MEN OF EXCHANGE: CREATION AND CIRCULATION OF KNOWLEDGE IN THE SWISS REPUBLICS OF THE EIGHTEENTH CENTURY

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Over the past decades, the study of communicative processes in the *Respublica litteraria* of the Modern Age has played an increasingly crucial role for research into the history of science, and for the transfer of knowledge more generally. Turning their attention to the phenomenon, researchers have pinpointed the role of learned correspondence as an instrument of socialisation across borders and religious beliefs, as a means of exchange for knowledge and ideas, but also as a vehicle for communicating and sharing values. More especially, by exchanging letters scholars were able to assure a regular transfer of information and collectibles (i.e. not merely publications, but also plant seeds, dried flowers, stuffed animals, and even animal organs that might serve medical testing), a faster transfer—and at times even less formal—than was afforded by the new media (reviews, periodical publications, etc.), which were just taking off around the seventeenth and the eighteenth century. By analysing a scholar's epistolary network we are likely to come across what Robert A. Hatch has defined "science in the making", that is the development of a new idea, of a new scientific interpretation, or even the complex process of drafting a text.[1]

[1] Robert A. Hatch, 'Correspondence Networks', in Wilbur Applebaum (ed.), *Encyclopedia of the Scientific Revolution: from Copernicus to Newton* (New York 2000), 168–170. On the *respublica litteraria*, e.g. Hans Bots and Françoise Waquet (eds.), *Commercium Litterarium. Forms of Communication in the Republic of Letters, 1600–1750* (Amsterdam and Maarsen 1994); Anne Goldgar, *Impolite Learning. Conduct and Community in the Republic of Letters, 1680–1750* (New Haven and London 1995); Robert Vellusig, *Schriftliche Gespräche. Briefkultur im 18. Jahrhundert* (Wien 2000); Jürgen Fohrmann (ed.), *Gelehrte Kommunikation. Wissenschaft und Medium zwischen dem 16. und 20. Jahrhundert* (Wien 2005); Martin Stuber, Stefan Hächler and Luc Lienhard (eds.), *Hallers Netz. Ein europäischer Gelehrtenbriefwechsel zur Zeit der Aufklärung* (Basel 2005); Peter Burke, *A Social History of the Knowledge: from Gutenberg to Diderot* (Cambridge and Oxford 2000); Klaus-Dieter Herbst and Stefan Kratochwil (eds.), *Kommunikation in der Frühen Neuzeit* (Frankfurt/M., Berlin and Bern 2009); Ivano Dal Prete, Maria Teresa Monti and Dario Generali (eds.), *Le reti in rete. Per l'inventario e l'edizione dell'Archivio Vallisneri* (Firenze 2010). An interesting example of analysis of a learned network: Laurence Brockliss, *Calvet's Web. Enlightenment and the Republic of Letters in Eighteenth Century France* (Oxford 2002). Recently: René Sigrist, 'La République des sciences: essai d'analyse sémantique', *Dix-huitième siècle* 40 (2008),

My contribution will focus on scholars as "producers of knowledge", on their systematic accumulation of learning and strategies of communication. The Swiss doctor and naturalist Johann Jakob Scheuchzer (1672–1733) is a case in point. My aim is to present some general thoughts on data collection strategies but also on the relationship between scientific documents and the role of epistolary communication, which turns out to be instrumental in the study of natural history in the modern age.[2] The paper is structured in three parts. The first presents an outline of the figure of Scheuchzer as a member of the Republic of Letters of the time and his epistolary network. Part two examines the function of questionnaires in the process of gathering and exchanging information and knowledge. In the third and final part, my analysis will focus on the significance of correspondence in this respect.

Precisely this last point is the core concern of the present article. Here, two elements seem to me to be crucial, and indeed there has been a fresh surge of interest in them over the past few years.[3] To begin with, we notice the role of correspondence with local peripheral elites, geared—in the case of Scheuchzer—to systematic data gathering on Swiss and Alpine natural history. Swiss scholars were invited to respond to a questionnaire devoted to natural history which our Zurich scientist sent to his correspondents in 1699: this mobilisation clearly shows the existence of a sort of "horizon of expectations" which also involved the *peripheral* elites of the old Confederation. From this point of view, the interest in collecting observations on natural history was an ideal that spread not only across the educated urban elites, but which overlapped with a patriotic mission of promoting knowledge of one's homeland. Such channels through which

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333–357. On the role of correspondence in the field of botany, see Regina Dauser et al. (eds.), *Wissen im Netz. Botanik und Pflanzentransfer in europäischen Korrespondenznetzen des 18. Jahrhunderts* (Berlin 2008), in particular, the introductory articles by Hans Bots, 'Exchange of Letters and Channels of Communication. The Epistolary Networks in the European Republic of Letters', 31–45, and Emma C. Spary, 'Botanical Networks revisited', 47–64.

[2] On the study of natural sciences in the modern age, see for instance Katharine Park and Lorraine Daston (eds.), *The Cambridge History of Science*, vol. 3: *Early Modern Science* (Cambridge 2006); Roy Porter (ed.), *The Cambridge History of Science*, vol. 4: *Eighteenth-Century Science* (Cambridge 2003); cf. Lorraine Daston, *Wunder, Beweise, und Tatsachen. Zur Geschichte der Rationalität* (Frankfurt/M. 2001); Nicholas Jardine (ed.), *Cultures of Natural History* (Cambridge 1996); on the Renaissance, see Brian W. Ogilvie, *The Science of Describing. Natural History in Renaissance Europe* (Chicago 2006).

[3] This is the path followed by, for instance, Alix Cooper, *Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe* (Cambridge 2007), and, in the context of historical and antiquarian studies in England, the study by Daniel Woolf, *The Social Circulation of the Past* (Oxford 2003).

local observations and knowledge were collected and exchanged proved essential for the development of naturalist research. In the specific case of Scheuchzer, the constant mingling of the epistolary testimony with the printed texts, in the form of frequent direct quotations from letters, is indeed proof that there was total trust between the naturalist and his informers; but it also confirms the use of a method based on compilation, built on the simultaneous presence of literary and erudite references, of passages copied from letters, and personal observations.[4] Items of information received from his correspondents went to make up thematic chapters, devoted to the description of diverse phenomena or of different fields of study (from the animal kingdom to the vegetable and mineral kingdoms) and which contained practical illustrations, in addition to a series of observations and data detailed serially. It was this particular approach of combining compilation with description that enabled our Zurich scientist to contextualise the observations received from his correspondents and so to produce an original, logical and organised corpus of naturalist knowledge.[5] Within this compilatory strategy, noticeably Scheuchzer uses several rhetorical devices in order to insert his epistolary testimonies into the volumes he put into print: at times he gives accurate details of his sources, at other times he underlines generically the reliable quality of his writer-correspondent, without mentioning him by name; or again—though rarely—he tinkers a little with his source document to make it more "neutral", more "rigorously scientific". For Scheuchzer, the epistolary source, already used by other natural scientists before him, from Conrad Gessner (1516–1565) to Athanasius Kircher (1602–1680) and Johann Jakob Wagner (1641–1695), is invested with the quality of testimony and authentication that is as fundamental as that of information sources in print. In addition it was something that he could hardly avoid if he wanted to study a territory, the old Swiss Confederation, which at the time was still uncharted territory for naturalists.

The significance that Scheuchzer attributed to local witnesses reveals another essential aspect which, to my mind, remains largely ignored. I am

[4] On the subject, see for example Franz Mauelshagen, 'Netzwerke des Vertrauens. Gelehrtenkorrespondenzen und wissenschaftlicher Austausch in der Frühen Neuzeit', in Ute Frevert (ed.), *Vertrauen. Historische Annäherungen* (Göttingen 2003), 119–151.

[5] Further reflections on this subject in Paola Giacomoni, 'La teologia naturale di Johann Jakob Scheuchzer', in Simona Boscani Leoni (ed.), *Wissenschaft—Berge—Ideologien. Johann Jakob Scheuchzer (1672–1733) und die frühneuzeitliche Naturforschung/Scienza—montagna—ideologie. Johann Jakob Scheuchzer (1672–1733) e la ricerca naturalistica in epoca moderna* (Basel 2010), 37–56 and Giuseppe Olmi, *L'inventario del mondo. Catalogazione della natura e luoghi del sapere nella prima età moderna* (Bologna 1992).

referring to the role of so-called minor figures, or simply "curious" members of the educated class, who kept up a steady stream of correspondence with "high-ranking" scholars (who, like Scheuchzer, could have access to major European academies). More importantly, however, these same people acted as intermediaries, transferring evidence gathered from more ordinary people, shepherds, peasants, etc.[6] This consideration flags up two elements that are central to the Scheuchzerian work and—more generally—to the development of the study of natural sciences after the Renaissance. On the one hand, there is a call, or plea, typical to modern science, from Francis Bacon (1561–1626) to Galileo Galilei (1564–1642) and Descartes (1596–1650) to emphasize the importance of observing phenomena empirically and without preconceived ideas. In this sense, the testimony provided by people involved in "practical" activities was held to be more credible and reliable than that of intellectuals, who were often too dependent on written-down knowledge and less on in-the-field experimentation.[7] On the other hand, this "democratisation" of learning perfectly reflects the idealisation of ordinary people which Scheuchzer puts forward in the figure of *homo alpinus*: the simplicity of his life and habits and of his inborn love for "freedom" and "democracy". Through this idealised figure, Scheuchzer offers a model of pan-Helvetic identification likely to be appreciated across (and regardless of) language and religious boundaries.[8]

A European Intellectual

Scheuchzer is known above all for his leading role in the history of geology, palaeontology, and for his pioneering contribution to the advance-

[6] On the concept of the relation between centre and periphery and between "major" and "minor" scholars, see René Sigrist, 'Correspondances scientifiques du 18e siècle', *Schweizerische Zeitschrift für Geschichte* 58 (2008), 147–177: especially 163ff.

[7] Cf. Anthony Grafton, *New Worlds, Ancient Texts. The Power of Tradition and the Shock of Discovery* (Cambridge and London 1992), 3.

[8] *Homo alpinus* was an anthropological model developed by Scheuchzer on the basis of his observations of the simple lifestyle of shepherds and alpine farmers. This "model" was to re-emerge and be celebrated (hence acquiring a European dimension) by Albrecht von Haller (1708–1777) in his poem *Die Alpen* (dated by Haller 1729, and published within *Versuch Schweizerischer Gedichten* in Bern 1732). The myth would again be revived in *La Nouvelle Héloïse* (Amsterdam 1761) of Jean-Jacques Rousseau (1712–1778). On Scheuchzer's *homo alpinus*, see Thomas Maissen, 'Die Bedeutung der Alpen für die Schweizergeschichte von Albrecht von Bonstetten (ca. 1442/43–1504/05) bis Johann Jakob Scheuchzer (1672–1733)' and Guy P. Marchal, 'Johann Jakob Scheuchzer und der schweizerische "Alpenstaatsmythos" ', both in Boscani Leoni 2010 (note 5), 161–178 and 179–194.

ment of naturalistic science and climatology in Switzerland and in the Alps.[9]

He was born in Zurich in 1672 into a family of the local bourgeoisie. He studied medicine and natural sciences (mathematics, physics, and astronomy) in Germany (Altdorf, near Nuremberg) and Holland (Utrecht). His interests, however, encompassed broader fields of knowledge, from history to geography, to numismatics. Having completed his academic studies, he returned to Zurich, where in 1695 he was appointed chief medical officer of the Foundling Hospital; some years later he was appointed professor of mathematics in the city's most prestigious college, the *Carolinum*, which trained theologians to enter the Reformed Church. A very dynamic curator of the Bürgerbibliothek and of the Kunstkammer, as well as an actuary of one of the early pre-Enlightenment societies of the city, *Collegium der Wohlgesinnten*, Scheuchzer was also a member of the most distinguished academies of science of his time, including the Royal Society.[10] A matter of months before his death, he was appointed Physics professor in the Carolinum, a great distinction for it was the top chair for the teaching of natural history in Zurich, as well as the rank of senior town physician. Scheuchzer's slow career progress, notwithstanding the esteem and renown he enjoyed abroad, may be explained by his difficult relationship with the political and religious authorities of the town. In particular, his adherence to Copernican theories placed him in an awkward position, as this school of thought was seen as heretical at the time by the most conservative members of the Lutheran Church who held sway over the religious and cultural life of Zurich.[11] Since 1675, the old Confederation had been dominated by a new reformed faith, staunchly orthodox, which required a declaration of acceptance by anyone wishing to practise as professor or minister. The so-called *Formula consensus* claimed—inter alia—divine inspiration for every word of the Hebrew Bible, the salvific power of Christ's death only for the *chosen*, denying the universality of God's grace. Zwingli's reformed Church exercised a tight grip on the cultural

[9] For a comprehensive overview of his publications and activity, please see part one of the volume Boscani Leoni 2010 (note 5).

[10] On *Collegium der Wohlgesinnten* and other semi-secret societies in Zurich, see Michael Kempe and Thomas Maissen, *Die Collegia der Insulaner, Vertraulichen und Wohlgesinnten in Zürich, 1679–1709* (Zürich 2002).

[11] Rudolf Steiger, *Johann Jakob Scheuchzer (1672–1733). I. Werdezeit (bis 1699)* (Zürich 1927); Hans Fischer, 'Johann Jakob Scheuchzer (2. August 1672–23. Juni 1733). Naturforscher und Arzt', *Neujahrsblatt der Naturforschenden Gesellschaft in Zürich* 175 (1973), 3–168; Michael Kempe, 'Johann Jakob Scheuchzer', in *Neue Deutsche Biographie* (Berlin 2005), vol. 22, 71ff.

life of the city through the censorship institute to which was submitted every text or document that went to press *in loco*. Scheuchzer himself was repeatedly confronted with this problem, especially while he was putting together his commentary to the Book of Job, published—after several revisions demanded by censors—in 1721.[12]

Scheuchzer's popularity as an intellectual seems to have revived in the past decade, both on account of his role as leading spokesman in the geological debate of the early eighteenth century and as a representative of physico-theology, a philosophical-theological school of thought intent on proving God's existence through the study of nature.[13] Reflected in a number of research projects in progress,[14] this renewed interest is an acknowledgement of the depth and relevance of his work, while 90 per cent of its *corpus* remains to be discovered. In addition to a publication record of over 150 books and scientific articles, our scholar has also left us a huge manuscript corpus: about 200 unpublished works and fifty volumes of correspondence, comprising some 7,000 letters from 800 correspondents scattered around Europe. All of these papers are preserved at the Zentralbibliothek in Zurich.[15] Half of Scheuchzer's epistolary network consisted

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[12] Johann Jakob Scheuchzer, *Jobi physica sacra, oder Hiobs Natur-Wissenschaft verglichen mit der heutigen* (Zürich 1721); on these issues, see Irmgard Müsch, *Geheiligte Naturwissenschaften. Die Kupfer-Bibel des Johann Jakob Scheuchzer* (Göttingen 2000), 16–36 (for more on Zurich's cultural and religious context around 1700) 41–44, (for more on the difficulties with censorship authorities) 183ff. (Protocol of the Board of Censors of 21 September 1726). For an overview of Zurich's cultural background in the modern age, see Kempe and Maissen 2002 (note 10), 16–30; Niklaus Flüeler and Marianne Flüeler-Grauwiler (eds.), *Geschichte des Kantons Zürich*, vol. 2: *Frühe Neuzeit—16. bis 18. Jahrhundert* (Zürich 1996).

[13] Worth mentioning: Michael Kempe's studies, in particular his PhD thesis: Michael Kempe, *Wissenschaft, Theologie, Aufklärung. Johann Jakob Scheuchzer (1672–1733) und die Sintfluttheorie* (Epfendorf 2003); as well as other PhD theses, namely Müsch 2000 (note 12) and Robert Felfe, *Naturgeschichte als kunstvolle Synthese. Physikotheologie und Bildpraxis bei Johann Jakob Scheuchzer* (Berlin 2003).

[14] I am referring to the research project funded by the Swiss National Science Foundation (SNSF): *History of Science and History of Knowledge in Dialogue: Common Grounds in the Work of Johann Jakob Wagner (1641–1695) and Johann Jakob Scheuchzer (1672–1733)*, based at the University of Basle (head of project: Prof. Dr. Kaspar von Greyerz) and to the project *Helvetic Networks. Science and Politics in the Correspondence of Johann Jakob Scheuchzer (1672–1733)* which expects to publish a partial edition of the correspondence and to set up a database accessible online. The project is coordinated by the author of this paper at Università della Svizzera italiana and is funded by the Swiss National Science Foundation and the Institut für Kulturforschung Graubünden (Chur). See Simona Boscani Leoni, 'Il progetto Helvetic Networks e la creazione di un repertorio on line della corrispondenza di Johann Jakob Scheuchzer', in Dal Prete, Monti and Generali 2010 (note 1), 1–22.

[15] Cf. Rudolf Steiger, *Verzeichnis des wissenschaftlichen Nachlasses von Johann Jakob Scheuchzer* (Zürich 1933), 3–46.

of *national* contacts, while some 180 correspondents resided in what is now Germany, and some 60 lived in France and Italy; there were fewer contacts with England (about 20 people) and the Netherlands (about 16 correspondents).[16] Scheuchzer's correspondents included mostly doctors, naturalists, and university professors, the most renowned being the philosopher Gottfried W. Leibniz (1646–1716), Antonio Vallisneri (1661–1730), Luigi Ferdinando Marsili (1658–1730), Lucas Schröck (1646–1730), John Woodward (1665–1728), Thomas of Woolhouse, court ophthalmologist in Paris (1661–1730), Abbot Bignon (1662–1743), several members of the Bernoulli family (all mathematicians) in Basle, and many other contacts with the fellows of the Royal Society, London, in particular Isaac Newton (1642–1727), (see tab. 1 and 2). Locally, in Switzerland, the key role was more often played by men of the Church (parish priests, ministers of the reformed Church).[17]

The numerous writings (books and scientific articles) which Scheuchzer put into print during his life are evidence of his tireless activity of researcher into natural history and palaeontology, climatology, medicine, and history.[18] He was a skilled populariser, fired by the belief that naturalistic research was close to a patriotic duty necessarily involving different social classes, which emerges also from his work as a "journalist". Scheuchzer edited several periodical publications, such as *Nova literaria helvetica*, which—after the fashion of similar European publications—contained different types of

[16] Other correspondents were located in Scandinavian countries, in Russia, and Poland. Scheuchzer's legacy comprises 5,150 letters addressed to him and copies (complete or in parts) of a further 1,800 letters that he mailed to correspondents all over Europe. Unfortunately, there is as yet no full inventory of the correspondence from which to build a numerically accurate picture of his contacts. Cf. Steiger 1933 (note 15) and Simona Boscani Leoni, 'Johann Jakob Scheuchzer und sein Netz. Akteure und Formen der Kommunikation', in Herbst and Kratochwil 2009 (note 1), 47–67.

[17] Analogous examples are to be found in the epistolary network of the Oekonomische Gesellschaft, Bern and environs, cf. Regula Wyss and Gerrendina Gerber-Visser, 'Formen der Generierung und Verbreitung nützlichen Wissens. Pfarrherren als lokale Mitarbeiter der Oekonomischen Gesellschaft Bern', in André Holenstein et al. (eds.), *Nützliche Wissenschaft und Ökonomie im Ancien Régime. Akteure, Themen, Kommunikationsformen* (Heidelberg 2007), 41–64.

[18] His best-known works include: Johann Jakob Scheuchzer, *Οὐρεσιφοίτης Helveticus sive Itinera per Helvetiae alpinas regiones facta annis 1702–1707, 1709–1711* (Lugduni Batavorum 1723); id., *Der Natur-Histori des Schweitzerlands* (Zürich 1716–1718), vols. 1–3; id., *Physica sacra* (Augustae Vindelicorum & Ulmae, 1731–1735), 4 vols. About Scheuchzer's research on natural history, see Simona Boscani Leoni, 'Zwischen Gott und Wissenschaft: Johann Jakob Scheuchzer (1672–1733) und die frühneuzeitliche Naturforschung', in Sophie Ruppel and Aline Steinbrecher (eds.), *"Die Natur ist überall bey uns." Mensch und Natur in der Frühen Neuzeit* (Zürich 2009), 183–194.

information and in particular an updated bibliography of works published in the Confederation.[19] This could not be achieved without a network of correspondence across the Confederation from which he could collect all such information.[20] *Beschreibungen der Natur-Geschichten des Schweizerlands*, which came out at weekly intervals between 1706 and 1708, was a regular supplier of news both useful and curious on local natural history. It was designed to inform a middle-class middlebrow readership, with a twofold objective: popularise science and recruit new correspondents to assist him in this undertaking.[21]

For the multifaceted nature of his activity he may be seen as a "great communicator" Europe-wide. He may no less be considered as obligatory staging post for the analysis of the production and transmission of knowledge in the Swiss Confederation between the Baroque and the pre-Enlightenment period.

A Systematic Database: The Questionnaires

If we want to understand how the Scheuchzerian network developed in the outlying regions of the Confederation and the Cantons allied to it, we need to look more closely at the role of *Einladungsbrief zu Erforschung natürlicher Wunderen, so sich im Schweitzerland befinden*, a questionnaire published in Zurich in 1699 both in Latin and German, containing nearly 200 questions on different aspects of Swiss natural history.[22] Encour-

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[19] *Nova literaria helvetica* was published in Zurich between 1702 and 1715. Other examples outside the Confederation and which Scheuchzer was interested in include for instance: *Nova literaria germaniae collecta Hamburgi* (Hamburg 1703–1706); *Nova literaria germaniae aliorumque Europae regnorum collecta Hamburgi* (Leipzig and Frankfurt/M. 1707–1709); and *Nova literaria maris balthici et septentrionis* (Lubecca, Leipzig and Hamburg 1698–1708).

[20] An illustration of the importance of Scheuchzer's network for the regular collection of bibliographic information is provided by Gaudenzio Fasciati, a councillor for Bregaglia, who in December 1720 despatched from Soglio (Grisons) to Scheuchzer in Zurich a 23-page letter with a list of the publications printed in the Grisons and Valtelline in those years (Gaudenzio Fasciati to Johann Jakob Scheuchzer, 15/26.12.1720, ZBZ H 326, 251–274).

[21] On the journalistic activity of our Zurich scholar, see Walter Kurmann, *Presenze italiane nei giornali elvetici del primo Settecento* (Bern 1976), 82–111; Johann Jakob Scheuchzer, *Beschreibung der Natur-Geschichten des Schweitzerlands* (Zürich 1706–1708), vols. 1–3; the subtitle of the publication is: *Seltsamer Naturgeschichten des Schweitzer-Lands wochentlich Erzehlung*. All through his life, Scheuchzer collected copies of ancient documents for his compilation of Swiss history, preserved in manuscript form at the Zentralbibliothek Zürich [ZBZ]: Johann Jakob Scheuchzer, *Diplomata Helvetica*, 18 Voll., ZBZ Ms. K 12–29; id., *Historia Helvetiae*, 29 Voll., ZBZ Ms. H 105–133.

[22] Johann Jakob Scheuchzer, *Einladungs=Brief/zu Erforschung natürlicher Wunderen/so sich im Schweitzer=Land befinden* (Zürich 1699), 2; reprinted in Hansjörg Küster and Ulf

aging the study of natural sciences by means of questionnaires was an important phenomenon in the modern age.[23] The use of questionnaires originated in similar systems of data collection, which spread after the discovery of the Americas and—in the church—after the Council of Trento. The Spanish "Cuestionarios", on the one hand, and pastoral visits, on the other, were both designed to achieve better administrative communication between centres (of the Spanish Empire or of a diocese) and their peripheries. Improved knowledge in geography, natural sciences, politics, and anthropology of a region—through a systematic collection of data—underpinned a more effective organisation and centralisation of the political and religious powers.[24] Designed to promote the development of naturalistic studies in seventeenth-century England the questionnaires show that there was a perceived need to gather information in an orderly and systematic manner. This new urge was brought about by the geographical expansion and the exploration of new fields of knowledge since the Renaissance. Already in his two volumes *Historia naturalis et experimentalis ad condendam philosophiam* (London 1622), published as Part III of his *Instauratio magna*, Bacon pointed out a range of topics, queries ("*topica particularia*" or "*Articuli Inquisitionis*"), intended to define the state of research in the natural sciences and at the same time promote new ones.[25] Bacon's scheme for gathering data is reflected in the early years of activity of the Royal Society: in 1661, sixteen of its members were entrusted with drafting a list of questions addressed to travellers in exotic countries. Thomas Povey himself (1613/14–c. 1705), colonial entrepreneur who held several administrative appointments and a member of this

Küster (eds.), *Garten und Wildnis. Landschaft im Achtzehnten Jahrhundert* (München 1997), 14–31. There is also a Latin version of the text: *Charta invitatoria, quaestionibus quae historiam Helvetiae naturalem concernunt* (Zürich 1699). Cf. Simona Boscani Leoni, 'La ricerca sulla montagna nel Settecento sotto nuove prospettive: il network anglo-elvetico-alpino', *Histoire des Alpes* 12 (2007), 201–213.

[23] In general, on the natural sciences from the Renaissance, see Ogilvie 2006 (note 2); Nicholas Jardine, James A. Secord and Emma Spary (eds.), *Cultures of Natural History* (Cambridge 1996), Porter 2003 (note 2).

[24] On these issues, in general: Arndt Brendecke et al. (eds.), *Information in der Frühen Neuzeit. Status, Bestände, Strategien* (Münster 2008); on Spanish questionnaires, see id., 'Informing the Council. Central Institutions and Local Knowledge in the Spanish Empire', in Wim Blockmans et al. (eds.), *Empowering Interactions. Political Cultures and the Emergence of the State in Europe 1300–1900* (Aldershot 2009), 235–252.

[25] For example: Michael Hunter, 'Robert Boyle and the Early Royal Society: A Reciprocal Exchange in the Making of Baconian Science', *The British Journal for the History of Science* 40 (2007), 1–23: especially 14–15; id. (ed.), 'Robert Boyle's "Heads" and "Inquiries" ', Robert Boyle Project Occasional Papers, no. 1, 2005 (downloadable in the researchers' area of the Boyle website: URL: www.bbk.ac.uk/boyle [accessed 28.06.2010]).

group, in 1661 sent Edward Digges (1620–1674/75), Colonial Governor of Virginia, a series of questions designed to steer his observations towards interesting and original aspects to be discovered in the Bermuda Islands and in Virginia. It is within the same process that we should read also the volume *General Heads for a Natural History of a Countrey, Great or Small* of Robert Boyle (1627–1691) published in 1666 in *Philosophical Transactions* and reprinted—proof of their interest and success—with other questionnaires of the time in 1692.[26] The essential role of these "queries" (also in the form of a self-contained work) is clearly demonstrated by the large number of publications that followed Boyle's until at least the late 1690s. Worth mentioning are *Queries in Order to the Description of Britannia* published by John Ogilby (1600–1676) in 1673, as well as, some years later, a list of questions compiled by Robert Plot (1640–1696), author of a natural history of Oxfordshire, of Staffordshire, and first curator of the Ashmolean Museum, and the *Parochial Queries* devoted to Wales in 1696 by Edward Lhwyd, naturalist and palaeontologist (c. 1660–1709).[27] In the same year came out *Brief Instructions for Making Observations and Collections, in order to the promotion of Natural History, in all parts of the World* (London 1696) by John Woodward (1665–1728), English naturalist, physician and professor at Gresham College, London, one of Scheuchzer's most assiduous correspondents. Contacts between the two men were very intense, at least from 1701 and till 1726, on account of Scheuchzer's keen interest in the diluvial theory advocated by the English doctor in his *Essay toward a Natural History of the Earth* (1695). The theory focused on the significance

[26] Dominik Collet, *Die Welt in der Stube. Begegnungen mit Aussereuropa in Kunstkammern der Frühen Neuzeit* (Göttingen 2007), 294; Robert Boyle, 'General Heads for a Natural History of a Countrey, Great or Small', *Philosophical Transactions* 1 (1665–1666), 186–189, 315–316 and 330–343; *General Heads for the Natural History of a Country Great or Small: Drawn out for the Use of Travellers and Navigators, Imparted by . . . Robert Boyle . . . to Which Is Added, Other Directions for Navigators, etc. with Particular Observations of the Most Noted Countries in the World; by Another Hand* (London 1692).

[27] John Ogilby, *Queries in Order to the Description of Britannia* (s.l. [London] 1673); Edward Lhwyd, *Parochial Queries in Order to a Geographical Dictionary, A Natural History, &c. of Wales* (s.l. [Oxford?], s.a. [1696]); For Plot: Royal Society Classified Papers, 19, 93 and 94; Robert Plot, *The Natural History of Oxfordshire. Being an Essay towards the Natural History of England* (first edn. Oxford 1677, Chichelet 1972); id., *The Natural History of Staffordshire* (original edn. Oxford 1686, Manchester 1973). Interestingly, the answers to Lhwyd's questionnaire were assembled and published: Rupert H. Morris (ed.), 'Parochialia Being a Summary of Answers to "Parochial Queries"', *Archaeologia Cambrensis*, Supplements, April 1909, April 1910 and April 1911.

of the Flood for the geological history of the Earth, fossils being interpreted as organic residues of plants and animals killed in the cataclysm.[28]

Scheuchzer aimed to continue the study of natural history undertaken by his predecessor in the position of doctor of the city's foundling hospital and curator—as Scheuchzer was to become, too—of the Bürgerbibliothek. Johann Jakob Wagner (1641–1695) was the author of *Historia naturalis Helvetiae curiosa* (Zurich 1680), one of the first in Zurich to propound an empirical research method based on Bacon.[29] The aim of this work was also to prove to any foreign visitor travelling through the Confederation that, despite the ragged landscape, his homeland was not "harsh and wild" [rauh und wild], a godforsaken country, but on the contrary it possessed "so many and so great beauties and such heart-warming gifts of Nature that you would not look for or find anywhere else", as Scheuchzer himself wrote in his questionnaire.[30] The publication represents a crucial stage in the research strategy launched by the Zurich scholar, first because it confirmed the close ties with Britain's scientific circles, and secondly because it generated—especially in the outlying regions—fresh interest in the study of local history and natural history. There was a deliberate need to involve as many inquisitive (curious) people as possible in his project; a requirement expressed in the introductory pages, in which the naturalist appeals not only to the noble and the learned classes, but also

[28] Woodward's book is to be seen against the backcloth of the discussions that had enlivened the second half of the seventeenth century in Britain on how to interpret the history of the Earth in the wake of the great popularity of Thomas Burnet (1635?–1715), *Thelluris theoria sacra* (1681). This work presented the Flood as a moment of upheaval, in which the earth's crust, which had been perfectly smooth and even in pre-diluvial times, was upset by subterranean forces which gave rise to the formation of mountains and hills; these in turn may be interpreted as a token or memory of God's wrath and punishment for the sins of mankind. See John Woodward, *Essay toward a Natural History of the Earth and Terrestrial Bodies, Especially Minerals* (London 1695); Scheuchzer translated this work into Latin: *Specimen geographiae physicae* (Zürich 1704). On the diluvial theory, Scheuchzer and his connections with England, see Kempe 2003 (note 13). For Burnet: *Telluris theoria sacra: orbis nostri originem et mutationes generales, quas aut iam subiit, aut olim subiturus est complectens* (London 1681); the English translation came out some years later: *The Sacred Theory of the Earth* (London 1684); about these problems, see William Poole, *The World Makers. Scientists of the Restoration and the Search for the Origin of the Earth* (Oxford 2010); on the English debate over the origin of mountains, see for example Marjorie Hope Nicolson, *Mountain Gloom and Mountain Glory. The Development of the Aesthetics of the Infinite* (first edn. 1959, Seattle and London 1997).

[29] On Wagner and Scheuchzer, see Kempe and Maissen 2002 (note 10), 176–177 and 310.

[30] "…so viel und große Wunder und herrliche Gaben der Natur sich finden, als man kaum anderstwo wird suchen oder finden können." Küster and Küster 1997 (note 22), 15.

to those who lived in direct contact with nature, fishermen, shepherds, alpine farmers, mountain dwellers:

> Here I appeal to . . . to everybody, also to ordinary people who live close to nature and derive their food from her, whether as fishermen, shepherds, alpine farmers, alpine dwellers, farmers, herbs and roots gatherers, so that all—for their own honour and that of their homeland—may collect diverse facts and information about nature and [naturalistic] observations coming from anywhere, at least those that come into view and do not occur as man-made or unnaturally contrived, and that they communicate them [to me] even unsolicited, provided they care about it as much as I find it useful and convenient.[31]

We must not underestimate the impact of this text on the regions of the old Confederation and allied territories, particularly in the Alpine regions: in the old Free State [Freistaat] of the Three Leagues, between 1698 and the final years of his life Scheuchzer could rely on some thirty contacts (mainly with the local religious and political elites) which—if we look more closely at his works—turn out to be inexhaustible sources of information.[32] The Three Leagues stood in the eastern part of today's Switzerland, on the border between Austria and Italy, and acted as a staunch ally of the Swiss Confederation. Based on a solid local council autonomy and on an oligarchic-republican constitution, their territory stretched beyond what is currently Canton Grisons. Their jurisdiction, in fact, extended to a number of Lombard provinces, including Valtelline and the counties of Bormio and Chiavenna, which Napoleon annexed to the Cisalpine Republic only in 1797.[33]

Correspondence from the Grisons Three Leagues accounted for 20 per cent of Scheuchzer's Swiss correspondence, while Basle (a university canton) came first, with 25 per cent of Swiss contacts, the most substantial

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[31] "Ich will hiemit . . . auch gemeiste Leut, so mit der Natur viel umgehen und durch sie ihre Nahrung suchen, als da sind Fischer, Hirten, Sennen, Einwohner der Alpen, Baursleut, Kräuter-und Wurzengraberen, daß alle zu ihrem und des Vaterlands Lob allerhand Gattungen natürlicher Begebenheiten oder Observationen von allen Orten her zusammensuchen, aufs Wenigste dasjenige, was ihnen ungefähr aufstoßet oder umsonst zukommet, auch umsonst mitteilen, wann es ihnen so lieb als mir angenehm ist." Küster and Küster 1997 (note 22), 15–16.

[32] So far researchers have considered the *Charta invitatoria* as rather inadequate, cf. Fischer 1973 (note 11), 76.

[33] The territory of the Cisalpine Republic, created by Napoleon in 1797, included Lombardy, Emilia-Romagna, and part of Veneto and Tuscany. To find out more about the history of the Three Leagues and subjected areas in the modern age: Verein für Bündner Kulturforschung (ed.), *Handbuch der Bündner Geschichte*, vol. 2: *Frühe Neuzeit* (Chur 2000).

communication axis at home. The chronological evolution of contacts in this region is a clear demonstration of the domino effect produced by the invitation letter [Einladungsbrief/Charta invitatoria, cf. tab. 2].[34] Before its publication our scholar was able to resort to only one contact, the evangelical reformed minister Giacomo Picenino, with whom he had been exchanging letters regularly since 1698. It was to be another few years before the number of the doctor's contacts—also thanks to Picenino's mediation[35]—rose to 15, prominent among them being clergymen and men of learning. These informants often openly referred to the *Charta invitatoria* in their own letters, replying quite articulately, and enclosing sketched of mountain outlines, alpine plants, minerals, crystals or again transcriptions of tales about dragons encountered by shepherds, hunters, and valley dwellers in the Alps. The 1699 questionnaire seems to have acted as a stone dropped into a pond: the circular ripples set off by the impact spread outwards to encompass friends of friends, other hunters and shepherds, in a word the voice of the local community. It is therefore a complex network that grinds into motion: the local correspondents stir into action, looking for new informants and gather unpublished material of natural history and local history. The replies that reach Zurich by mail are funnelled directly into our scholar's works. Scheuchzer would transcribe excerpts of these letters, at times indicating the name of the informant, at other times only his initials, and in other cases still simply forgetting altogether to mention his sources. Thus local data and lore (supplied by the elite, but also by ordinary people) were circulated, by being integrated into publications based on compilation principles, maybe later to be picked up and re-elaborated into different types of texts (e.g. *Itinera alpina* or the *Natur-Histori des Schweitzerlandes*) or again in articles printed in international journals. Applying this compilatory system all

[34] On Scheuchzer's network: Boscani Leoni 2009 (note 16). References to the *charta invitatoria* appear for example in the letters of Johannes Leonhardi to Scheuchzer, 12.12.1699 (ZBZ H 327, 11–12), 8.2.1700 (ZBZ H 327, 30); Rudolf von Rosenroll to Johann Jakob Scheuchzer, 11.2.[1700] (ZBZ H 326, 361–366); Giovanni Donato Marlianico to Johann Jakob Scheuchzer, 21.8.1700 (ZBZ H 327, 99).

[35] The central role played by the minister Picenino is testified in the letter he wrote to Scheuchzer thanking him for sending him many copies of his questionnaire: "Invitatorias tuas accepi, quas Ill.^{mis} Proceribus meis Aliis communicavi. Herculeu[m] tu Hercules aggrederis opus. Faveat conatibus tuis clementissime Clementissimus." [I have received your questionnaires [chartas invitatorias, SBL] which I have passed on to Illustrious and influential fellow noblemen in my neighbourhood. Like Hercules indeed, you have undertaken a 'herculean' feat. May the most merciful Lord look benignly on your efforts.] Giacomo Picenino to Johann Jakob Scheuchzer, 30.10.1699, ZBZ H 326, 101.

data supplied by individual correspondents were sorted and logged into lists of similar data (descriptions and inventories of avalanches, solar eclipses, other particular phenomena, but also straightforward descriptive inventories of hot springs and mineral water spas). Thus separate, isolated items of information would be transformed, by a contextualising process, into new and original knowledge.[36]

Circulating Local Knowledge

Striking examples of this transfer of local information and lore are to be found in the correspondence of four of Scheuchzer's major informants, namely the ministers of the Reformed Church Johannes Leonhardi (1655–1725),[37] Giacomo Picenino (1654–1714),[38] and the members of the aristocracy Rodolfo de Salis-Soglio (1652–1735)[39] and Rudolf von Rosenroll.[40]

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[36] Useful thoughts on the question of transfer of practical knowledge in botany may be found in Martin Stuber, 'Kulturpflanzentransfer im Netz der Oekonomischen Gesellschaft Bern', in Dauser et al. 2008 (note 1), 229–269. More generally on this subject "Kulturtransfer": Hans-Jürgen Lüsebrink, 'Kulturtransfer—methodisches Modell und Anwendungsperspektiven', in Ingeborg Tömmel (ed.), *Europäische Integration als Prozess von Ausgleichung und Differenzierung* (Opladen 2001), 213–226.

[37] Leonhardi was active in the Three Leagues as a reformed church minister but also as a political activist. His political commitment was aimed at strengthening the axis between the reformed churches of his country, with England and Holland, which he had visited on various occasions. In addition, he pursued a tireless activity as a publicist, with translations into English and Dutch, which remains largely unknown. On the figure of Leonhardi, see Erich Wenneker, 'Leonhardi (Linnard), Joahnnes Christian', in *Biographisch-Bibliographisches Kirchenlexikon* (Nordhausen 2001), vol. XIX, col. 887–891; his correspondence is preserved at ZBZ, Ms. H 327. See also Thomas Maissen, ' "Die Gemeinden und das Volck als höchste Gewalt unsers freyen democratischen stands". Die Erneuerung der politischen Sprache in Graubünden um 1700', *Jahrbuch der Historischen Gesellschaft von Graubünden* 131 (2001), 39–84.

[38] Picenino studied theology in Zurich and—once back in his home country—he practised as a church minister at Soglio, Bregaglia. Erich Wenneker, 'Picenino, Giacomo', in *Biographisch-Bibliographisches Kirchenlexikon* (Nordhausen 2003), vol. XXI, col. 1052–1054. His correspondence is stored at ZBZ, Ms. H 326, *passim*.

[39] The de Salis family held important political and legal appointments in Bregaglia, an Italophone valley in the southern Grisons; in the fifteenth century it became one of the leading families in the Bishopric of Chur. Together with the Planta family, the de Salis grew into one of the most influential families in the Three Leagues from the sixteenth century onwards. Rodolfo de Salis-Soglio was Governor-general for Valtelline in 1699–1700. Cf. Peter Conradin von Planta, 'Salis, von', in *Historisches Lexikon der Schweiz* (HLS), version 6 January 2011, URL: http://www.hls-dhs-dss.ch/textes/d/D20157.php. His correspondence is stored at ZBZ, Ms. H 328.

[40] Public records show that the von Rosenroll family had acquired the freedom of the city of Thusis from as early as the sixteenth century; its activities were in the transports and lending sectors. In the eighteenth century the von Rosenroll encouraged the spread of

Leonhardi, von Rosenroll and Salis are among the top ten correspondents of our Zurich doctor altogether: Leonhardi's *corpus* comprises, in fact, over 300 letters (purely in terms of numbers he is the most active correspondent over a 12-year period, from 1699 to 1711). The aristocrat von Rosenroll is—for the significance of his letters—Scheuchzer's fifth biggest correspondent, over a 27-year span (1700–1727). Between 1703 and 1715, Salis exchanged some 130 letters with Zurich, thus standing in ninth place among major correspondents (see tab. 1 and 2).

The first interesting example of this transfer appears in a letter from nobleman Rodolfo de Salis-Soglio, despatched on 12 May 1704 to Zurich. There, at Scheuchzer's request dated 4 May, unfortunately unavailable, the nobleman replied to several questions regarding the names of some mountains of the Engadina valley and the possibility of treating sheep affected by mange by applying the medicinal properties of certain stones. The focus of the letter, however, was the practice in Bregaglia of using plaster to kill mice.[41] The letter, in Italian, read:

> The method of using our white chalk to destroy mice may be described as follows: place a small piece of chalk in the fire, when it has been baked sufficiently, grind it down to a fine powder and then mix it in with a little chestnut flour. Now when the chalk comes in contact with the moisture of the stomach it quickly sets and hardens, thereby killing the mice.[42]

A German version of the passage, without any mention of the source, figures in *Erzehlung seltsamer Natur-Geschichten des Schweitzerlandes*, picked up again in the later version, in a posthumous reprint edited by Johann Georg Sulzer (1746). The reference is inserted into a chapter on the use of chalk, part of a more general entry devoted to Swiss mineral soil (clay) and their virtues for medicinal, household, or also handicraft purposes. Scheuchzer explains its important use for plastering walls, but also to staunch bleeding from wounds: at the end of the chapter, the reader is given a list of places where chalk was available in the old Confederation.

Pietism in the regions. Rudolf von Rosenroll was Vicar for Valtelline and was acted as envoy for the Three Leagues in Zurich in 1717. About de Rosenroll, see Florian Hitz, 'Rosenroll', in *Historisches Lexikon der Schweiz* (HLS), version 12 November 2010, URL: http://www.hls-dhs-dss.ch/textes/d/D21934.php. His correspondence is stored at ZBZ, Ms. H 329.

41 Küster and Küster 1997 (note 22), 30.

42 Rudolf de Salis-Soglio to Johann Jakob Scheuchzer, 12.05.1704: "La maniera di servirsi del n[ost]ro giesso bianco per distruggere li sorci, è q[ue]sta: si metta nel fuoco un pezzetto di d° gesso, è quando è cotto abastanza si pista minutam^te poi si mischia con un puocho di farina di castagne, acciò li sorci lo mangino, ora quando il gesso sente l'humidità del ventricolo subito s'indurisce, et li fa crepare." ZBZ, H 328, 35–36.

On this list, the example of Val Bregaglia is slotted in immediately after the case of Tiefencastel.[43]

The letter written by the nobleman de Salis-Soglio therefore contributes a description of a local use of chalk (a piece of practical and popular knowledge), and the notion is then incorporated by Scheuchzer into more general chapters. These chapters are assembled from a collection of information and facts according to a systematic design, in order not only to provide new forms of erudition on the Confederation, but also to show the wealth of these lands, blessed by God.

The same principles inform *Natur-Geschichten* where the naturalist dwells on the description of various types of snow slides, what causes them, as well as what preventive measures have been put in place in the mountains; here, again, we see a subject to which he devoted ample space in his questionnaire.[44] In this respect, the observations he received from his most loyal contact, the evangelical minister Johannes Leonhardi and from the aristocrat Rudolf von Rosenroll are particularly relevant. Leonhardi's letter is interesting for it confirms the enthusiasm aroused in the local elites by the *Charta invitatoria*. Leonhardi replies to the numerous questions in a 15-page manuscript, devoting special attention to questions nos. 24–29, regarding what causes avalanches, their different typologies, the damage they bring about, means of avoiding them or their degeneration'. Leonhardi tells a story that was reported to him from the village of Tschiertschen, in the Churwalden district, a region situated near the town of Chur, a number of kilometres to the north of the village where Leonhardi resided (Nufenen, in Rheinwald, on the road that climbs up to the alpine passes of Splugen and S. Bernardino). Scheuchzer was interested in this story because it showed empirically how—by creating a thin layer of air—one could survive under the snow of an avalanche:

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[43] "Bey *Soglio* im Bergellerthal, allwo die Einwohner den Gyps zu Vertreibung der Mäusen und Ratten. Nachdem sie den Stein gebrennet, und zu einem subtilen Pulver gestossen, mischen sie dasselbe mit dem Castanien-Mehl; wenn denn die Mäuse kommen, davon zu fressen, und der Gyps in ihren Mägen mit dem dasigen Hebel sich in eine Massam vereinbaret, welche in dem Leibe selbst verhartet, so müssen sie nothwendig davon zu Grunde gehen." *Johann Jakob Scheuchzer, Naturgeschichte des Schweitzerlandes, samt seinen Reisen über die Schweitzerische Gebürge*, ed. by Georg Sulzer (Zürich 1746), 2 vols., I: 412–413. See also Scheuchzer, *Beschreibung* 1706–1708 (note 21). This style Scheuchzer had to provide long lists of places and events is found equally in his research on earthquakes: Monika Gisler, 'Forschen in den "Eingeweiden der Erde". Johann Jakob Scheuchzers Erdbebenforschung zwischen Wissenschaft und Theologie', in Boscani Leoni 2010 (note 5), 73–88.

[44] Küster and Küster 1997 (note 22), 19.

> At this point we cannot help mentioning the story that happened a few years ago in Tschiertschen in the jurisdiction of Churwalden; there two men wanted to take home the milk that was still warm from their *salvo honore* [sic] cows in the basket that they carried on their back and they were run over by an avalanche. The first man's basket overturned and the milk spilled out and poured over his head and neck; it created some room in front of his mouth and nose, allowing him to breathe; so he was pulled out from under the snow alive, and he lived on for years after the event. The second man, whose basket had not overturned, was found dead.[45]

The question of how to survive under an avalanche of fresh snow was discussed by Scheuchzer in a chapter devoted to "Schnee-Lauwen" [On snow slides], with an advanced reference to the Tschiertschen event, and later narrated in detail in the section entitled "Historical account of all the damage caused to this day in the Helvetic lands". Here he was going back to a series of accounts of catastrophes caused by avalanches, in order to prove, I would say scientifically, both the regularity and the dangerous nature of such phenomena, not be interpreted as a "mere figment of one's imagination" [leeres hirn-gedicht]. The repertoire of natural disasters that have marked the history of the Confederation began with the episode of the onslaught in 1478 of the Confederate troops on Ticino's territory, which was still under Milan's rule. It took place on the St. Gotthard Pass. The Confederates were caught up in an avalanche that swept away 60 men. The list of catastrophes ended with contemporary events (namely in 1700).[46] Local informants replaced historical and literary sources, which were largely tapped into for information when drawing up the list of more ancient catastrophes. When dealing with events that had taken place in his lifetime, Scheuchzer makes room for eyewitnesses or hearsay witnesses, especially clergymen with whom he enjoyed an intense exchange of correspondence, as for instance Giacomo Picenino, Johannes Leonhardi

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[45] Johannes Leonhardi to Johann Jakob Scheuchzer, 23.11.1699, ZBZ H 327, 4: "… hierher/ gehört eine geschickt, welche sich vor etliche jahren zu Tschiertschen, im Churwaldergericht begeben; da zwey männer ihrer S[alvo, SBL] H[onore, SBL] kühen warme milch nacher Haus tr[ugen] wolten in rückküblen; (die mann auff den rücken tragen thut) und beide von einer schneelöuwenen eingewicklet wurden; da gienge dem einte der rückkübel auff, und den milch rin[n]ete ihme über den hals und kopff hinab, und machete ihme ein wenig weite vor dem mud [sic] und nasen; den er athem holen möchte; der wurde lebendig außgegraben und hatt noch seithero zimlich lang. Aber der andere, welichem der rückkürbel nicht auffgegangen, wurde tod außgegraben."

[46] The sources mentioned by Scheuchzer are historical sources: Fuesslin, *Chronicon Helveticon*, Msc.; Michael Stettler, *Chronic oder gründliche beschreibung … Nüchtlandischen Chronic*, Lib. VI, 274; Bullinger Lib. IX, Hist. Helv. Msc.; Johann Heinrich Rahn, *Eydgenössische Geschichts-Beschreibung* (Zürich 1630). Scheuchzer 1746 (note 43), I: 303–307.

for Grisons, and Johann Heinrich Tschudi for the Glarus region. Their testimonials were introduced and used in the same way as those that he drew from printed texts. In the case of Leonhardi, Scheuchzer mentions his correspondent's name and the date of the letter, and intervenes only in one place to censor the text of the letter that he transcribed—literally in all other respects—by cutting the phrase *salvo honore* (S.H.) which accompanied "cows" in the original, probably because it added an excessively "moralistic" tone to the text.[47] Our Author's concern for the topic is borne out by two further letters. The first contains a lengthy report by the nobleman von Rosenroll in response to the *Einladungsbrief*, in which he described what one had to do to survive under a snow slide, in particular by creating a hollow space over or around nose and mouth, exactly as was explained by Leonhardi. The second reference is found in Scheuchzer's reply dated February 1700, where he asked for more details on "Staublawinen" [powdery avalanches].[48]

A further example of his curiosity for these issues is presented in volume one of *Natur-Histori* devoted to a description of Swiss orography (1716).[49] In a chapter on mountains and their dangerous nature, Scheuchzer provides a sort of complement to the description of the various kinds of avalanches, of the different systems to escape and reach safety, and to his account of the damage caused by avalanches over the centuries, published in *Natur-Geschichten*. The method is compilatory and consists in integrating, this time "tacitly", data or information drawn from letters. In this case, he transcribes a passage from a letter of the reformed minister Giacomo Picenino, dated 26 December 1705, who in turn was acting as spokesman for villagers who had witnessed the catastrophe covered by the narrative. The passage of the letter reads:

> A little while ago, a large mass of snow fell from a very high mountain over our village, crushing two little girls who were asleep in a little hovel. For

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47 Ibid., 306; Scheuchzer, *Beschreibung* (note 21), 4.11.1705, 155 (Zürich 1706).

48 Rudolf von Rosenroll to Johann Jakob Scheuchzer 11.2.[1700], ZBZ H 326, 361. "vor dem maul die schnee wegmachen, dan wan durch dises mittel, oder sonsten mitlest eines steins, holzes, od eingeworffene gebäwes, ein Hole zu haben, den athem zu schöpfen kan Einer zwey, oder drey tag beym leben erhalten schöpfen kan Einer zwey, oder drey tag beym leben erhalten" [...in the event of being buried under a mass of snow, one must, if possible, remove any snow from around the mouth, and so dig out a hollow, by means of a stone, wooden stick, or some device that may have been sent down, so as to be able to breathe, which would enable one to survive for two or three days]. Johann Jakob Scheuchzer to Rudolf von Rosenroll, 23.2.1700, H 150, 146–147.

49 Scheuchzer 1716 (note 18), I: 144–145.

> three days farmers carried out a careful search for the little corpses lying under the snow. The hovel [Hyppocaustum] (this is how it is reported by those who saw) was swept away with great force by the huge volume [of snow] (not fragmented but in one whole piece) hurtling through the wood and down escarpments, till it smashed against them. Nearly everything that was in that unfortunate hovel was found, except for the two little girls, who were still missing then. This happened on Mount Albirum on the night of 21 December, according to the old style [calendar]; should anyone pass on any more information, I will not fail to let you know, most perceptive of observers.[50]

Without even a hint at his source, Scheuchzer picks up the narrative of the clergyman in a quasi-slavish manner:

> On 20/21 December of the year 1705, at night, an avalanche plunged down from Mount Albirum in Bregaglia, not far from Soglio in the Leagues. It smothered two little girls in their sleep; they were in a little hovel, which was swept away by the snow slide and after careering downhill smashed against trees and escarpments; almost everything belonging to the hovel was found, but the two little corpses were recovered only on 26 December.[51]

Once again, local testimony is sound and valuable as it is unmediated, and replaces, at the same level, older testimonies supplied by literature or history books to which our Zurich author impartially and constantly refers.

A third example of such contaminations may be found in a letter from nobleman von Rosenroll who, like Leonhardi, was engaged in the collection of naturalistic material. Since 1700 and following up on the *Einladungsbrief*, he had grown into one of the most regular contacts of our Zurich author. In particular he also sent him the report mentioned earlier, in which he replied painstakingly to at least 40 questions in Scheuchzer's survey.[52] Scheuchzer used von Rosenroll's information in various ways:

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[50] "Nuperrime nivium moles, ab altissimo monte ruens in ditione nostra, duas filiolas in hyppocausto stertentes, suffocavit. Corpuscola, licet per triduum a rusticis nostris diligenter quaesita, adhuc nive obruta jacent. Hyppocaustum (ubi referunt qui spectaculum hocce viderunt) a Mole (haud lacerum, sed integrum) summo cum impetu ad silvam et rupes fuit transportatum: ast in eas incidens fuit disruptum. Fere omnia, quae per infausto huic erant inclusa tuguriolo sunt inventa exceptis defunctarum cadaveribus, quae adhuc desiderantur. Accidit id in Monte (Albirum) sub crepusculum vespertinum die 21 Xbris s[tilus] [vetus] si quid hic rari mihi communicetur, id tibi hujus aliorumque scrutatori sagacissimo, communicabo." Giacomo Picenino to Johann Jakob Scheuchzer, 26.12.1705 st[ilus] v[etus], ZBZ H 326, 159–160.

[51] Scheuchzer 1716 (note 18), I: 145.

[52] Rudolf von Rosenroll to Johann Jakob Scheuchzer 11.2 [1700], H 326, 361–366; Simona Boscani Leoni, 'Tra Zurigo e le Alpi: le "Lettres des Grisons" di Johann Jakob Scheuchzer (1672–1733). Dinamiche della comunicazione erudita all'inizio del Settecento', in Jon

an interesting example may be seen in *Natur-Geschichten*, introduced by a clear pledge of esteem toward his friend, not mentioned by name, but called "Your Excellency, my Lord and Friend". The quotation figures in the chapter which reports the devastating effects of the Foehn wind and heavy rains that battered the Confederations in 1705:

> His Excellency, my Lord and Friend from the Domleschg valley, narrates the following facts: in our area, unusually, all streams have overflowed, so much so that on 21 October[53] [of the Julian calendar, SBL] chiefly the Nolla River, which flows past the village of Thusis, swept away weirs and canals [Wuhren] and river banks, destroying bridges, water pipes, flooding gardens and orchards and filling up with rubble the bed of the Rhein River . . . The Nolla river was making such noise as it flowed past, carrying logs, trees, and dark earth matter mixed up with them . . . and ran downhill in such frightening fashion that neither eye nor ear had ever seen or heard the like for horror.

Scheuchzer goes on to mention the fact that his witness, far from merely recounting the events that he had personally "seen" happen, had collected and recorded what other eyewitnesses had allegedly seen: the river had risen by two fathoms [Klafter] and, out of fear, people living there had fled from their homes, carrying their belongings with them to safety.[54]

This is another case in which local accounts were incorporated, hence placed in context and perspective, into a more general chapter: their inclusion is an acknowledgement of the fact that epistolary testimonies and eyewitness reports played a vital part.

Other examples related to observation of mountains illustrate the intense exchange between Scheuchzer and the British cultural circles close to the Royal Society.[55] The circulation of data based on Woodward's

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Mathieu and Simona Boscani Leoni (eds.), *Die Alpen! Zur europäischen Wahrnehmungsgeschichte seit der Renaissance/Les Alpes! Pour une histoire de la perception européenne depuis la Renaissance* (Bern 2005), 157–171.

[53] The date is expressed not according to the Gregorian Calendar (stilus novus) introduced in 1582, but according to the Julian calendar (stilus vetus), which was often the practice in Reformed countries.

[54] Scheuchzer 1746 (note 43), I: 216–217; Scheuchzer used the text of Rosenroll's letter verbatim: Rudolf von Rosenroll to Johann Jakob Scheuchzer, 26.10.1705, ZBZ H 329, 99–100.

[55] Cf. Michael Kempe, 'Die Anglo-Swiss Connection. Zur Kommunikationskultur der Gelehrtenrepublik in der Frühaufklärung', in Robert Seidel (ed.), *Wissen und Wissensvermittlung im 18. Jahrhundert. Beiträge zur Sozialgeschichte der Naturwissenschaften zur Zeit der Aufklärung* (Heidelberg 2001), 71–91; Simona Boscani Leoni, 'La ricerca sulla montagna nel Settecento sotto nuove prospettive: il network anglo-elvetico-alpino', in *Histoire des Alpes/Geschichte der Alpen* 12 (2007), 201–213.

questionnaire is worth mentioning. Scheuchzer responded to it in a letter dated June 1702. The question formulated by the English physician in *Brief Instructions for Making Observations* (1696) concerning the configuration of mountains and caves, also draws attention to the impact of rainfalls on the erosion of mountains and to the problem "whether their *Tops* be not covered with a *Fog*, or *Mist*; especially *before Rain*".[56] To answer the question, Scheuchzer needs to refer to his correspondents, and use their letters as a starting point for his comments:

> On the question whether before great rains and storms clouds or fogs are not observed arising out of the tops of the highest mountains, I am beholden to mountain dwellers who (alone) can determine the arrival or onset of rains or bad weather. Please accept this time [illegible word] this observation on rain. At Filisur in Rhaetia they have this proverb in Rhaetic language: *Cura ch'il pitz da Stiervi fo chiapi, schi lascha der la fotsch, et piglia il rasti* (this Rhaetic language, in common parlance called 'Romantsch', is a corrupt form of Italian dialect). The proverb means: When the top of Mount Stierwis [Stierva/Stürvis] (two miles to the west of Filisur) is shrouded in fog or cloud, cast aside your scythe, with which one cuts the grass, and pick up the rake, with which one gathers in the corn crops, because the rain is coming.[57]

The quotations are from a letter of the pastor Johann Leonhardi dated February 1700:

> In answer to question 9 of the *charta invitatoria*: here at Nufenen when the mountain (called Cucarnil) that towers over the village is wrapped in fog, or clouds, one may expect rain or bad weather the same evening or on the following day. Indeed I remember that a popular proverb in Filisur warns: "Cura ch'il pitz / da Stiervi fo chiapi, schi lascha dar la fotsch et piglia il rasti", in other words: when the top of Mount Stierwis [Stierva/Stürvis], which stands some three to four hours' walk to the west, is covered or

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[56] John Woodward, *Brief Instructions for Making Observations and Collections, in Order to the Promotion of Natural History, in All Parts of the World* (London 1696), 6. Italics are Woodward's.

[57] Johann Jakob Scheuchzer to John Woodward, 8.6.1702, ZBZ H 150, 116–117. "Ad questionem whether before great rains and storms clouds or fogs are not observed arising out of the tops of the highest mountains, scias, inde certissium alpicolis desinui pluviarum et tempestatum Jndicia. Accipe hâc vice [parola illeggibile] eamque pluviosam observationem. Filisurij in Rhaetia restitas viget Proverbium ~~lingua~~ Rhaetica: Cura ch'il pitz da Stiervi (lingua haec est Rhaetica [Romana vulgò dicta] Italicae coruptae dialectus) fo chiapi, schi lascha der la fotsch, et piglia il rasti. Sensum hic est: Quando cacumen montis Striewis quo duobus circiter miliaribus distat Filisuris versus occasum capitium facit, id est nube veluti pileo cingitur abyt falcem, qua secatur foenum, et accipe Rastrum, instrumentum aliud quo foenum in acervos colligitur: quod instet pluvia". Ibid., 116. On Woodward and Scheuchzer, see Kempe 2003 (note 13).

> hidden behind clouds, you should abandon your scythe and pick up your rake because it will be raining soon.[58]

The same reflections return in *Itinera* of 1708 and in *Natur-Histori* (1716).[59] In *Itinera*, the Latin text reads as follows:

> The issue of early-warning signs for rain I am not going to forget, but will demonstrate it later, with further new observations made by mountain dwellers. At *Filisur* in Raethia one can hear the following proverb: *Cura ch'il pitz da Stiervi fo chiapi, schi lascha dar la fotsch et piglia il rasti*. In Rhaeto-romantsch, which is an Italian dialect, it means: *When the top of Mount Stier-wis,* located two miles to the west of Filisur, is *shrouded in clouds or fog, get rid of your scythe*, which you use to cut the hay, *and pick up your rake* which you use to gather and stack it up, because it is about to rain. In Nufenen, too, a village close to the source of the Rhein, if you notice fog patches or clouds on or around the mountain, you can predict rain.[60]

The observation was to become very popular, and it is recorded even in *Relazioni di alcuni viaggi fatti in diverse parti della Toscana* (1773), by Giovanni Targioni-Tozzetti.[61]

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[58] Johannes Leonhardi to Johann Jakob Scheuchzer, 8.2.1700, ZBZ H 327, 32: "Ad quaest. 9. chartae invit: Wann mann hier zu Nuffenen einene kleinen Nebel, oder wolken, auff einen berg, so grad gegen dem dorff über ligt, und Cucarnil genen[n]et wird, sieht, so hatt mann gemeinlich an des selbigen tags abend, oder am anderen tag einen starke/regen, oder ungewitter zu erwarten—So errinneren ich mich/auch daß zu Fillisur ein gemein Spruch-wort ist: Cura ch'il pitz/da Stiervi fo chiapi, schi lascha dar la fotsch et piglia il rasti. das ist: wann der Spitz zu Stiervis [Stierva/Stürvis] (so 3. oder 4. stund von fillisur, gegen abend ligt) kappen macht; oder mit einem wolklein bedeckt/wird, so lasse die Sägessen fallen, und nim[m]e dem rachen: anzeigende/es volge gemeinlich bald ein regen darauff."

[59] Scheuchzer 1716 (note 18), I: 268: "Von dem Cucarnil-Gebirg ist dieses auch ramarquabel, daß wann bey schönem Wetter ein Nebel-oder Wölklein fast im mitten im Berg sich sehen laßt, das gemeinlich am anderen Tag ein Regen folget." [Mount Cucarnil is remarkable in this, when in fair weather you happen to see some fog or a little cloud halfway up the mountainside, you know that as a rule there will be rain the day after].

[60] Johann Jakob Scheuchzer, *Oyresiphoites Helveticus sive itinera alpina tria* (London 1708), 16–17. "Materia hancce de *Signis Pluviarum* non ante dimitto, quam aliis homogeneis novisque Observationibus ab Alpicolis factis illustravero. *Filisurii* in Rhaetiâ usitatum est Proverbium: *Cura ch'il pitz da Stiervi fo chiapi, schi lascha dar la fotsch et piglia il rasti*. Sensus Linguae Rhaeticae, quae est Italicae Dialectus, hic est: *Quando cacumen montis Sterwis*, qui duo circiter milliaria distat à Filisurio versus occasum, *capitium facit*, id est, nube velut pileo cingitur, *abjice falcem*, quâ secatur foenum, & *accipe rastrum*, instrumentum, quo foenum in acervos colligitur, quod pluvia instet. Ita quoque *Novenae*, qui pagus haud longè distat ab origine Rheni, si conspiciatur nubicula vel nubes in monte *Cucarnil*, praedicunt Incolae pluviam procellosam."

[61] Giovanni Targioni Tozzetti, *Relazioni di alcuni viaggi fatti in diverse parti della Toscana, per osservare le produzioni naturali e gli antichi monumenti di essa* (Firenze 1773), vol. 5, 75.

Another theme attracting a good deal of debate, which was also discussed in *Helvetia curiosa* by Johann Jakob Wagner (Zurich, 1680), was the presence of dragons. It was rumoured that there were a number of them inhabiting the Alps, and Scheuchzer argues the question at length in his *Itinera* (tales of travels in the Alps), providing a detailed description of Swiss dragons, canton by canton, "exactly as I have myself come across found in sources be they manuscript or in print, or as was reported to me".[62] Leonhardi himself reported the accounts of eye witnesses from the area, for instance the account of pastor Bartolomeo Alegro da Ponte (a locality in the jurisdiction of Piuro in Valtelline), through the mediation of the minister of reformed church Peter de Juvalta, at Stuls (near Bergün in Grisons). In his letter sent to Zurich on 12 December 1699, Leonhardi transcribed the account received from Bartolomeo Alegro to the clergyman (which the latter had forwarded to Leonhardi on 29 October 1699) of the encounter the man had with a dragon on the mountain of Foppatsch, in the Alps of Stuls, three years previously. The dragon allegedly had the head of a ginger cat, its paws covered in fish scales, tongue like a serpent's and a forked tail. The shepherd claims that he managed to kill the monster, whose carcass was reportedly eaten up by insects in the space of three days. An animal like that one, asserted Leonhardi, was supposedly seen flying by the inhabitants of the region twenty years earlier in the skies above the mountain of Foppatsch. Our Zurich scholar in *Itinera alpina*, as well as in *Naturgeschichten*, returns to this letter, specifying its source, a letter from the evangelical pastor de Juvalta dated 29 October 1699 (but postdating it, arguably by mistake, to 29 October 1702). Dragons with similar characteristics were, in his opinion, to be found in Georgia and in other European regions: this is borne out in the work of Paolo Giovio (1483–1552).[63]

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[62] "…wie ich dieselbe in gedruckten oder geschriebnen Urkunden gefunden, oder aus Erzehlungen gehört habe." Scheuchzer 1746 (note 43), II: 221. Scheuchzer 1723 (note 18), 378–397. Johann Jakob Wagner, *Historia naturalis Helvetiae curiosa, in VII sectiones compendiose digesta* (Zürich 1680), 245–254.

[63] Scheuchzer 1746 (note 43), II: 235–236 (Journey through the Alps no. 5, 1706; German text); Scheuchzer 1723 (note 18), 393–394 (Latin text), the inventory of dragons in the different regions of the Confederation begins on 37. Johannes Leonhardi to Johann Jakob Scheuchzer, 12.12.1699, ZBZ H 327, 11–12. See: Simona Boscani Leoni, 'Johann Jakob Scheuchzer (1672–1733) et la découverte des Alpes: les "Itinera Alpina"', in Catherine Demeulenaere-Douyère (ed.), *Explorations et voyages scientifiques de l'Antiquité à nos jours* (Paris 2008), 81–100.

Once again, local testimony is sound and valuable: it is direct, unmediated, and, being contextualised in a book with a compilatory structure, it can grow into organic and original knowledge of natural history.

Our last example shows that written correspondence can have a facilitating role for the indefatigable naturalist [fleissiger Natur-Forscher] granting him an accurate observation of phenomena, complementing the classical sources. In the specific case, Scheuchzer turns his attention to periodic springs, i.e. well springs that, legend has it, flow alternately. A similar case had already been reported by Pliny the Younger (61–113) in a letter to his friend Licinio Sura, where he described the spring located not far from Lake Como.[64] Scheuchzer not only returns to Pliny's text in his *Natur-Histori* but also compares it with the story he had been sent by Rodolfo de Salis-Soglio in November 1709 as well as with a report that the same Salis supplied in February 1710. In 1709, Salis wrote:[65]

> As to the well spring near Lake Como, which both Pliny the Younger and Pliny the Elder have written about, for the time being I have little more to add to Your Excellency save the fact that I went to see it for myself two or three years ago, and it is on the left-hand bank of the Lake if you are travelling towards Como, at the foot of a big rocky mountain a gunshot away from the lake. There you will find a House or mansion, and behind it up the mountain side, in a rugged and impervious spot, there is a vineyard, and therein in this tight spot, you find the well spring, as far as I can remember they told me that its water rose and fell at six-hourly intervals, at the top of its flow it spills out of its bed and drains into the Lake quite abundantly, but when it reaches a low point, I do not think that it dries up completely; when I saw it, it was visibly rising and then spilled and drained as above, I was told that like the sea, it is subject to the tide. In some respects, its water is

[64] Scheuchzer 1717 (note 18), II: 125. Plinius Caecilius Secundus, Epistolae/Complete letters, transl. with an introduction and notes by Patrick Gerard Walsh (New York 2006), Lib. IV, Ep. 30.

[65] Scheuchzer 1717 (note 18), II: 126; Rodolfo de Salis-Soglio to Johann Jakob Scheuchzer, 7/18.11.1709 and 3.2.1710, ZBZ H 328, 147 and 159. In 1709, he writes: "Quanto alla fontana del Lago di Como, della quale ne parlano li due Plinj p[er] ora non sò dir'altro à V.S. Ecc.ma se non che due ò tre anni sono io son stato à vederla, è a man sinistra del lago nell'andar à Como al piede d'una gran montagna sassosa un tiro di pistola incor lontana dal lago, ivi vi è una Casa ò sia palazzo e dietro essa sù per la montagna in sito molto erto e scosceso una vigna, in q[ue]sto angusto sito si trova da fontana, à mio ricordo mi dissero che cresceva e calava ogni sei hore, quando ella è nella maggior crescenza sgorga dal suo letto e si scarica nel Lago in buona quantità, mà quando è nel maggior callo, non penso che si asciughi del tutto, quando io la viddi cresceva à vista e poi sgorgò come sopra, à me dissero ch'à somiglianza del mare haveva il suo flusso e riflusso. Per altro l'acqua è chiara e molto buona per essere bevuta, ed io stesso ne bevo la pancia piena. Questa fontana o sia palazzo si chiama la Pliniana, dicendosi che un de' Plini vi haveva fabricato una Casa per una dimora…"

> pure and tastes good, and I myself drink it to my heart's content. This spring, or rather 'mansion', is known as 'Pliniana', as legend has it that one of the Plinys had built himself a House for one of his residences…

Scheuchzer's concern was not simply to expound on the phenomenon by reporting the descriptions provided by the ancient authority (Pliny) and the contemporary one (Salis). He went further: following up on Pliny's account, he inquired into the mechanism of such well springs and their connection with tides. In this way, he was prompting his own contemporaries to undertake more thorough research, including for instance the compilation of a sort of journal to monitor and record the rhythms of sources and the relation between the ebb and flow movements and weather events.[66]

Conclusions

The cases presented in this paper show the importance of Britain's cultural influence for a systematic study of nature in the Swiss Confederation at the beginning of the eighteenth century. Scheuchzer was a central figure in this process as a mediator between different traditions and different languages. The cases also corroborate his ability to collect direct observations, by means of a fairly articulated network of correspondence. The circulation of observations and local knowledge ends up making use of the voices of the humbler classes, shepherds and farmers, turned recorders of experiences and narratives as authentic eyewitnesses. The examples cited not only help us highlight two central elements of the strategies of data collection used by Scheuchzer but also suggest more general reflections on the spread of knowledge in the modern age. To begin with, these testimonials are seen as having an equivalent function to that of printed (literary and historical) sources, which Scheuchzer used when recording past or—also—recent events: empirical testimony conveyed in letters was worth as much as sources in print, and complemented "classical" knowledge (suffice it to think, for example, of Pliny's well-spring in Como). We have pointed out that individual letters may be cited in the same way as literary sources (with explicit reference to author and title of the book, the name of the correspondent and date of the letter), or by emphasizing the sender's respectability or trustworthiness without quoting him explicitly

[66] Scheuchzer 1717 (note 18), II: 127.

(see von Rosenroll's case); or yet again by transcribing whole passages word for word with no indication of the provenance. The latter procedure may suggest an oversight on the part of Scheuchzer, who used to work collecting, with a compilatory method, notes extracted from books and letters (sometimes disregarding where the information came from): but it may equally well mean that the author was reluctant to stuff his text full of quotations of passages that the reader would be unable to check. The end result is printed volumes storing a wealth of remarkable primary and secondary sources, in which all the collected data and observations are arranged according to a clear perspective, fitted into a "serial" framework, in which the reader may enjoy a new form of systematic naturalistic knowledge.

The example of the Swiss doctor points to a mechanism of production and circulation in the modern age which did not merely implement a "centre—periphery" model, where "centre" in this case meant the City of Zurich while periphery meant the regions furthest away from the centre, but assumed a more complex and decentralised geography of knowledge production. Although the input for the promotion of knowledge comes from afar, from England as well as from Zurich (remember the *Einladungsbrief*, the first questionnaire of its kind in Switzerland) we have nonetheless pointed out the existence of an horizon of expectations common to the educated classes (both urban and not). These carried out their own naturalistic studies, integrating into their accounts the observations they had personally witnessed but also any "hearsay" from the common people, shepherds, hunters with whom they were constantly in touch. Local lore is therefore gathered, redrafted, selected, put in perspective and finally transferred into the works of Scheuchzer sent for publication, and his texts meet with international acclaim. The Zurich doctor integrates these data into his publications, exports them to an international circuit, lending them his voice as a scholar welcomed into the most distinguished European academies.

Knowledge transfer, in any case, happened on a bipolar basis and struck off in different directions:[67] the difference lies in the fact that Scheuchzer, an intellectual esteemed in the circles of the *Respublica litteraria*, had

[67] Let us not forget that Scheuchzer, in exchange for observations received, used to send to his interlocutors, on a regular basis, not only books, articles, and the odd object, but also other information he thought might be of interest to them.

access to books and articles in print which he could not have obtained at all without his network of national and international relations.

These examples prompt us to reflect more generally on the existence of channels of knowledge production, still to be discovered, which I believe can help us see with different eyes the role of the intellectual in the modern age. Perhaps there is a new angle from which to understand the role of that intellectual as a producer of knowledge, but also as a big *bricoleur*, a tinkerer of local knowledge. There is a sense that naturalistic research finds fertile and critical soil in the provinces, in regions away from the centre. Thus, we might also put forward a new reading of the phenomenon which turns the usual perspective on its head. The input blown in from the cultural centres was echoed among local elites and not only there: these—in turn—by selecting topics according to their own priorities, and questions they chose to answer, defined and gave shape to the image of natural history which the "great" scholars were subsequently to deliver and distribute on the international market of knowledge.