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CHAPTER 10

A Spanner and His Works: Books, Letters, and Scholarly Communication Networks in Early Modern Europe

Daniel Stolzenberg

> Since the end of the fifteenth century, the printed book had become the means par excellence for the diffusion of knowledge.
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> HANS BOT AND FRANÇOISE WAQUET, *La République des Lettres*, 128

> The letter remained throughout the sixteenth and seventeenth centuries the means par excellence for the diffusion of knowledge.
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> HANS BOT AND FRANÇOISE WAQUET, *La République des Lettres*, 129

In recent years, the network has emerged as a pervasive concept for thinking about the social practices of early modern science and scholarship. As a metaphor, the network implies the existence of nodes (individual scholars), distributed through geographic space, and connected to one another by various means of communication that facilitated the circulation of knowledge. The metaphor of the network serves as a powerful analytical tool because it highlights issues—communication, standards of communal behavior, the coordination of collective enterprises—that loomed large in the minds of early modern scholars. Those individuals did not speak of networks, however. The dominant metaphor that they used to think about similar issues was "the Republic of Letters" (*respublica literaria*). This metaphor posits the existence of citizens (individual scholars), distributed through geographic space, and connected to one another by a common interest (*res publica*) and bonds of mutual obligation that ensured the circulation of knowledge (*literae*) by various means of communication.[1] It is not by chance that historians' interest in

1 The best overview of the early modern Republic of Letters is Hans Bots and Françoise Waquet, *La République des lettres* (Paris: Belin, 1997). See also Anthony Grafton, "A Sketch Map of a Lost Continent: The Republic of Letters," *Republics of Letters: A Journal for the Study of Knowledge, Politics, and the Arts* 1, no. 1 (2009), http://arcade.stanford.edu/rofl/sketch-map-lost-continent-republic-letters; Marc Fumaroli, "The Republic of Letters," *Diogenes* 143 (1998); Peter Burke, "Erasmus and the Republic of Letters," *European Review* 7, no. 1 (1999);

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the early modern concept of the Republic of Letters has grown in tandem with interest in social networks. The emic category, the Republic of Letters, and the etic category, scholarly communication networks, are significantly congruent.

In studying the networks that connected early modern scholars, historians have adopted a variety of approaches, from quantitative research aspiring to some degree of cliometric rigor to more qualitative explorations of the representations and practices that gave form to the scholarly community. Among the former, a number of innovative, large-scale projects are under way that use digital technology and social network analysis to interpret databases of information about relations among early modern scholars.[2] Across this methodological spectrum, historians have accorded a privileged role to correspondence, and with good reason. As Anthony Grafton puts it, letters "constituted the fragile but vital canals that connected and animated intellectual commerce," forming "a capillary system along which information could travel from papal Rome to Calvinist strongholds in the north, and vice versa—so long as both had inhabitants, as they did, who wished to communicate."[3] The growth of state and commercial postal services during the Renaissance created unprecedented possibilities for long-distance communication, which European scholars were quick to exploit for their own ends.[4] From the sixteenth century onward, the exchange of letters was considered a fundamental duty of all would-be members of the Republic of Letters, and the epistolary networks they formed were an essential factor in the creation of an international scholarly community.[5]

This essay instead highlights the importance of books as a medium of scholarly communication. It may seem unnecessary, if not retrograde, to make the case for print rather than manuscript communication. The printed book has

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Anne Goldgar, *Impolite Learning: Conduct and Community in the Republic of Letters, 1680–1750* (New Haven, CT: Yale University Press, 1995).

2 Among the most notable are Mapping the Republic of Letters, http://republicofletters.stanford.edu; Cultures of Knowledge: Networking the Republic of Letters, 1550–1750, http://www.culturesofknowledge.org; Circulation of Knowledge and Learned Practices in the 17th-century Dutch Republic, http://ckcc.huygens.knaw.nl; and Six Degrees of Francis Bacon: Reassembling the Early Modern Social Network, http://sixdegreesoffrancisbacon.com.

3 Grafton, "Sketch Map of a Lost Continent," 9.

4 Steven J. Harris, "Networks of Travel, Correspondence, and Exchange," in *Early Modern Science*, ed. Katherine Park and Lorraine Daston, The Cambridge History of Science (Cambridge: Cambridge University Press, 2008), 347–50.

5 Hans Bots and Françoise Waquet, eds., *Commercium Litterarium: La Communication dans la République des Lettres, 1600–1750* (Amsterdam: APA-Holland University Press, 1994); Paul Dibon, "Communication in the Respublica Literaria of the 17th Century," in Dibon, *Regards sur la Hollande du siècle d'or* (Naples: Vivarium, 1990).

long been the privileged source of intellectual historians. Even among those who attend to scholarly practices, the thriving subfield of the history of the book has kept "print culture" in the fore. Perhaps it is precisely because the book looms so large that, at times, it becomes lost to view. This seems to be the case in some recent scholarship that more or less equates scholarly communication (and the Republic of Letters) with correspondence networks, giving the role of print short shrift. The website of the Cultures of Knowledge project at Oxford University, for example, asserts that "correspondence was the information superhighway of the early modern world," while a recent article in the journal *History of European Ideas* describes "exchanges of letters between scholars" as "the central mean[s] of [the] circulation of knowledge for at least the period 1600–1800."[6] Statements like these, drawn from longer passages that make no mention of books, point to a historiographic blind spot for which this essay seeks a corrective.

My claim is not that books were more important than letters—although, if one seeks an early modern analogue to the information superhighway of the digital age, print certainly has a strong claim. The essential point is rather that both media were indispensable components of the early modern communication infrastructure, each with its own distinct advantages.[7] For disseminating information broadly, reliably, durably, and in large quantities, the printed book was without rival. By contrast, the letter offered accessibility, speed, reciprocity, and greater freedom from censorship, all of which made it the ideal medium for communicating news or engaging in long-distance conversation. As complementary media, books and letters functioned together within a single information order.[8]

While this essay focuses on the relationship of books and correspondence, these were far from the only modes of communication among early modern scholars. The exchange of manuscripts, antiquities, botanical specimens,

6 "About | Cultures of Knowledge," Cultures of Knowledge: Networking the Republic of Letters, 1550–1750, http://www.culturesofknowledge.org/?page_id=2, accessed 30 July 2014; Mark Gingras, "Mapping the Structure of the Intellectual Field Using Citation and Co-citation Analysis of Correspondences," *History of European Ideas* 36 (2010): 338.

7 For clarity and concision of argument, I treat (printed) books and (manuscript) correspondence as a simple dichotomy. A finer-grained analysis of early modern scholarly communication would complicate this picture by considering the circulation of manuscript treatises and by distinguishing among different kinds of printed media, such as treatises, textbooks, reference works, and journals, not to mention published collections of letters.

8 For the notion of an "information order," see C.A. Bayly, *Information and Empire: Intelligence Gathering and Social Communication in India, 1780–1870* (Cambridge: Cambridge University Press, 1996).

astronomical observations, anatomical drawings, portraits, and other objects were other common practices of the Republic of Letters that enabled the circulation of knowledge. So too was face-to-face conversation, facilitated by the humanist tradition of learned travel and the emergence of specialized sites of intellectual encounter, such as libraries, bookshops, collectors' cabinets, and academies.[9] Drawing on various combinations of these practices, early modern scholars found diverse means to respond to the Republic of Letters' key imperative: to communicate information and thereby advance knowledge.

In order to present a richer, more accurate account of early modern scholarly communication, this essay draws on the insights of social network analysis. Many studies of correspondence and the Republic of Letters are based on the tacit assumption that the reciprocal exchange of information with a large and diverse group of interlocutors is a uniquely effective method for contributing to the circulation of knowledge. While individuals who have such a wide range of interlocutors tend to be the most conspicuous information brokers, social network analysis teaches that there are other powerful ways to facilitate the exchange of information. In particular, "boundary spanners," who link groups that would otherwise be isolated from one another, can play as important a role as individuals with larger and more diverse sets of connections. To illustrate the variety of effective communication strategies as well the pitfalls of studying correspondence in isolation from print, I will use the example of one of the seventeenth century's most famous scholars, Athanasius Kircher, SJ (1601/2–80).

Throughout his long career Kircher made membership in the Republic of Letters a defining feature of his scholarly persona. He incessantly invoked the concept in publications and private correspondence, speaking of his duty to share his studies with the Republic of Letters, and describing his publications as contributions to its "greater good." In many books he explicitly called attention to the social networks that assisted him in their completion, depicting the results as de facto collaborations, even as he boasted of his personal genius and tireless labor. As the impresario of the Musaeum Kircherianum, one of Europe's most famous collections of natural and artificial curiosities, Kircher styled himself as one of the republic's "living monuments" (so-called by Peter Burke) who connected the world of scholarship by serving as "objects of tourism" for learned travelers.[10] He tended a large network of correspondence, which he

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9 Bots and Waquet, *La République des lettres*, 126. See also Grafton, "Sketch Map of a Lost Continent"; Paula Findlen, *Possessing Nature: Museums, Collecting and Scientific Culture in Early Modern Italy* (Berkeley: University of California Press, 1994); Goldgar, *Impolite Learning*.

10 Burke, "Erasmus and the Republic of Letters," 10. On Kircher's museum see Angela Mayer-Deutsch, *Das Musaeum Kircherianum. Kontemplative Momente, historische Rekonstruktion,*

eventually turned into a display in his museum, where visitors could admire twelve thick volumes containing letters sent to him "from popes, emperors, cardinals, and princes of the empire, as well as scholars, philosophers, mathematicians, and physicists from all over the world."[11] (Over two thousand letters are extant, involving almost eight hundred correspondents.)[12] There is no question that Kircher wished to be seen as an important and exemplary citizen of the Republic of Letters. But serious doubts have been raised about whether his dedication to its ideals and practices amounted to more than ostentatious display and empty rhetoric.

Before turning to the specifics of Kircher's case, it is worth asking what precisely it means to question a historical figure's place in an entity such as the Republic of Letters. Although it is common to use the term as a synonym for the community of scholars, or some subgroup of it, strictly speaking it is a metaphor that early modern scholars used to represent an ideal of what their community should be like.[13] (As a normative ideal it thus differs importantly from the descriptive concept of the network, despite the aforementioned isomorphism of the two notions.) The earliest known usage of the term Republic of Letters is from the early fifteenth century, but it was not until the sixteenth century, especially owing to the influence of Erasmus, that it became widely used. While the term knew various usages and definitions, it is possible to identify a commonly agreed meaning that would have been recognizable to most learned Europeans between roughly 1550 and 1750. By imagining themselves as collectively constituting a "Republic of Letters," European scholars asserted that they belonged to a universal and autonomous community, transcending political and religious divisions and united by a common interest in the advancement of learning. The conviction that the progress of knowledge was a collective project, requiring the coordinated collaboration of the scholarly community, fostered a system of values and practices. At the center of this

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Bildrhetorik (Zurich: Diaphanes, 2010); Paula Findlen, "Scientific Spectacle in Baroque Rome: Athanasius Kircher and the Roman College Museum," in *Jesuit Science and the Republic of Letters*, ed. Mordechai Feingold (Cambridge, MA: MIT Press, 1995).

11 Giorgio de Sepibus, *Romani Collegii Societatis Iesu Musaeum Celeberrimum* (Amsterdam: Ex Officina Janssonio-Waesbergiana, 1678), 65.

12 The bulk of Kircher's surviving correspondence in the Archives of the Pontifical Gregorian University has been digitized: "Correspondence," Athanasius Kircher at Stanford, http://web.stanford.edu/group/kircher/cgi-bin/site/?page_id=7, accessed 30 July 2014.

13 Herbert Jaumann, "Respublica litteraria/Republic of letters: Concept and Perspectives of Research," in *Die europäische Gelehrtenrepublik im Zeitalter des Konfessionalismus/The European Republic of Letters in the Age of Confessionalism*, ed. Jaumann, Wolfenbüttler Forschungen 96 (Wiesbaden: Harrassowitz, 2001).

system was the obligation to "communicate" (*communicare*).[14] All the various practices and values that defined the *respublica literaria* can be understood as means to the end of facilitating intellectual exchange among scholars in a Europe divided by religion and politics. It goes without saying that the reality of scholarly practice fell short of the normative ideal, which nonetheless had significant influence as a regulative force. The question, then, with respect to Kircher is: did he share its values and goals and engage in its practices, not perfectly, but more than superficially?

The case against Kircher's good standing as a member of the Republic of Letters has been made forcefully, and with some influence, by Noel Malcolm, who describes Kircher's frequent use of the term as "little more than a token," and his actual "modus operandi," especially his use of correspondence, as outside the "mainstream" of the republic's practices.[15] As opposed to a supposedly genuine exemplar of the Republic of Letters like Marin Mersenne, who deployed a massive correspondence network in order to facilitate sustained, complex, multidirectional, and reciprocal flows of information, Kircher typically used letters either to gather information for his own research or to answer queries sent to him. Furthermore, Malcolm argues, with most of his correspondents he exchanged only a single letter, and the majority were Catholic and Jesuit, whereas the Republic of Letters was multi-confessional. (It is important to note that Malcolm's argument for Kircher's marginality in the Republic of Letters is also based on the claim that Kircher's views about the relationship of power and knowledge were antithetical to the republic's implicit "ideology of the non-political." Since it is not directly relevant to my present concern with books and letters as channels of scholarly communication, I do not engage this part of Malcolm's argument in this essay.)[16] In an article on Kircher's museum, Paula Findlen has offered a contrasting, vivid portrait of Kircher as participant in the Republic of Letters, paying due attention to his many modes of intellectual sociability.[17] For the purposes of this discussion, I will focus more narrowly

14 Dibon, "Communication in the Respublica Literaria."

15 Noel Malcolm, "Private and Public Knowledge: Kircher, Esotericism, and the Republic of Letters," in *Athanasius Kircher: The Last Man Who Knew Everything*, ed. Paula Findlen (London: Routledge, 2004), 298–99.

16 I agree with Malcolm (and others) that the Republic of Letters was based on the conceit of a circumscribed realm in which scholarship was isolated from divisive political and religious matters. But I disagree that the individuals who constituted the republic believed that scholarship and politics should be kept separate *in general*. I will treat this subject at length in a separate article on ideology and the Republic of Letters.

17 Findlen, "Scientific Spectacle in Baroque Rome."

on the relationship between print and correspondence in Kircher's scholarly activity.

Malcolm's description of Kircher as falling so far outside the customary epistolary practices of the Republic of Letters is debatable.[18] One can certainly find examples of Kircher using correspondence in more complex ways, for instance in his studies of magnetic declination, discussed below. But exactly how much weight to assign such examples—are they the exception or the rule?—is not obvious. Conversely, more systematic analysis of Mersenne's correspondence (the standard against which Kircher has been measured and found wanting), which has not yet been digitized, could yield a surprise like that registered by Dan Edelstein upon inspecting a data visualization of Voltaire's epistolary network, which turned out to be far less cosmopolitan than he previously supposed.[19] Furthermore, it should not be taken for granted that virtuosic deployment of correspondence of the sort attributed to Mersenne was more typical or exemplary of the Republic of Letters than more superficial exchanges. The single, flattering letter that a young German Protestant named Gottfried Leibniz sent to Kircher in 1670 did not lead to an ongoing epistolary relationship, and may seem to confirm the shallow nature of Kircher's correspondence. (As John Fletcher observed, "It is rather startling to realize how great a proportion of letters written to Kircher by various learned and famous men say nothing at all.")[20] But writing to an illustrious scholar was an important rite of passage for the tyro savant, a fact well understood by Leibniz, who subsequently boasted to other correspondents about his "commercium literarum" with Kircher as well as with Robert Boyle and Christiaan Huygens.[21] With his prompt and encouraging reply, in which he

18 Paula Findlen, Iva Lelková, and Suzanne Sutherland have undertaken an in-depth study of Kircher's correspondence, which shows it to have been considerably more complex, diverse, and multidirectional. I thank the authors for sharing a draft of their initial results: Paula Findlen, Iva Lelková, and Suzanne Sutherland, "A Jesuit's Letters: Athanasius Kircher at the Edges of His World," *American Historical Review*, forthcoming.

19 Meredith Hindley, "Mapping the Republic of Letters," *Humanities: The Magazine of the National Endowment for the Humanities* (2013), http://www.neh.gov/humanities/2013/novemberdecember/feature/mapping-the-republic-letters; "Voltaire and the Enlightenment," Mapping the Republic of Letters, http://republicofletters.stanford.edu/casestudies/voltaire.html, accessed 2 Aug. 2014.

20 John Edward Fletcher, *A Study of the Life and Works of Athanasius Kircher, "Germanus Incredibilis," with a Selection of His Unpublished Correspondence and an Annotated Translation of His Autobiography*, ed. Elizabeth Fletcher (Leiden: Brill, 2011), 304.

21 Paul Friedländer, "Ein Beitrag zur Geschichte der Polyhistorie im XVII. Jahrhundert," in Friedländer, *Studien zur antiken Literatur und Kunst* (Berlin: De Gruyter, 1969), 667.

responded point by point to Leibniz's several queries, Kircher cheerfully fulfilled his republican duty.[22]

For the sake of argument, however, let us grant that overall Kircher acted as Malcolm describes. The chief assertion of this essay is that, even if this were so, it by no means should lead to the conclusion that he was not a mainstream participant in the Republic of Letters. The claim that Kircher did not engage in the kind of communication enjoined by the ideal of the republic is based on two implicit assumptions about the social network of early modern scholars. The first assumption is that that the individual who communicated with the largest and most diverse group of interlocutors contributed most to the exchange of knowledge. Thus, the most exemplary citizens of the Republic of Letters were those who had the largest and most heterogeneous correspondence networks, figures like Mersenne, Nicolas-Claude Fabri de Peiresc, Henry Oldenburg, and so forth. The second implicit assumption is that the early modern scholarly communication network was held together primarily by means of letters and thus can be adequately reconstructed and analyzed through the lens of correspondence. Both these assumptions are flawed.

Here some sociological terminology can be helpful. In social network analysis an actor's importance is measured in terms of "centrality," of which there are three types. "Degree centrality" measures an actor's number of ties or connections. Individuals with high degree centrality appear most obviously to be near the center of action in a network. "Closeness centrality" measures the distance between an actor and the other members of a network—essentially, an individual's ability to reach another node by the fewest steps. Finally, "betweenness centrality" measures an actor's ability to connect subgroups that otherwise would be isolated from one another and thus to serve as a gatekeeper. Such "boundary spanners" can play as powerful a role in a network as actors with high degree and closeness centrality.[23] The great early modern correspondence masters, the so-called *épistoliers* or "secretaries" of the Republic of Letters, such as Mersenne and Peiresc,[24] were powerful information brokers

22 Fletcher, *Study of the Life and Works of Athanasius Kircher*, 351–55.

23 Stanley Wasserman and Katherine Faust, *Social Network Analysis: Methods and Applications* (Cambridge: Cambridge University Press, 1994), 177–92; John P. Scott, *Social Network Analysis: A Handbook*, 2nd ed. (London: Sage, 2000), 82–99. These concepts have mathematical definitions that allow computational analysis of networks. Here I use them qualitatively.

24 See Hans Bots, "Marin Mersenne, 'secrétaire général' de la République des Lettres, 1620–1648," in *Les grands intermédiaires de la république des Lettres. Etudes de réseaux de correspondants du XVIe au XVIIIe siècle*, ed. Christian Berkvens-Stevelinck, Hans Bots, and Jens Häseler (Paris: Champion, 2005); Justin Grosslight, "Small Skills, Big Networks: Marin

because of their high degree (as well as closeness) centrality. Kircher, too, was an important information broker, but he accomplished this task as a boundary spanner, funneling information from Jesuit information circuits, collected by correspondence and other means, to an international, multi-confessional audience through the medium of print. This dynamic is invisible if one considers his correspondence in isolation.

In other words, if Kircher's correspondence network was predominantly Catholic and Jesuit, and if he used it primarily to gather material for his own studies rather than to help other scholars with theirs, we should not conclude that he aspired to use correspondence in the same manner as Mersenne or Peiresc, but did it badly. Kircher's role in the world of scholarship was different, and it would be a mistake to judge how well he fulfilled the Republic of Letters' ideal of communication by the same standard. Above all, he was the author of books, and his use of correspondence needs to be seen in that light. If we pay attention to Kircher's overall communication strategy, the supposed defects in his modus operandi turn out to be features of a sophisticated system for gathering information from a powerful social network and sharing it with the learned world at large.

Consider *Oedipus Aegyptiacus*, Kircher's magnum opus on the hieroglyphs and so much else.[25] The multivolume work appeared in 1655, but Kircher had first announced the project almost twenty years earlier. In an appendix to his pioneering treatise on Coptic, *Prodromus Coptus*, he printed an outline of his work in progress. Appealing to their concern for the "promotion of the common good," Kircher asked readers to send him any material, textual or artifactual, relevant to his research.[26] Over the next twenty years such information flowed to his study at the Collegio Romano via the post. Jesuits played an important role, especially those at various courts who could provide material from princely collections, but so did non-Jesuit correspondents from many parts of Europe. In the preface to *Obeliscus Pamphilius* (in all but name the first volume of *Oedipus Aegyptiacus*), Kircher acknowledged these debts in detail, offering a rich description of the social network that had contributed to the work's

Mersenne as Mathematical Intelligencer," *History of Science* 51, no. 3 (2013); Peter N. Miller, "Nicolas-Claude Fabri de Peiresc and the Mediterranean World: Mechanics," in Berkvens-Stevelinck, Bots, and Häseler, *Les grands intermédiaires culturels de la République des Lettres*.

25 Athanasius Kircher, *Oedipus Aegyptiacus: hoc est, Universalis hieroglyphicae veterum doctrinae temporum iniuria abolitae instauratio*, 3 vols. in 4 (Rome: Ex typographia Vitalis Mascardi, 1652–54).

26 Athanasius Kircher, *Prodromus Coptus sive Aegyptiacus* (Rome: Typis S. Cong. de Propag. Fide, 1636), 333.

completion.[27] Twenty-five hundred pages later, he concluded his hieroglyphic studies with the declaration, "All for the greater glory of God, and the improvement of the Republic of Letters."[28]

Kircher's attempt to create a global map of magnetic declination offers another example of his communication strategy. The underlying idea—not original to Kircher—was that since a magnetic compass deviates from true north to different extents at different locations, such a map might solve the longitude problem in navigation.[29] At its outset, Kircher's project seemed full of promise to some of Europe's leading astronomers and natural philosophers, including Mersenne and Pierre Gassendi, who recognized that only a centralized, global missionary order would be capable of carrying out such a complex enterprise.[30] If the project's inspiration came from the Republic of Letters, its execution depended on Kircher's ability to exploit the Society of Jesus's unique institutional resources—its centralized communication system, worldwide network of missions, large pool of competent mathematicians, and hierarchical command structure—in the name of experimental science. In 1639 Kircher took advantage of the meeting in Rome of the Congregation of Procurators (an assembly of representatives from the Society's provinces) to provide the departing delegates with detailed instructions for obtaining observations of magnetic declination and longitude. The delegates communicated the instructions to Jesuit mathematicians in missions and colleges around the world, who sent their results to Rome. As it happened, Kircher never completed his "magnetic geography." (He attributed the failure to a purloined manuscript, but more likely he gave up after learning that declination was not stable over time.) But he shared the initial data that he received from Jesuit and non-Jesuit informants in his widely read treatise on magnetism, *Magnes, sive de arte magnetica*, published in 1641.[31]

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27 Athanasius Kircher, *Obeliscus Pamphilius, hoc est, interpretatio nova & hucusque intentata obelisci hieroglyphici* (Rome: Typis Ludovici Grignani, 1650), 333; Daniel Stolzenberg, *Egyptian Oedipus: Athanasius Kircher and the Secrets of Antiquity* (Chicago: University of Chicago Press, 2013), 124–27.

28 Kircher, *Oedipus Aegyptiacus*, 3:590.

29 Michael John Gorman, "The Angel and the Compass: Athanasius Kircher's Magnetic Geography," in Findlen, *Athanasius Kircher: The Last Man Who Knew Everything*, which this paragraph follows.

30 Ibid., 244; Noel Malcolm, "Five Unknown Items from the Correspondence of Marin Mersenne," *The Seventeenth Century* 21, no. 1 (2013): 76–81.

31 Athanasius Kircher, *Magnes, sive, de arte magnetica opus tripartitum* (Rome: Sumptibus Hermanni Scheus… Ex typographia Ludovici Grignani, 1641).

Further evidence of Kircher's coordinated use of correspondence and print can be found in almost any of the dozens of books that he published. I will limit myself to one more example: *China Illustrata*, published in 1667.[32] Kircher's treatise on China was his most collaborative work, being largely a compilation of material from Jesuit missionaries. He devoted its preface to acknowledging these debts, detailing in particular his reliance on the reports of Martino Martini, Michael Boym, Filippo Marino, Johannes Grueber, and Heinrich Roth. His most important informants had supplied him with information personally while visiting Rome, either in conversation or by delivering manuscripts. "While I am writing this," Kircher announced in the preface, Grueber and Roth "are here with me, and continually tell me things." He also depended heavily on previously published Jesuit texts on China, especially the *Novus Atlas Sinensis* by his former student Martini, although he downplayed this kind of debt in the preface, instead presenting himself as the disseminator of fresh information collected by his missionary colleagues. "While the fathers were working for the salvation of souls," he explained,

> they lacked time, leisure, and means. Yet, they made notes on rare things which they observed in all these vast regions where they journeyed. They asked only that those notes made with so much labor and exertion shouldn't be left to the roaches and worms, but that I should publish them for the common good of the republic of letters.[33]

Despite being Kircher's most explicitly Jesuit work, *China Illustrata* was also his most popular, spawning a pirate edition and Dutch and French translations, as well as a partial English one. Given the importance of correspondence in the functioning of the Society's global missionary network,[34] it is somewhat ironic that correspondence per se played a relatively small role in its composition. Nonetheless, *China Illustrata* amply confirms the larger point about Kircher's communication strategy, which involved gathering information from

32 Athanasius Kircher, *China monumentis, quà sacris quà profanis, nec non variis naturae & artis spectaculis, aliarumque rerum memorabilium argumentis illustrata* (Amsterdam: apud Joannem Janssonium à Waesberge & Elizeum Weyerstraet, 1667).

33 Ibid., **v–**2v, trans. slightly modified from Athanasius Kircher, *China Illustrata*, trans. Charles D. Van Tuyl (Bloomington: Indiana University Research Institute for Inner Asian Studies, 1987), iv.

34 Steven J. Harris, "Confession-Building, Long-Distance Networks, and the Organization of Jesuit Science," *Early Science and Medicine* 1 (1996): 313–15; Noël Golvers, "'Savant' Correspondence from China with Europe in the 17th and 18th Centuries," *Journal of Early Modern Studies* 1 (2012).

Jesuit circuits and making it available to the universal Republic of Letters through the medium of the printed book.

If Kircher's correspondence network tended to be Catholic and Jesuit, although by no means exclusively so, his readership was profoundly multi-confessional as well as international—indeed, global.[35] *China Illustrata*, like most of his works from 1666 onward, was published by Protestant printers in Amsterdam, the center of the international book trade. As Anne Goldgar has argued, one of the fundamental obligations of members of the Republic of Letters was to make information from one's local environment available to distant colleagues.[36] Kircher did just that, but with the difference that his local environment happened to be the nerve center of the Catholic world. Rome was the most active postal center in Italy, if not all of Europe,[37] while the Society of Jesus possessed the most sophisticated and geographically extended information bureaucracy of the seventeenth century, rivaled only by the Dutch East Indies Corporation.[38] By necessity, the Republic of Letters was parasitic on existing channels of communication, political, ecclesiastical, and commercial. In this respect, Kircher's use of Jesuit information channels (which he also exploited to great effect in distributing his publications) was not unlike the strategy of Gisbert Cuper, who took advantage of resources at his disposal as a Dutch diplomat to develop an influential scholarly correspondence network devoted to antiquarian research.[39] Whatever doubts many European scholars

35 Kircher's non-European readership is best documented for the Americas. See Paula Findlen, "A Jesuit's Books in the New World: Athanasius Kircher and His American Readers," in Findlen, *Athanasius Kircher: The Last Man Who Knew Everything*; Ignacio Osorio Romero, ed., *La luz imaginaria: epistolario de Atanasio Kircher con los novohispanos* (Mexico City: Universidad Nacional Autónoma de México, 1993); J. Michelle Molina, "True Lies: Athanasius Kircher's *China Illustrata* and the Life Story of a Mexican Mystic," in Findlen, *Athanasius Kircher: The Last Man Who Knew Everything*.

36 Goldgar, *Impolite Learning*.

37 Peter Burke, "Rome as Center of Information and Communication for the Catholic World, 1550–1650," in *From Rome to Eternity: Catholicism and the Arts in Italy, ca. 1550–1650*, ed. Pamela M. Jones and Thomas Worcester (Leiden: Brill, 2002).

38 Markus Friedrichs, *Der lange Arm Roms? Globale Verwaltung und Kommunikation im Jesuitorden 1540–1773* (Frankfurt: Campus Verlag, 2011); Dauril Alden, *The Making of an Enterprise: The Society of Jesus in Portugal, Its Empire, and Beyond* (Stanford, CA: Stanford University Press, 1996).

39 Bianca Chen, "Digging for Antiquities with Diplomats: Gisbert Cuper (1644–1716) and His Social Capital," *Republics of Letters: A Journal for the Study of Knowledge, Politics, and the Arts* 1, no. 1 (2009), http://arcade.stanford.edu/rofl/digging-antiquities-diplomats-gisbert-cuper-1644-1716-and-his-social-capital.

had about the content of Kircher's scholarship, they widely praised his work as a cultural broker.[40] As Robert Southwell wrote to Robert Boyle,

> Father Kircher is my particular friend, and I visit him and his gallery frequently. Certainly he is a person of vast parts and of as great industry. He is likewise one of the most naked and good men that I have seen, and is very easy to communicate whatever he knows, doing it, as it were, by a maxim he has. On the other side he is reputed very credulous, apt to put in print any strange, if plausible, story, that is brought unto him.[41]

Kircher was nothing if not a communicator.

Kircher's method was not unusual. A generation ago, Elizabeth Eisenstein called attention to the practice, common since the mid-sixteenth century, of authors using correspondence networks to collect information out of which they composed books.[42] For Jesuits who aspired to participate in the Republic of Letters publication had a special importance, since they sometimes faced constraints on corresponding with Protestants, whereas print was less affected by confessional boundaries.[43] As Luce Giard and Antonella Romano have argued, Kircher followed the model of Christoph Clavius, his predecessor as mathematician at the Collegio Romano. Clavius perfected a strategy that built on the Society of Jesus's powerful system of internal administrative correspondence in order to create a scholarly epistolary network that sustained his work as an author. Like Kircher in his wake, Clavius depended on correspondents (including former students) to provide information that he used to produce his publications and also to disseminate them. In a positive feedback loop, which Kircher replicated, Clavius's references in his books to correspondents

40 Findlen, "Scientific Spectacle in Baroque Rome," 259.

41 Robert Southwell to Robert Boyle, Rome, 30 Mar. 1661, in Robert Boyle, *The Works of the Honourable Robert Boyle, In six volumes. To which is prefixed The life of the author …, A new edition* (London, 1772), 6:299.

42 Elizabeth Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early-Modern Europe* (Cambridge: Cambridge University Press, 1979), 98, 109–11, 232–33, 488, as noted by Luce Giard and Antonella Romano, "L'usage jésuite de la correspondance. Sa mise en pratique par le mathématicien Christoph Clavius (1570–1611)," in *Rome et la science moderne: Entre Renaissance et Lumières*, ed. Antonella Romano (Rome: Publications de l'École française de Rome, 2009), http://books.openedition.org/efr/1926, n. 15.

43 Giard and Romano, "L'usage jésuite de la correspondance," 77; Mordechai Feingold, "Jesuits: Savants," in Feingold, *Jesuit Science and the Republic of Letters*, esp. 23–24.

functioned as invitations to readers to become collaborators by contacting him through letters.[44]

It is no coincidence that when the phrase *respublica literaria* emerged in the late fifteenth and early sixteenth centuries, it did so in a humanist printshop. Apart from an isolated instance in an early fifteenth-century letter by Francesco Barbaro, the earliest known use of the expression comes from Aldo Manuzio, director of the great Aldine Press in Venice.[45] Beginning in 1491, Manuzio popularized the concept of the Republic of Letters in the influential prefaces that he contributed to various Latin and Greek editions issued by his publishing house. The metaphor conveyed the humanists' self-conception as participants in a collective effort to recover classical literature (*bonae literae*). As the case of Barbaro indicates, this vision predated Gutenberg, but it was only with the arrival of the printing press, and its adoption by classical scholars, that this grandiose ambition passed from utopia to reality. More than anyone before, Manuzio recognized the potential of the new technology to contribute to the humanist project by disseminating and preserving the ancient texts that Renaissance scholars had rescued from oblivion.[46] As time went on, the learning (*literae*) that defined the mission of the Republic of Letters expanded beyond the horizons of classical scholarship, but the book retained its central role. When René Descartes, in the *Discourse on Method* (1637), referred to his duty to communicate his discoveries to the public (rendered in the Latin translation as "respublica literaria"), he was thinking especially of the printed book and its ability to speak across generations.[47]

Books were not necessarily the most important media of scholarly communication; but they were certainly the most important *output* of the Republic of Letters' cooperative system of knowledge production. One might go so far as to say (paraphrasing Jack Hexter) that the purpose of the Republic of Letters, including the indispensable practice of correspondence, was to see to it that scholarship got written and printed.[48] Correspondence itself confirms this. If one examines the content of early modern scholars' letters, one of the most

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44 Giard and Romano, "L'usage jésuite de la correspondance"; Antonella Romano, "Epilogue: Understanding Kircher in Context," in Findlen, *Athanasius Kircher: The Last Man Who Knew Everything*, 6–9.

45 Bots and Waquet, *La République des lettres*, 11–13; Fumaroli, "Republic of Letters," 136–39.

46 On Aldo Manuzio, see Fumaroli, "Republic of Letters," 147–51.

47 René Descartes, *Oeuvres de Descartes*, 11 vols. (Paris: Léopold Cerf, 1897–1909), 6:61–63; Fumaroli, "Republic of Letters," 136.

48 J.H. Hexter, "The Historian and His Society: A Sociological Inquiry—Perhaps," in Hexter, *Doing History* (Bloomington: Indiana University Press, 1971), 96: "The purpose of the society of professional historians is to see to it that history gets written."

frequent topics—perhaps the most frequent—was books: information about the latest publications, discussions about authors and controversies, reports about works in progress, and so forth. Moreover, a crucial function of epistolary networks was to exchange books as well as letters. In the learned journals that came to play a large role in scholarly communication by the late seventeenth century (in effect, taking over functions formerly belonging to private correspondence) "news of the Republic of Letters" meant above all news about books. As for those icons of the republic who served scholarship through correspondence rather than publication, in many cases a primary function of their correspondence was to facilitate the publication of other scholars' texts. Peiresc, who liked to call himself a "midwife" with regard to his protégés' publications, is an outstanding example of this dynamic.[49] If such middlemen were sometimes more celebrated than the authors they assisted, that was in large measure because they were recognized as playing at least as important a role in helping knowledge find its way into print.

In their survey of the Republic of Letters, written before the historiographic pendulum had swung so far in the direction of correspondence, Hans Bots and Françoise Waquet felt the need to specify that not *every* member of the republic was the author of books; some played an essential role by furnishing others with materials for their research or by communicating information through letters.[50] Why, then, have some more recent discussions of the Republic of Letters and scholarly communication tended to minimize the importance of print? One reason may be that correspondence makes a better emblem of the republic. Unlike publishing, exchanging letters was a duty that every would-be member could fulfill, and it more obviously embodies the values of sociability and reciprocity. Another significant factor is that correspondence lends itself to social network analysis in a way that books complicate. This is especially true when it comes to the most tantalizing new approach to the history of scholarly communication, projects to map the Republic of Letters digitally.[51] Typically, a letter has one sender and one recipient, each with a specified geographic location. As such, a correspondence network can be converted into a database and then analyzed and visualized by existing methods and software. To create an analogous map that would capture how information was disseminated through printed books as well would be vastly more complicated and

49 E.g., Peiresc to Dupuy, Aix, 21 May 1633, in *Lettres de Peiresc*, ed. Philippe Tamizey de Larroque, 7 vols., Collections de documents inédits sur l'histoire de France (Paris: Imprimerie Nationale, 1888–98), 2: 528–29.

50 Bots and Waquet, *La République des lettres*, 93.

51 For examples, see above, n. 2.

imprecise, if indeed it is even possible. While some of the current digital initiatives are also exploring methods that apply data visualization to printed media,[52] as far as I know, none attempt to integrate print and correspondence into the same network.[53] Digital maps of correspondence are promising analytic tools, as has been recently demonstrated for the specific case of Kircher.[54] But they offer a very partial representation of an early modern information order in which private letters and published books were symbiotic and complementary components of a single system. To understand the circulation of information among early modern scholars, we need to examine how different media functioned together. In the future it may be possible to create digital maps of early modern scholarly communication that integrate letters and books in a unified web. Until then, we must not lose sight of what the new digital methods leave out, lest a partial but useful perspective becomes a misleading and distorted one. If that were to happen, a major conveyor of scholarly information might be mistaken for a marginal outlier in the Republic of Letters.

52 For example: "Voltaire's places of publication (1712–1800)," Mapping the Republic of Letters, http://republicofletters.stanford.edu/casestudies/voltairepub.html, accessed 2 Aug. 2014.

53 A step in this direction would be to enhance digital maps of correspondence networks (such as those being produced by Stanford's Mapping the Republic of Letters project) with visual indicators of an individual scholar's publishing activity—most simply, the number of editions he or she published; more ambitiously, the geographical extent of their dissemination, the frequency of their citations in other books, etc. This would reveal at a glance, for example, whether an individual at the margins of a correspondence network was a prolific author.

54 Findlen et al., "A Jesuit's Letters," is an exemplary model of the creative and judicious use of data analysis to study scholarly correspondence.

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