

*‘Sciences strange and diverse’: Europeanization
through the transfer of scientific knowledge in Russia, 1717–65*

Alexander Iosad

St Edmund Hall, University of Oxford

Hilary Term 2017

Thesis submitted to the Faculty of History, University of Oxford,
for the Degree of Doctor of Philosophy

SHORT ABSTRACT

'Sciences strange and diverse': Europeanization through the transfer of scientific knowledge in Russia, 1717–65

Alexander Iosad, St Edmund Hall

DPhil in History

Hilary Term 2017

The history of the cultural role of science in eighteenth-century Russia has to date mostly focused on the biographies of specific individuals or the reception of particular scientific theories. This is despite the fact that science has been shown to play an important role in contemporary European Enlightenment culture, which certainly represented a model for emulation in the eyes of Russian elites. This thesis argues for a new approach to the study of science in Russian society in the period between the reigns of Peter I and Catherine II that takes into account both the role of state-sponsored institutions in shaping attitudes towards science and their reception by the Russian literate public.

It argues that the first half of the eighteenth century saw the introduction of a number of discourses that variously ascribed value to natural knowledge on the basis of its rarity (curiosity), utility, or relevance to polite sociability and refined leisure (pleasure). These three approaches to the study of nature, which had their roots in contemporary European thought, effectively defined the terms in which educated Russians thought about science. Their common feature was the association of scientific knowledge with elite European culture, which was eventually internalized by the Russian court society. The thesis explores the role of material culture, paratexts, and ephemeral genres in shaping perceptions of science. Through a number of case studies, it demonstrates the complexity of Russian interactions with European notions of science, mediated through state-sponsored institutions at different points in time or encountered directly. Ultimately, it demonstrates the coexistence of a variety of attitudes to European natural knowledge, all associated with different conceptions of elite European culture and internalized at different points in time, helping to expand our view of the role of science in Russian elite culture.

LONG ABSTRACT

At the beginning of the eighteenth century, the Russian state embarked on an almost unprecedented programme of Europeanization, demanding from its elites that they not simply borrow or emulate European technologies, fashions, and habits but actually feel – become – European. The cultural reforms initiated by the Tsar Peter I at the beginning of the eighteenth century hold a special place in the Russian historical imagination. Their spectacular breadth and variety, affecting everything from the military, naval, and civil service to the social life, dress, and even grooming habits of the Russian elite, have long since secured Peter's status as the man responsible for the country's Europeanization. In this context, the introduction of European attitudes to the production of natural knowledge, or science, has passed almost unnoticed, taken for granted as an indelible part of the general package of reform. And yet, as this thesis argues, science as a cultural phenomenon played an important role in the formation of Europeanized self-identities among members of the Russian elite.

This is all the more surprising given that, as far as science was concerned, Russian society represented a virtual *tabula rasa*. The extent of knowledge of contemporary European understandings of the natural world in pre-Petrine Muscovy was negligible. For centuries, Russia did not possess a body of systematic knowledge about nature, whether based on local tradition or European models. In confronting the natural as well as the supernatural, Muscovite Russians shied away from categorization and explanation. The patristic theology of Eastern Christianity, combined with the Russian Orthodox Church's isolationist stance, discouraged the development of religious institutions of scholastic learning. Literacy rates remained very low and the observance of ritual was prioritized over 'book learning'. Owing in part to difficult geography, with a low density of population, and in part to political considerations, alternative sites of knowledge production, like the court or the printer's shop, did not develop in Russia. Without an indigenous religious or secular scientific tradition, and with little knowledge

of European developments in this area, it may be said, without exaggeration, that there was no science in pre-Petrine Russia. The process of its appropriation by Russian elites is therefore a unique case study in the processes of cultural transfer.

The historiography of science in eighteenth-century Russia is mostly a history of institutions, the St. Petersburg Imperial Academy of Sciences first and foremost. Insofar as it deals with the role of science in Russian elite culture, the historiography of the period has largely focused on the popularization of scientific knowledge by the Academy or the strategies academicians employed to secure patronage. In some ways, this focus on dissemination is both understandable and unavoidable. On the one hand, the nature of surviving sources is such that personal records and recollections are very rare for the period before the reign of Catherine II, while institutional archives are relatively well preserved and many documents were published in the nineteenth century. This means that a certain institutional bias is introduced when relying on these sources. On the other hand, eighteenth-century Russia was somewhat unique among contemporary countries in that state-sponsored institutions played an outsized role in the translation and publication of scientific knowledge. The result is that the focus has squarely been on people involved directly in the production of knowledge. The other side of this process – the reception of natural knowledge, of associated practices and worldviews by members of Russian elites – has too often been ignored.

This thesis aims to address this shortcoming by unpacking the meanings with which the notion of science as a cultural phenomenon was invested over the period roughly from 1717 (the foundation of the *Kunstkamera*, the first public curiosity cabinet in Russia, and the introduction of natural philosophy as a cultural concept in Russian print) to 1765 (the death of Mikhailo Lomonosov, a Russian physicist, chemist, and literary author who played an important role in shaping contemporary views of science). It was during this time that Russians first encountered and negotiated the idea that science could play a role in the life of the court and the nobility and began to discuss what that role could be. This aim gives the thesis a dual focus: on the one hand, to describe the

attitudes promoted by state-sponsored institutions and how these changed across time periods, various media, and different audiences; on the other hand, to trace, as far as possible, the reception of these attitudes, their internalization by various members of Russian society, and the ways in which such responses in turn shaped the presentation of science. In particular, the thesis addresses the development of three distinct discourses of the value of natural knowledge, based on curiosity, utility and pleasure. The result is a novel interpretative framework for the role of European science in the Europeanization of Russian elites.

The thesis is structured in three parts in a roughly chronological order. The Introduction lays out the research question and provides justification for a view of Russia at the beginning of the eighteenth as a uniquely 'blank' slate for the transfer of scientific knowledge.

Part I ('The curious Tsar') considers the place of European natural philosophy in Petrine Russia and proposes a new approach to views of nature held and promoted by Peter and his followers. It disputes the standard claim that Peter's sole or even primary concern was with technical training that promoted 'useful' applied disciplines at the expense of 'abstract' knowledge.

Chapter One demonstrates that views of nature held by Peter and his retinue were closely connected to the dominant political culture of his court. I argue that Petrine attitudes towards natural knowledge were shaped by a Northern European 'culture of curiosity', which suggested that rare and unusual objects should be the focus of natural study and complemented the emblematic Baroque culture of the Petrine court. The focus on curiosity allows us to see certain idiosyncratic features of the Petrine era as representative of a characteristic view of the cultural, rather than purely practical, role of science with an internal logic of its own. A close reading of extant Russian responses to natural phenomena such as eclipses shows that this culture of curiosity was embraced by members of Russian elites and provided a mainstay of a Europeanized cultural identity even at this early stage.

Chapter Two examines the foundation of the Imperial Academy of Sciences in St Petersburg in 1725. By showing how the Academy's foundation fit within the culture of institutional entrepreneurship recently postulated for the Petrine court, I demonstrate the contingent and fluid nature of this enterprise. A close reading of the Academy's founding document shows how its idealized vision of European science reflected changing views of natural philosophy in the late Petrine era. Finally, I examine the gap between designs for the Academy and their implementation. Unable to attract prominent members of the Republic of Letters, the Academy was composed of younger scholars whose views diverged sharply from the Petrine culture of curiosity. Such contingent circumstances set the tone for the public representation of natural knowledge over the following two decades.

Part II ('The Useful Academy') examines the history of the St Petersburg Academy of Sciences and its interaction with Russian elites up to 1747. Building on earlier scholarship on the Academy's efforts to secure patronage, I propose a new interpretive framework for the Academy's interactions with Russian society within and beyond the court, built around its efforts to promote the discourse of *dulce et utile*.

Chapter Three suggests that the Academy's embrace of the printing press allowed it to address the difficulties it faced in attracting interest in its educational institutions and public lectures. From 1727, the Academy's professors, students, translators, and administrators established a virtual monopoly over secular print, proving very adept at controlling the flow of knowledge to different audiences. Building on the Petrine separation of secular and religious printing, the Academy developed a tacit demarcation of spheres of intellectual influence with the Church, presenting itself as an arbiter of elite European culture. A concerted effort to develop a scientific Russian language with a more or less unified terminological system lowered barriers to the consumption of natural knowledge, but made access to it dependent on an implicit acceptance of Academic attitudes to science.

Chapter Four proposes a new approach to the Academy's printing activities that takes into account the multilingual and frequently ephemeral nature of its print production. By accepting private commissions, the Academy press served as an exemplar of the uses of print to Russian audiences. The Academy used its control over paratexts to share in the prestige of courtly literary production, police the dissemination of natural knowledge, and situate science within the context of polite European culture. The resulting discourse of 'polite cameralism' emphasized science's role as a form of refined leisure and its utility for state service and imperial expansion. I focus in particular on its promotion in the *Notes*, a bi-weekly journal produced by a group of academicians under Schumacher's supervision. Taken together, the Academy's printing activities contributed to the creation of a sphere of intellectual and literary activity separate, though not yet independent, from state service and attendance at court.

Chapter Five addresses the issue of the Academy's interaction with Russians outside the elite circles of St Petersburg, using the example of the Second Kamchatka Expedition (1732–44). On the basis of previously unexamined official instructions to local assistants, I show how academicians constructed and struggled to maintain hierarchies of knowledge production designed to control the flow of data. In particular, I point out the contrast between representations of science to elite audiences in St Petersburg (a pleasant, culturally prestigious diversion) and provincial and colonial servitors (an imperial duty). The case of Stepan Krasheninnikov, a Russian student of the Academy of Sciences who spent several years carrying out research on the Kamchatka Peninsula, shows the challenges of employing European modes of knowledge production without easy access to requisite materials, such as instruments. It also highlights the importance of local observers to Krasheninnikov's research and their disappearance from the printed outputs of the expedition as academic hierarchies reasserted themselves.

Chapter Six considers the Academy's relationship with the Petrine culture of curiosity. It explores the strategies employed by academicians to discredit 'inappropriate' forms of natural knowledge in print and overcome readers' resistance to these efforts.

On the basis of a previously unexamined source, annual almanacs composed at the Academy, I show how sections devoted to astrological knowledge in Petrine calendars were appropriated to promote an empirical approach to the study of nature. Astrology was first reconfigured as a form of polite (but useless) entertainment and later cast as an outdated and, crucially, un-European belief. Changes in the structure of the calendar and its treatment of astrology are used as a proxy to judge the extent of resistance to Academic discourses of natural philosophy and trace the marginalization of curiosity in official discourse.

Part III ('The Enlightened Elite') attempts to trace the reception of the Academy's discursive practices by members of Russian society. The Royal Charter of 1747, granted by Empress Elizabeth (r. 1742–1762), enshrined the idea of scientific utility formulated by the Academy but left little room for its participation in court culture. The Academy's diminished role allows us to shift the focus of attention to the influence of its earlier activities on Russian elite culture and the development of alternative attitudes to science.

Chapter Seven focuses on Prince Antiochus Cantemir (1708–1744), whose interest in natural sciences is well known. The chapter reconsiders this interest in the context of the framework of curiosity, utility, and pleasure developed in earlier parts of the thesis. Cantemir rejected the cameralist element inherent in the Academy's approach, emphasizing instead the cultural prestige of European sciences and its political uses in a meritocracy based on learning. Examining Cantemir's interactions with a circle of Italian immigrants in Georgian London, I propose a new view of his decision to revisit a decade-old translation of Fontenelle's *Entretiens sur la pluralité des mondes*. Although Cantemir disagreed with Fontenelle's Cartesianism, he appreciated the cultural value of the perspective on the production of natural knowledge expressed in *Entretiens*. Ultimately printed by the Academy of Sciences, the text simultaneously challenged its intellectual authority by implying the validity of alternative approaches to natural knowledge.

Chapter Eight considers the social mobility strategies of Russian scientific practitioners in the 1740s–50s. It contrasts the careers of Stepan Krasheninnikov, who accepted Academic hierarchies of knowledge production, and Mikhailo Lomonosov, who maintained a link with the Academy while seeking outside patronage. Lomonosov's efforts to balance the discourses of pleasure and utility in his representation of science were only partially successful, particularly as he failed to adapt to the polite sociability of the court. At the same time, I suggest that Lomonosov's standing in society was determined by his membership of the Academy, which also provided a measure of political protection even where patron-client relationships did not.

Chapter Nine examines the role and cultural uses of science in the lives of Elizabethan nobility. Contrary to claims about the elites' rejection of scientific learning, it is shown to be an important element in the public performance of European polite culture. An examination of correspondence from the Grand Tour of Baron Aleksandr Stroganov, undertaken in the early 1750s, shows a conflict between his father's view of science as a form of polite leisure and Stroganov's initial enthusiasm for natural philosophy, as well as his gradual assumption of the role of an enlightened patron of arts and sciences – a role he reprised in St Petersburg where his nobility was questioned by others within the court society. Similar conclusions about the cultural role of science may be drawn from an examination of its effect on the material culture of the elites. Finally, the death of Professor Georg Richmann in the course of an electrical experiment in 1753 serves to demonstrate the variety of attitudes towards science available to members of the Russian elite, including one example that demonstrates how the Petrine culture of curiosity, internalized in childhood, continued to shape some noblemen's views of scientific research at the Academy.

The conclusion discusses how the interpretive framework proposed in this thesis allows us to see the cultural phenomena encountered over the pages of the thesis as inextricably linked with the activities of state-sponsored institutions like the Academy of Sciences. In the absence of pre-existing notions of what the study of nature should

involve, the official discourses of such institutions played an outsized role in determining Russian views of science. And yet, as the century wore on, members of the Russian elite began to develop their own attitudes towards the value and function of sciences, which were often informed by these 'official' discourses but could also conflict with them. All too often, Europeanization is seen as a linear narrative, starting with a moment at which European values are imported and then tracing their gradual acceptance. As this research hopefully demonstrates, the real picture is far more complex and arguably more fascinating.

Acknowledgements

This thesis would have been a very different, and far inferior, work, were it not for the advice, help, and support of colleagues and friends that I was lucky enough to enjoy at every step of the way. Firstly, I want to thank the History Faculty of the University of Oxford, my college St Edmund Hall, and the ill-fated Cantemir Institute for providing me with the funding I needed to embark on and continue with this project. I would also like to thank Anton Fromm and Dmitry Kuzmin, whose patience and generosity always made this work possible.

Much of the text that follows I have presented, at different stages of its development, at conferences hosted by the Ertegun House, the University of Oxford; the Northeast Modern Languages Association; the Study Group on Eighteenth-century Russia; the British History of Science Society; the Association for Slavic, East European, and Eurasian Studies; and the Books at Bristol Project. I have also been fortunate enough to present my work at a number of different seminars at the University of Oxford and the University of Cambridge. I would like to thank those who attended my talks, commented on their content, or suffered me as their co-panelist.

In a show of great faith, Andreas Schönle, Andrei Zorin, and Alexei Evstratov invited me to contribute a chapter to their project on the creation of a Europeanized elite in Russia when I was but a lowly first-year student. This project, and the discussions with members of its Advisory Board, editors, and fellow contributors that it entailed, have greatly influenced my approach to my subject matter and shaped the interpretative framework adopted in the thesis.

Throughout the course of my studies, I have enjoyed discussing eighteenth-century Russia with colleagues from a variety of disciplines and backgrounds, all of whom have greatly contributed to the improvement of this thesis. I would like to thank, in particular, Kirill Ospovat, Clare Griffin, Rachel Koroloff, Simon Werrett, Michael Gordin, Anna Graber, Kelsey Rubin-Detlev, Claas Kirchhelle, Roman Shliakhtin, and countless

other kind souls. These discussions have helped me to clarify and correct my positions, always to the great benefit of the thesis. A special word of thanks to the organizers, presenters, and attendees of the early modern history seminars at the University of Oxford – throughout my time as a student, I came away from these meetings with something new to consider.

I owe a great debt of gratitude to my patient friends, always willing to field yet another esoteric comment on the curiosity of Peter I or the utility of chemistry. Bethany Spare, Rhea Sookdeosingh and Adam Harnischfeger, Alexei Evstratov, Ovanes Akopian, Kseniia Toropova, Yurii Sorochkin and Zlata Ponirovskaya, Yulia Taranova, Oz Jungic – your support has been invaluable. Above all, I would like to thank Beatrice Gutmann and Sergei Fokin for their friendship, which sustains me at all times.

If there is anything good in the chapters that follow, I owe it wholly to those who have taught me. Paul Luna has shown me how to see books as more than words on a page. My gratitude to Andrew Kahn, who awakened my interest in the eighteenth century and gave me the skills and understanding to pursue it, knows no bounds. Andrei Zorin and Pietro Corsi have been the perfect supervisors and have saved me countless blushes. Any errors that remain are wholly my own.

I would not be where I am without the people closest to me. My father, Vladimir, did not live to see the submission of this thesis; that will always weigh on me. My brother, Pavel, is an inspiration and I am glad we have each other. My mother's contribution to my intellectual development, her boundless curiosity, and her support and encouragement have all shaped me and my work.

Finally, Maria: best of wives and best of women, a constant source of joy and pride, the reason anything gets done. With her and with Lev, whom I love beyond all measure, I have nothing to fear.

Table of Contents

Editorial notes	2
Introduction	4
Part I: The Curious Tsar	39
1 <i>Natural cabinets and unnatural eclipses: the Petrine culture of curiosity...</i>	44
2 <i>'We have made the beginning': The foundation of the St Petersburg Academy of Sciences.....</i>	63
Part II: The Useful Academy	84
3 <i>'Endeavour as useful as it is difficult': Academic print culture and control over knowledge</i>	88
4 <i>Europeanization in the margins: ephemera and paratext in the formation of an elite Russian public</i>	118
5 <i>Instructions and instruments: the exchange of natural knowledge beyond St Petersburg</i>	147
6 <i>'Strictly Astronomical, and truthful': the appropriation of inappropriate knowledge</i>	169
Part III: The Enlightened Elite	190
7 <i>'Of little use? So be it!': Prince Antiochus Cantemir and the parallel development of polite science.....</i>	195
8 <i>The Academy and its alternatives: science and social mobility in Elizabethan Russia</i>	226
9 <i>The connoisseur, the electrician, and the major-general: science in the public and private lives of Russian nobility</i>	252
Conclusion	281
Illustrations	285
List of Illustrations	295
Works Cited	297

Editorial notes

All dates are in the Old Style unless otherwise specified. Throughout the text, I use a simplified (without diacritics) version of the British Standard transliteration system for Russian, except for names of people and places that have established English language forms, such as Moscow, St Petersburg, or Peter I. I try to honour contemporary spellings of foreign names, thus ‘De L’Isle’ rather than ‘Delisle’ and ‘Cantemir’ not ‘Kantemir’.

LIST OF ABBREVIATIONS

AB = Library of the Russian Academy of Sciences, *Annotirovannaia bibliografiia izdanii XVIII veka Sankt-Peterburgskoi Akademii nauk i Akademicheskoi tipografii* (St Petersburg, 2002).

<http://www.ras.ru/e_resours/ran18/index.html> last accessed 9 March 2017

AV = Bartenev, Petr (ed.), *Arkhiv kniazia Vorontsova* (40 vols., Moscow, 1870–95)

LAN = Nevskaia, Nina Ivanovna and Iudif’ Khaimovna Kopelevich (eds.), *Letopis’ Rossiiskoi Akademii nauk, i: 1724–1802* (St Petersburg, 2000)

Lomonosov, *PSS* = Lomonosov, Mikhailo, *Polnoe sobranie sochinenii*, eds. S.I. Vavilov and T.P. Kravets (11 vols, Moscow and Leningrad, 1950–83)

MIAN = Sukhomlinov, M. I. (ed.), *Materialy dlia istorii Imperatorskoi Akademii nauk* (10 vols., St Petersburg, 1885–1900)

Notes = *Istoricheskiia, genealogicheskiia i geograficheskiia Primechaniia na Vedomosti* [Historical, geographical, and genealogical notes to the [St Petersburg] News] (St Petersburg, 1729–42)

OZK = Krasheninnikov, Stepan Petrovich, *Opisanie zemli Kamchatki, s prilozheniem raportov, donesenii i drugikh neopublikovannykh materialov*, eds. L.S. Berg, A.A. Grigor’ev and N.N. Stepanov (Moscow, 1949)

PiB = *Pis’ma i bumagi Imperatora Petra Velikago* (13 vols., St Petersburg and Moscow, 1887–2003)

PSZ = Speranskii, M. M. (ed.), *Polnoe sobranie zakonov Rossiiskoi Imperii s 1649 goda* (45 vols., St Petersburg, 1830)

SK = *Svodnyi katalog russkoi knigi grazhdanskoi pečhati XVIII veka. 1725–1800* (6 vols., Moscow, 1962–75)

SK (In.) = Russian National Library, *Knigi na inostrannykh iazykakh, izdannye v Rossii v 18 veke* (2001–2015). <<http://www.nlr.ru/rlin/ruslbr.php?database=RLININXVIII>> last accessed 9 March 2017

SKPer = *Svodnyi katalog russkoi knigi grazhdanskoi pečhati XVIII veka. 1725–1800*, iv: *Periodicheskie i prodolzhaiushchiesia izdaniia* (Moscow, 1966)

SPV = *Sanktpeterburgskie vedomosti* [St Petersburg News] (St Peterburg, 1728–)

PRINTING OUTPUT DATA

Unless otherwise specified, all calculations regarding the Academy's print output are my own. I have compiled data from *SK*, similar to the *English Short-Title Catalogue* and published in six volumes between 1962 and 1975; *SK (In.)*, an online catalogue of books printed in eighteenth-century Russia in foreign languages maintained by the National Library of Russia; and *AB*, a catalogue of the Academy's eighteenth-century print output published online by the Library of the Russian Academy of Sciences. They have been supplemented by my own research in published sources on the history of the Academy, such as *MIAN*, and in online library catalogues. This makes possible an approach to print in eighteenth-century Russia that does not divide the printers' activities by genre and language and treats it as a unified process.

I count separate volumes of the same work as distinct titles, as these were often published years apart and sold separately. I exclude the output of other presses, which was mostly limited to the publication of new laws, but do include legal texts printed at the Academy. I have erred on the side of inclusivity by adding all known ephemera (such as all forms of panegyric literature, private and Academic notices and catalogues, or occasional sermons) to the total count, as the nature of printing in early modern Russia, somewhat akin to the European incunabula age, makes it very difficult to distinguish 'ephemera' from 'proper' books and vice versa. The above catalogues, and therefore my own dataset, are based on surviving copies and do not contain titles of which no copies survive; it is also often unclear whether works in progress mentioned in archival documents were actually published. Thus, any figures cited are a lower estimate.

Introduction

Nowadays, secular learning takes precedence over the redemptive knowledge of the Law, which is the source of wisdom; nowadays, people devote themselves fully to sciences strange and diverse, yet do not fortify their weak hearts with the grace of spiritual instruction. That is indeed the reason why so many Christians have loose morals, are obstinate, and profess the most depraved of opinions.¹

So wrote Platon (Levshin) (1737–1813), the court preacher of Empress Catherine II, in his 1765 catechism of the Russian Orthodox faith. The slim 173-page volume was set in an alphabet that we today recognize as the Cyrillic script but which would not have been familiar to any Russian before 1700. The imprint at the bottom of the title page read: ‘In St Petersburg at the Imperial Academy of Sciences’.

Platon’s comment reflected just how profound a change had come over his audience – the elite of Russian society – since the beginning of the century. In that time, Russia had acquired military and mathematical schools, a scientific academy of no mean reputation, and a chartered university. The output of printing presses operated by these institutions, though meagre by British or French standards, dwarfed anything the country had known before. Its nobility had adopted European dress and social norms; learned foreign languages; extended patronage to artists, scientists, and men of letters at home and abroad, Voltaire among them. The country, most observers agreed, had been irreversibly transformed. Platon’s words, in that context, must be understood not as a call to turn back the clock but rather as an expression of a clergyman’s alarm at just how much his role in society has diminished, an attempt to stake a claim to continued relevance alongside ‘sciences strange and diverse’. What were these sciences and how justified was Platon’s concern?

¹ P. Levshin, *Pravoslavnoe uchenie, ili Sokrashchennaia khristianskaia bogosloviia* (St Petersburg, 1765), p. 8r.

The subject matter of this thesis lies at the intersection of the history of science, the history of the book, and the history of Russian culture. I aim to answer questions about the role and perception of sciences (*nauki*, in Russian), and in particular natural history and philosophy, within the upper reaches of Russian society in the period between the reigns of Peter I (r. 1682–1725) and Catherine II (r. 1762–1796). In doing so, I hope to shed some light on the early history of Russia's 'Europeanization' (the interiorization of concepts and cultural practices originating from Western Europe) and the patterns of mediation and reception of novel ideas within a society. This requires a thorough exploration of the transmission of European 'science' (broadly defined) in the early modern period; of the reaction to natural philosophical ideas outside the narrow circles of scientific practitioners; and of the role played by texts (print and manuscript), periodicals, public events, and other media in the promotion of these ideas. Above all, it requires a great deal of attention to the complexities of such knowledge transfer.

The reigns of Peter I (known as 'the Great') and Catherine II (also 'the Great') are traditionally seen as the two high points of the Russian eighteenth century. The former is said to have introduced Russia to Western culture and the latter to have completed his work. Just as one might suspect, this narrative, most succinctly expressed during Catherine's reign by the inscription on the famous 'Bronze Horseman' statue of Peter in St Petersburg – 'PETRO primo CATHARINA secunda MDCCLXXXII' – is something of an oversimplification. To begin with, even though the scope of Peter's reforms was unprecedented, in many areas they built on the work of his predecessors the Tsars of Muscovy. It is also clear that the genuine cultural achievements of Catherinian Russia would not have been possible without serious efforts to preserve and extend the Petrine legacy during the often neglected period between the two 'great' rulers.

In the case of Western scientific ideas and practices, it is the latter process that is of particular interest. Peter's reforms were manifold and affected most spheres of Russian elite life: military, naval, and civil service, cultural norms and expectations, the geographies of political and social life, educational practices, and a great deal more. In

almost all of those cases, the innovations of Peter's reign have to be seen in the context of pre-existing notions of land-based and naval warfare, civility, political life, and so on. Thus, Peter's new political capital on the Neva River and the European-style assemblies introduced by him as a venue for public interaction between men and women, as opposed to the segregated life of the Muscovite court, were explicitly designed to displace existing practices.

In the case of science, however, Russian society represented a virtual *tabula rasa*. The extent of knowledge of contemporary European understandings of the natural world in pre-Petrine Muscovy was negligible. For centuries, Russia did not possess a body of systematic knowledge about nature, whether based on local tradition or European models. In confronting the natural as well as the supernatural, Muscovite Russians shied away from categorization and explanation. The patristic theology of Eastern Christianity, combined with the Russian Orthodox Church's isolationist stance, discouraged the development of religious institutions of scholastic learning of the kind that underpinned the development of European science. Literacy rates remained very low and the observance of ritual was prioritized over 'book learning'. Owing in part to difficult geography, with a low density of population, and in part to political considerations, alternative sites of knowledge production, like the court or the printer's shop, did not develop in Russia. Without an indigenous religious or secular scientific tradition, and with little knowledge of European developments in this area, it may be said, without exaggeration, that there was no science in pre-Petrine Russia.

This might strike some as a controversial statement. The meaning and relevance of the term 'science' (a nineteenth-century neologism) for the early modern era has a long and contested historiography.² Such definitions are especially important in the context of debates associated with global history, to which early modern Russia is undoubtedly

² Discussed in detail in K. Park and L.J. Daston, 'Introduction. The Age of the New', in K. Park and L.J. Daston (eds.), *The Cambridge History of Science*, iii: *Early Modern Science*, (Cambridge, 2006), pp. 1–17.

relevant (if all too often ignored). A recurrent – and justified – criticism is that historians have sometimes tended to see European forms of natural knowledge (labelled as ‘science’) as superior to indigenous knowledge systems.³ The growing interest in and understanding of local non-European traditions and circumstances has much to recommend it.

However, Eurocentrism is perhaps less objectionable when we consider science and its reception as a case study in the process of Europeanization: that is, when science is understood by the protagonists of our study as a specifically European phenomenon. It is worth noting that the term ‘science’ itself, in its modern English meaning, would not have been familiar to them. Its use in these pages is anachronistic. The Russian equivalent, in the eighteenth century as well as now, is *nauki*, a term that encompasses all kinds of subjects in the humanities as well as social and natural sciences (similarly to the German *Wissenschaften* and the French *sciences*). However, as a historian’s shorthand for a set of ideas and practices associated with the study of nature, it is widely used by present-day scholars of the early modern period. The alternative would be to adopt a more contemporary formulation, such as ‘natural philosophy’. That, in my view, would introduce additional complications because such terms were themselves fiercely contested in European languages during the period in question – a debate that is beyond the scope of this work. (One need only think of the different connotations invested in the English ‘natural philosophy’ and the German *Naturphilosophie*). By contrast, the use of ‘science’, anachronistic though it may be, allows us to sidestep contemporary terminological disagreements and establish at the outset the scope of phenomena under consideration.

For the purposes of this thesis, I define science as the systematic acquisition of knowledge about natural objects and phenomena governed by a prescribed set of theories

³ For some critiques of the imposition of Eurocentric conceptions of science on the study of non-European cultures, see D.W. Chambers and R. Gillespie, ‘Locality in the History of Science: Colonial Science, Technoscience, and Indigenous Knowledge’, *Osiris*, 15 (2000), pp. 221–40; L. Roberts, ‘Situating Science in Global History: Local Exchanges and Networks of Circulation’, *Itinerario*, 33/1 (2009), pp. 9–30.

and attitudes and carried out through practices defined as ‘appropriate’. Central to my view of science or lack thereof in early modern Russia is the idea that the definition of ‘appropriate’ attitudes and practices is itself subject to constant doubt and negotiation. Institutions are important to this process precisely because they seek to regulate and exemplify the notions of what is and is not ‘science’; how and why they do so and what may motivate changes to such endorsed attitudes is as important as whether others accept, ignore, or dispute them. Moreover, in this view ‘science’ is a set of ideas and practices developed within the context of specifically *European* institutions: universities, seminaries, courts, or specialist sites of natural knowledge production. It is precisely the absence of such institutions that marks the history of natural knowledge in Muscovy, as the following overview will demonstrate.

###

To claim there was no science in Muscovy is not the same as to suggest that this somehow made its culture inferior.⁴ If we understand science as a set of notions about how the production of natural knowledge may be systematized, it requires no great leap of imagination to accept that some cultures may not share, may even reject, views about the value of such an enterprise. The alternative would be a grossly positivist view of science as the pinnacle of intellectual development.

Russians before the reign of Peter I observed nature, thought about nature, and found uses for nature. Some fascinating aspects of the Muscovites’ engagement with their environment have been explored at length, in particular by Valerie Kivelson.⁵

⁴ Paul Bushkovitch rightly notes the unfortunate tendency for discussions of Peter’s reform to shade into cultural polemic (P. Bushkovitch, ‘Change and Culture in Early Modern Russia’, *Kritika: Explorations in Russian and Eurasian History*, 16/2 (2015), p. 291–316). This is not at all my intention.

⁵ V.A. Kivelson, *Cartographies of Tsardom: The Land and its Meanings in Seventeenth-century Russia* (Ithaca, 2006); V.A. Kivelson, “‘Between All Parts of the Universe’: Russian Cosmographies and Imperial Strategies in Early Modern Siberia and Ukraine”, *Imago Mundi*, 60/2 (2008), pp. 166–81.

One widespread form of interacting with nature in all its forms was through a variety of magical practices.⁶ Such forms of natural knowledge, however, were neither regulated nor codified and had little in common with contemporary European developments (with the exceptions of astrology and medicine, addressed below). As far as science was concerned, the role of 'European' sources in Russian intellectual culture before the mid-seventeenth century was largely limited to Patristic literature and certain works of Byzantine authors. Eastern Slavs, in particular, showed no discernible interest in translating either the Greek sources of the European scientific tradition, such as Aristotle, or the Byzantine scholars' own contributions to that tradition.⁷ Where elements of systematized natural knowledge were found, these were typically translated as part of other texts or within compendia, almost exclusively religious in nature. It is far from certain that the translators and copyists always understood the meaning of the texts they were working on, and there was no consistent terminology even for the names of the planets.⁸ W.F. Ryan's remark that, although one sixteenth-century scholar's 'epistles on astrology continued to be copied, ... there was little new added to the literature of the subject' in the next century and a half illustrates the situation well.⁹ Similarly, there is very little

⁶ W.F. Ryan, *The Bathhouse at Midnight. An Historical Survey of Magic and Divination in Russia* (Stroud, 1999). Animals, plants, and natural phenomena were often, but not exclusively, implicated in Muscovite witchcraft trials – see V.A. Kivelson, *Desperate Magic: The Moral Economy of Witchcraft in Seventeenth-Century Russia* (Ithaca and London, 2013) and C.L. Griffin, 'The Production and Consumption of Medical Knowledge in Seventeenth-Century Russia: The Apothecary Chancery', PhD thesis, University College London, 2012, ch. 6.

⁷ I. Shevchenko, 'Remarks on the Diffusion of Byzantine Scientific and Pseudo-scientific Literature Among the Orthodox Slavs', *The Slavonic and East European Review*, 59/3 (1981), pp. 321–45. For a summary of attitudes to science in the Byzantine Empire, see E. Nicolaidis et al., 'Science and Orthodox Christianity: An Overview', *Isis*, 107/3 (2016), pp. 542–66.

⁸ W.F. Ryan, 'Astronomy in Church Slavonic: Linguistic aspects of cultural transmission', in *The Formation of the Slavonic Literary Languages*, 1985, pp. 53–60.

⁹ Ryan, *The Bathhouse at Midnight*, 393. The scholar in question was Maxim the Greek (1475–1556), who had studied in Italy at the height of the Renaissance and produced a series of treatises fully versed in contemporary anti-astrological debates (O.L. Akopian, 'Maksim Grek, Savonarola i bor'ba s astrologiei', *Dialog so vremenem*, 42 (2013), pp. 91–103).

evidence for any use of even the simplest instruments until the second half of the seventeenth century, when their importation by European immigrants began, and not in any significant numbers until the eighteenth century.¹⁰ Even in cartography, despite its growing importance to the administration of Muscovite lands and the development of the imperial imagination, there was no standard of projection, orientation, or scale and no formal training programmes.¹¹

The reasons for such a low level of penetration of European models of natural knowledge, either in its scholastic forms or as the ‘new’ natural philosophy of the Scientific Revolution, deserve their own full-length study. Some suggestions may be sketched out. One important factor was geography.¹² Unlike many Western and Central European lands, early modern Russia did not have a dense or well-connected network of urban settlements that would encourage the constant circulation of people and knowledge. As Andreev notes, the lack of mobility or a coherent social identity discouraged the development of institutions comparable to European universities.¹³

The lack of such institutions also hindered the emergence of indigenous systems of natural knowledge. As Kivelson and Shaheen have argued, belief in witchcraft and magic more generally in early modern Russia resists attempts to read it through conceptual frameworks developed for contemporary European phenomena because

¹⁰ W.F. Ryan, ‘Scientific Instruments in Russia from the Middle Ages to Peter the Great’, *Annals of Science*, 48/4 (1991), pp. 367–84.

¹¹ Kivelson, *Cartographies of Tsardom*, 22–3.

¹² For a well-considered view of the challenges and opportunities of what the author calls ‘the sheer fact of space’ in early modern Russia, see D.J.B. Shaw, ‘Russia’s Geographical Environment’, in M. Perkins (ed.), *The Cambridge History of Russia, i: From Early Rus’ to 1689* (Cambridge, 2006), pp. 19–43.

¹³ A.Iu. Andreev, *Russkie studenty v nemetskikh universitetakh XVIII – pervoi poloviny XIX veka* (Moscow, 2005), pp. 97, 99–100. On Muscovite urban environments, see D.J.B. Shaw, ‘Towns and Commerce’, in M. Perkins (ed.), *The Cambridge History of Russia, i: From Early Rus’ to 1689* (Cambridge, 2006), pp. 298–316 and D.J.B. Shaw, ‘Urban Developments’, in M. Perkins (ed.), *The Cambridge History of Russia, i: From Early Rus’ to 1689* (Cambridge, 2006), pp. 579–99.

Muscovy ... manifested no interest in formulating a comprehensive explanation for the efficacy of magic ... Without the intellectual or theological codification of its western counterparts, Russian magic functioned in an untidy, equivocal grey zone ... Categorization and systematic explanation generally seem to be quite alien to the mode of understanding evident in Muscovite approaches to the supernatural.¹⁴

As the authors note, the same may have been said of local magical practices in Western Europe at various points in time. However, European scholars and theologians developed a mythology of witchcraft that downplayed local differences in favour of a more or less unified explanation focused on satanic influences. 'Using the concerted power of courts, pulpits, and printing presses throughout western Europe,' – and here a crucial difference arises, for Russia had virtually none, – 'these demonologists indelibly altered European conceptions of magic.' By contrast, 'Muscovites high and low seemed content to confront the practical consequences of magic without pondering its origins.'¹⁵ The same may be said of the difference between European science, which depended on the development of underlying conceptual frameworks, and Muscovite ideas of nature.

Although the traditional view that Muscovy's lack of interest in European science was the result of religious obscurantism is far too simplistic, the cultural dominance of the Russian Orthodox Church did play a role. As a leading scholar has noted, Muscovy's long-standing aversion to secular culture marked its difference not only from Western Christianity but also from Byzantium, suggesting that the answer must be sought 'in the special nature of the reception of Christian culture by the Eastern Slavs.'¹⁶ This reception was shaped by historical contingency and political factors. The 'rise of Muscovy' in the 1450s coincided with the de facto establishment of an autonomous Russian Orthodox Church. Their close ideological union meant that the court was never conceptualized as

¹⁴ V.A. Kivelson and J. Shaheen, 'Prosaic Witchcraft and Semiotic Totalitarianism: Muscovite Magic Reconsidered', *Slavic Review*, 70/1 (2011), p. 28.

¹⁵ *Ibid.*, 27, 38.

¹⁶ V. Zhivov, *Language and Culture in Eighteenth-Century Russia*, trans. M.C. Levitt (Boston, 2009), p. 41.

a secular space that would present an alternative to the church.¹⁷ The clergy also exercised almost exclusive control over the production of written texts, particularly as the language of literary culture (Church Slavonic) increasingly diverged from the language of everyday speech and government business (Russian), which retained strong elements of orality even in its written forms.¹⁸ For reasons that are yet to be well understood, the printing press never came to play the role of an ‘agent of change’ in pre-Petrine Russia, where it was dominated by the Church with only a handful of secular books published before the 1700s.¹⁹

Thus, there was no institutional framework for the development of a systematic approach to the production of natural knowledge outside the religious domain. As for the latter, the Greek Fathers of the Church, greatly venerated by Orthodox Christians, ‘emphasized the limited capacity of the human senses and discursive reason to achieve a total apprehension of physical realities without faith’.²⁰ Moreover, as the Russian scholar of religion Dmitrii Furman has suggested,

... the efforts required to reach agreement between the different [Eastern] churches [were] so exhausting that the decisions of the first seven Ecumenical Councils became final, permitting no further alteration – while in the [West], theological innovation was at papal discretion.²¹

¹⁷ On the centrality of religious ritual to political practice, see M.S. Flier, ‘Political Ideas and Rituals’, in M. Perkins (ed.), *The Cambridge History of Russia, i: From Early Rus’ to 1689* (Cambridge, 2006), pp. 387–408.

¹⁸ J. Cracraft, *The Petrine Revolution in Russian Culture* (Cambridge, MA and London, 2004), pp. 31–5. On orality and literacy, see W.J. Ong, *Orality and Literacy: the Technologizing of the Word* (London, 2002).

¹⁹ G. Marker, ‘Russia and the “Printing Revolution”: Notes and Observations’, *Slavic Review*, 41/2 (1982), pp. 266–83.

²⁰ Nicolaidis et al., ‘Science and Orthodox Christianity’, 548. See also C.C. Knight, ‘Natural Theology and the Eastern Orthodox Tradition’, in R. Re Manning (ed.), *The Oxford Handbook of Natural Theology* (Oxford, 2013), pp. 213–26.

²¹ D. Furman, ‘Vybor kniazia Vladimira’, *Voprosy filosofii*, 6 (1988), pp. 94–9. The quote above is from a recent English-language summary of Furman’s thought (P. Anderson, ‘One Exceptional Figure Stood Out’, *London Review of Books*, 30 July 2015, pp. 19–28).

As a consequence, Russian Orthodox practice emphasized the observance of ritual (*obriadoverie*), given authority by long-standing custom, over everything else, including the study of scripture.²² This was not an environment conducive to the development of scholasticism or a system of natural knowledge based on religious concerns. By contrast, the fierce competition with Protestant and Catholic churches faced by the Orthodox Church in Ruthenia, the borderlands between Muscovy and the Polish-Lithuanian Commonwealth, drove the local Orthodox seminaries to adopt their rivals' educational forms, borrowing the curriculum of Jesuit colleges. By the 1640s, the premier such school was the so-called Mohyla Academy in Kiev, whose pupils studied – in Latin – natural philosophy and theology alongside other liberal arts.²³

From the middle of the seventeenth century, Muscovy began to develop a court culture that was more open to European influence, thanks in small part to immigrant expertise.²⁴ Eastern Ruthenia, under Muscovite control from the mid-1660s, provided the church and the court in Moscow with personnel who were familiar with European cultural models yet, crucially, still belonged to the Orthodox faith. Seminary graduates like Epifanii Slavinetskii, Dimitrii Rostovskii, and Simeon Polotskii came to play a major role in shaping elite Muscovite literary culture, translating a small number of secular texts (including Copernican cosmologies) and experimenting with Baroque forms

²² V. Zhivov, 'Vremia i ego sobstvennik v Rossii rannego Novogo vremeni (XVII–XVIII veka)', in V. Zhivov (ed.), *Ocherki istoricheskoi semantiki russkogo iazyka rannego Novogo vremeni* (Moscow, 2009), pp. 43–6.

²³ Andreev, *Russkie studenty v nemetskikh universitetakh*, pp. 102–105. For a still-current overview of perspectives on the Kiev Mohyla Academy, see F.E. Sysyn, 'Peter Mohyla and the Kiev Academy in Recent Western Works: Divergent Views on Seventeenth-Century Ukrainian Culture', *Harvard Ukrainian Studies*, 8/1-2 (1984), pp. 155–87. Recent research has highlighted the role of Latin books in its operation (L. Charipova, *Latin Books and the Eastern Orthodox Clerical Elite in Kiev, 1632–1780* (Manchester, 2006)).

²⁴ L. Hughes, 'Cultural and Intellectual Life', in M. Perkins (ed.), *The Cambridge History of Russia*, i: *From Early Rus' to 1689* (Cambridge, 2006), pp. 640–62; E. Levin, 'Muscovy and Its Mythologies: Pre-Petrine History in the Past Decade', *Kritika: Explorations in Russian and Eurasian History*, 12/4 (2011), pp. 773–88.

of poetry in Russian. The curriculum of the Slavo-Greco-Latin Academy in Moscow, founded in 1685 on the model of Ruthenian schools, featured Aristotelian physics based on Jesuit natural philosophy.²⁵

This Polish-Ukrainian influence explains some of the growing interest in European astrology that is attested at the Muscovite court from the mid-seventeenth century. Simeon Polotskii, for example, incorporated astrological motifs into his poetry and, according to legend, cast horoscopes.²⁶ Occasional references to astrological knowledge, almost always associated with Polish or German sources, occur in a small number of manuscripts surviving from the sixteenth and seventeenth centuries. These, too, often originated from Ruthenian scribes.²⁷ Although celestial portents loomed large in the Muscovite imagination, in this area, as with magic, no attempts seem to have been made at a systematic elucidation of astrological principles.

Another source of astrological and other forms of European natural knowledge was the expertise of immigrants from Western Europe. As early as the fifteenth century, Muscovite Tsars employed Western European architects and medical doctors. Given that astrology was an integral element of contemporary medical practice, royal physicians of European origin inevitably relied on astrological calculations in their work. Evidence also suggests that Russian monarchs realized that European astrology had its political uses and tried to improve their understanding of the astrological ‘logic of transformation of political and astronomical facts’ by, for example, quizzing their European physicians on astrology’s underlying principles.²⁸

²⁵ N.A. Chrissidis, *An Academy at the Court of the Tsars: Greek Scholars and Jesuit Education in Early Modern Russia* (DeKalb, IL, 2015).

²⁶ D.O. Sviatskii, ‘Ocherki istorii astronomii v Drevnei Rusi. Chast’ III’, *Istoriko-astronomicheskie issledovaniia*, 9 (1966), pp. 39–48.

²⁷ P.P. Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom* (2 vols., St Petersburg, 1862), i, 278–81.

²⁸ A.P. Bogdanov and R.A. Simonov, ‘Prognosticheskie pis’ma doktora Andreasa Engel’gardta tsariu Alekseiu Mikhailovichu’, in R.A. Simonov (ed.), *Estestvennonauchnye predstavleniia Drevnei Rusi. Schislenie let. Simvolika chisel. ‘Otrechennye’ knigi. Astrologiia. Mineralogiia* (Moscow, 1988), pp. 151–208. The article contains an excellent analysis of the attitude

The seventeenth century also saw the institutionalization of foreign medical expertise at the Apothecary Chancery (*Aptekarskii prikaz*). This was an area where the strongest claims to the existence of a system of natural knowledge in pre-Petrine knowledge may be made. Here, production as well as dissemination of knowledge about *materia medica* and the human body took place. This knowledge, constructed in accordance with European medical theory and practice, was codified in writing; inevitably, the process involved input from both European and local experts and laypersons. Because texts were compiled on orders from Russian administrators, the production of medical knowledge was a hybrid process shaped by Europeans and Muscovites alike. The practical focus of these activities and the collective nature of authorship (wholly in line with Muscovite literary traditions) meant that medical theory was almost never elaborated.²⁹

However, the Apothecary Chancery relied on European immigrants who staffed all three levels of its hierarchy: physicians, artisans, and surgeons. When, after 1654, Russian apprentices were sent to the Chancery, they were apparently only trained for the lowest rank and rarely permitted to take part in the production of systematized knowledge, like the compilation of reports.³⁰ A similar situation could be observed in the Apothecary Chancery's botanical collection.³¹ Foreign experts appear to have rather jealously guarded the underlying principles of their expertise from indigenous eyes. The locals, in turn, showed little interest in pursuing such knowledge. What science existed in Muscovy, then, was highly limited both in scope and circulation.

towards European astrology at the court of Tsar Alexei, the father of Peter I. See also R.A. Simonov, 'Rossiiskie pridvornye "matematiki" XVI-XVII vekov', *Voprosy istorii*, 1 (1986), pp. 76–84. For the political uses of astrology in early modern Europe, see P. Curry, *Prophecy and Power: Astrology in Early Modern England* (Princeton, 1989).

²⁹ For a comprehensive guide to the Apothecary Chancery, see Griffin, 'The Production and Consumption of Medical Knowledge'. As Griffin notes, 'theory was not banned; it was simply not a focus of the court's activity' (p. 216).

³⁰ *Ibid.*, 77–80, 145–6.

³¹ R. Koroloff, 'Seeds of Exchange: Collecting for Russia's Apothecary and Botanical Gardens in the Seventeenth and Eighteenth Centuries', PhD dissertation, University of Illinois at Urbana-Champaign, 2014, pp. 27–43.

That many of the cultural imports of the Petrine era had in some form been known at the court of his father has by now been well established. Viktor Zhivov's description of this court culture as 'esoteric' seems particularly apposite.³² It was shared by a select and closed-off group (possibly no more than fifty people) and tinged with a hint of subversive mystery. Peter I's grand innovation was to open up that culture to a much wider, though still limited, section of society, an enterprise continued by his successors. This thesis will consider the role played by science in this process – a subject that has received surprisingly little scholarly attention until now.

To this day, the pioneering multi-volume collections of materials on the history of the Petrine era and of the Academy of Sciences, published by Petr Pekarskii in the nineteenth century, remain some of the most comprehensive studies of the period. The first presents a narrative of the development of secular learning institutions in Petrine Russia and provides an excellent chronological overview still relied upon by many scholars.³³ Pekarskii's second major study is structured around the biographies of specific individuals associated with the Academy of Sciences.³⁴ Much like his work on Peter I, Pekarskii's *Istoriia Imperatorskoi Akademii nauk v Peterburge* ('The history of the Imperial Academy of sciences in St Petersburg') remains an indispensable guide to the first half-century of the Academy's existence. However, the author's focus on academicians meant that the Academy's engagement with the wider culture of the Russian nobility fell outside the scope of the work. At the same time, the separation of the work into two volumes, one devoted to foreign academicians and one to Russian members, served to encourage a nationalistic view of the early years of the institution. A certain anticlerical bias on the author's part also encouraged the entrenchment of a 'conflict thesis' view of the relationship between the Academy and the Russian Orthodox Church

³² Zhivov, *Language and Culture*, p. 45.

³³ Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom*.

³⁴ P.P. Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge* (2 vols., St Petersburg, 1870–3).

in later historiography. While Pekarskii's opus remains an invaluable source of information, it is perhaps now best seen as a collection of primary sources, alongside the monumental ten-volume collection of materials from the Academy's archives published at the end of the nineteenth century and covering its history up to 1750.³⁵

Unsurprisingly, Soviet historians of science readily embraced a nationalistic, anticlerical, and positivist view of science in eighteenth-century Russia. In broad strokes, the narrative they proposed described the struggles of a small group of devoted and talented researchers struggling for relevance and recognition under a tyrannical monarchy that did not appreciate their importance and an obscurantist church that wished to thwart them at every turn. This body of scholarship can be divided into two kinds. The first replicated Pekarskii in focusing on the heroic biographies of select scientists and demonstrating the value of the contributions they made, against odds, to the progress of human knowledge. A recurrent subplot concerned the history of foreign domination at the Academy. As David Griffiths notes in his overview of this class of literature,

Soviet histories of the Academy ... have ... tended to confine themselves to lauding the efforts of Peter I to establish the institution, ... making disparaging remarks concerning the talents and loyalties of the foreigners who served in and controlled the Academy in the interim period, and then passing quickly on to Lomonosov, whose entry into the hallowed halls is interpreted as the watershed in the history of Russian science.³⁶

As Griffiths suggests, the key figure in the historiography of Russian eighteenth-century science is Mikhailo Lomonosov (1711–1765), probably the most accomplished Russian natural philosopher of the period and an important literary figure. One recent study estimates the number of works devoted to his life at over four thousand.³⁷

³⁵ M.I. Sukhomlinov (ed.), *Materialy dlia istorii Imperatorskoi Akademii nauk* (10 vols., St Petersburg, 1885–1900), hereafter *MIAN*.

³⁶ D.M. Griffiths, 'The Early Years of Petersburg Academy of Sciences as Reflected in Recent Soviet Literature', *Canadian-American Slavic Studies*, 14/3 (1980), p. 1.

³⁷ S.A. Usitalo, *Invention of Mikhail Lomonosov: A Russian National Myth* (Boston, 2013), pp. 13–14.

From the middle of the twentieth century, a second type of scholarship has emerged that focuses on the history of particular scientific theories and concepts such as heliocentrism, materialism, or Newtonianism in Russia. Among these are some outstanding studies.³⁸ However, these works tended to consider the production of natural knowledge in isolation from external circumstances, except insofar as these hindered or assisted the progress of science. The social dimension of scientific knowledge in eighteenth-century Russia remained largely unexplored. This was despite a dramatic shift in the historiography of science of the past thirty to forty years away from a focus on the biographies of individual ‘great scientists’ to an approach informed by an understanding of the social and cultural contexts of the scientific enterprise. As Jan Golinski describes it, this

... break with the project of epistemological validation of scientific knowledge [...] brought in its train a series of novel techniques for the study of science as an aspect of human culture ... [T]he uncoupling of historical and sociological inquiry from issues of truth, or realism, or objectivity opened the way to a remarkably productive period in the understanding of science as a human enterprise.³⁹

By contrast, the body of scholarship discussed above has, for the most part, been concerned precisely with ‘epistemological validation’ of science in Russian history. One notable departure from this idea, in intention if not always in fact, was Alexander Vucinich’s 1965 *Science in Russian Culture: A History to 1860*, described by the author as

... a historical and sociological analysis of the growth of the *scientific attitude* in Russia – the development of the specific view toward the origin, value, meaning, and utility of secular knowledge that is held today by most intellectuals in Russia and the West.⁴⁰

³⁸ See, for example, B.E. Raikov, *Ocherki po istorii geliotsentricheskogo mirovozzreniia v Rossii: iz proshlogo russkogo estestvoznaniia* (2nd ed., Moscow, 1947); N.F. Utkina, *Estestvennonauchnyi materializm v Rossii XVIII veka* (Moscow, 1971); V.J. Boss, *Newton and Russia: The Early Influence, 1698–1796* (Cambridge, MA, 1972).

³⁹ J.V. Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (2nd ed., Chicago and London, 2005).

⁴⁰ A.S. Vucinich, *Science in Russian Culture: A History to 1860* (London, 1963), p. xv.

However, Vucinich's study relied largely on Russian secondary sources and shared many of their weaknesses. By treating the 'scientific attitude' as a self-contained phenomenon rather than a set of notions developed and negotiated in specific social conditions, Vucinich failed to explore how these notions were appropriated in Russian culture. He also largely followed the traditional narrative by proceeding from Peter I, whose approach to science he saw as utilitarian and instrumentalist, straight to the genius of Lomonosov. Out of the 450-odd pages of the volume, the two decades between the Academy's foundation in 1725 and the ratification of its first official charter in 1747 – a crucial period for the propagation of the 'scientific attitude' – merited just seven and a half. Much attention was devoted to individual scientific achievements, the perceived nationalistic conflict, and supposed resistance of the Church, 'clinging tenaciously to its Russo-Byzantine tradition and distorted Scholasticism ... ready to pounce on any scientific ideas that seemed incompatible with Orthodox theology'.⁴¹

Ultimately, most of these shortcomings can be attributed to an anachronistic view of science in that period. Although Vucinich admitted that 'during the first three decades of its existence the Academy was the main instrument in the growing Westernization of Russian culture', he believed that academicians 'were less preoccupied with transplanting Western science to Russia than with pursuing original investigations'.⁴² This implication that original research was incompatible with an active role in the cultural life of post-Petrine Russia ignores the countless studies of European science that have demonstrated how inextricably the pursuit of scientific knowledge is linked to the social conditions of the age. In the eighteenth century, in particular, science acquired a new cultural significance thanks to its close connection with contemporary notions of civility and politeness.⁴³

⁴¹ Ibid., 87.

⁴² Ibid., 91.

⁴³ W. Clark, J.V. Golinski and S. Schaffer, 'Introduction', in W. Clark, J.V. Golinski and S. Schaffer (eds.), *The Sciences in Enlightened Europe* (Chicago and London, 1999), pp. 3–31 is a useful overview of the historiography of the period.

It has only been in the last decade and a half that a more nuanced view of the history of science in eighteenth-century Russia has begun to emerge. A small but growing group of scholars is making good use of the methodological advances described above. Ernest Zitser and Robert Collis have proposed new, fruitful interpretations for the role of early modern practices now seen as ‘esoteric’, such as astrology and alchemy, in the culture of the Petrine court.⁴⁴ Works by Michael Gordin, Simon Werrett, Kirill Ospovat, and Steven Usitalo, reviewed below, have considerably improved our understanding of how the Academy of Sciences and its members fit within the larger intellectual, political, and cultural context of eighteenth-century Russia.⁴⁵ Finally, a new generation of scholars is exploring the production of natural knowledge within state-sponsored institutions other than the Academy of Sciences and mapping Russia’s participation in global commercial and scientific networks. Studies on the Muscovite Apothecary Chancery, its eighteenth-century successors, and the circulation of *materia medica* by Clare Griffin;

⁴⁴ E.A. Zitser, ‘The Vita of Prince Boris Ivanovich “Korybut”-Kurakin: Personal Life-Writing and Aristocratic Self-Fashioning at the Court of Peter the Great’, *Jahrbücher für Geschichte Osteuropas*, 59/2 (2011), pp. 163–94; R. Collis, *The Petrine Instauration: Religion, Esotericism and Science at the Court of Peter the Great, 1689-1725* (Leiden, 2011); E.A. Zitser and R. Collis, ‘On the Cusp: Astrology, Politics, and Life-Writing in Early Imperial Russia’, *The American Historical Review*, 120/5 (2015), pp. 1619–52.

⁴⁵ M.D. Gordin, ‘The Importation of Being Earnest: The Early St. Petersburg Academy of Sciences’, *Isis*, 91/1 (2000), pp. 1–31; S. Werrett, ‘An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia’, PhD dissertation, University of Cambridge, 2000; K. Ospovat, ‘Lomonosov i “Pis’mo o pol’ze stekla”: Poeziia i nauka pri dvore Elizavety Petrovny’, *Novoe Literaturnoe Obozrenie*, 87 (2007), pp. 148–83; K. Ospovat, ‘Estetika Sumarokova: K sotsial’nym izmereniiam literaturnoi refleksii’, in R. Vroon (ed.), *Ody torzhestvennyia. Elegii liubovnyia* (Moscow, 2009), pp. 498–552; S. Werrett, *Fireworks: Pyrotechnic Arts and Sciences in European History* (Chicago and London, 2010); S. Werrett, ‘The Schumacher Affair: Reconfiguring Academic Expertise across Dynasties in Eighteenth-Century Russia’, *Osiris*, 25/1 (2010), pp. 104–26; K. Ospovat, ‘Gosudarstvennaia slovesnost’: Lomonosov, Sumarokov i literaturnaia politika I.I. Shuvalova v kontse 1750-kh gg.’, in P. Pesonen, G. Obatnin and T. Huttunen (eds.), *Evropa v Rossii: Sbornik statei* (Moscow, 2010), pp. 6–65; K. Ospovat, ‘Mikhail Lomonosov Writes to His Patron: Professional Ethos, Literary Rhetoric and Social Ambition’, *Jahrbücher für Geschichte Osteuropas*, 59/2 (2011), pp. 240–66; and Usitalo, *Invention of Mikhail Lomonosov*.

on botanists and botanical gardens by Rachel Koroloff; on mineralogy and mining by Anna Graber have greatly expanded our understanding of scientific practices at work in a variety of institutional contexts.⁴⁶

The image of science in eighteenth-century Russia that has emerged as the result of this work is remarkably more complex than the traditional view. From Peter I onwards, science's public role extended far beyond the provision of technical expertise. For many members of Russian elites, it was a means of expressing themselves on the political stage, as in panegyric literature, and in private life, where the language of science could provide a sense of control over one's fate. For various rulers and their courtiers, science was a cultural model that could be invoked to support their claims to relevance and power. In many cases, these studies have echoed findings regarding the role of science in the development of European overseas empires, demonstrating the role that science played in Russia's claims to imperial status.⁴⁷ People engaged in the production of natural knowledge could, in turn, exploit these expectations to secure patronage or emphasize the importance of their work.

The first major contribution to this body of scholarship was made in 2000 by Michael Gordin, who challenged the standard view that the foundation of the Academy of

⁴⁶ Griffin, 'The Production and Consumption of Medical Knowledge' and C.L. Griffin, 'In Search of an Audience: Popular Pharmacies and the Limits of Literate Medicine in Late Seventeenth- and Early Eighteenth-Century Russia', *Bulletin of the History of Medicine*, 89/4 (2015), pp. 705–32; Koroloff, 'Seeds of Exchange'; A. Graber, 'Tsardom of Rock: State, Society, and Mineral Science in Enlightenment Russia', PhD dissertation, Yale University, 2016.

⁴⁷ In addition to Koroloff's work, this is the subject of Y. Slezkine, 'Naturalists Versus Nations: Eighteenth-Century Russian Scholars Confront Ethnic Diversity', *Representations*, 47 (1994), pp. 170–95 and R.T. Jones, *Empire of Extinction: Russians and the North Pacific's Strange Beasts of the Sea, 1741–1867* (2014). For some examples of research on science and empire, see A. Lafuente, 'Enlightenment in an Imperial Context: Local Science in the Late-Eighteenth-Century Hispanic World', *Osiris* (2000), pp. 155–73; R. Iliffe, 'Science and Voyages of Discovery', in R. Porter (ed.), *The Cambridge History of Science*, iv: *Eighteenth-Century Science* (Cambridge, 2003), pp. 618–45; J. Delbourgo and N. Dew, *Science and Empire in the Atlantic World* (New York and London, 2008).

Sciences was driven by purely utilitarian concerns. Gordin suggested that while in Western Europe social conventions regulated the conduct of natural philosophers, in Russia the situation was reversed: the Academy (and earlier Petrine importations of scientific culture) served as an emblem and exemplar of polite European behaviour to Russian elites.⁴⁸ By turning the focus on the broader cultural significance of scientific institutions, Gordin opened up a new avenue of research; his analysis of the Academy's foundational document, the so-called Project, has deservedly proved influential. Gordin largely failed, however, to draw a distinction between the intentions of the Project and the realities of its implementation and did not consider whether Russian elites understood the Academy's role as an 'exemplar', a topic that may have remained outside the scope of his article.

In a similar vein, Simon Werrett's excellent studies on the Academy have helped to place it in the context of Petrine cultural reform, the post-Petrine political landscape, and the wider eighteenth-century European trend towards public, polite science. Werrett's conclusions may be grouped under three headings: the Academy's role in the promotion of cameralist 'good order'; the importance of its efforts to secure patronage; and the idiosyncratic nature of public scientific demonstration in Russia, centred on the production of fireworks displays.⁴⁹ Notably, Werrett's analysis of the Academy's Project departed from Gordin in linking it to Petrine and post-Petrine efforts to 'militarise' Russian society and create a 'well-ordered police state'. Although, as Marc Raeff suggested, cameralism was the dominant philosophy of state administration in eighteenth-century Russia (one with which the Academy shared institutional roots), recent scholarship has demonstrated the significance of the gap between cameralist rhetoric and reality.⁵⁰ Accordingly, my view of the cameralist ideals underpinning the

⁴⁸ Gordin, 'The Importation of Being Earnest'.

⁴⁹ Werrett, 'An Odd Sort of Exhibition'; Werrett, 'The Schumacher Affair'; Werrett, *Fireworks*.

⁵⁰ A. Wakefield, *The Disordered Police State: German Cameralism as Science and Practice* (Chicago, 2009). For Raeff's views on cameralism, see M. Raeff, *The Well-Ordered Police State: Social and Institutional Change Through Law in the Germanies and Russia, 1600–1800* (New Haven, 1983).

Academy's organization is tempered by an understanding of the influence of contingent circumstances and individual actions; rather than consider it an extension of the state apparatus, as Werrett tends to do, I see it as an institution dependent upon the state but acting autonomously. As I demonstrate, the reality on the ground was anything but well-ordered, whatever the intentions of professors and administrators.

The second of Werrett's major themes has been to point out the centrality of patron-client relationships to the fortunes of the St Petersburg Academy, highlighting in particular the role played by its German administrator Johann Daniel Schumacher (1690–1761), whose management of the Academy had been routinely demonized in nationalist narratives of Russian science. Werrett convincingly demonstrated how the Academy's survival in the first few decades following Peter I's death in 1725 – the so-called 'Dark Era' of Anna Ioannovna – depended to a large extent on its ability to secure patronage at the Imperial court, through means varying from the production of elaborate fireworks displays to astrological predictions to the infamous 'Ice Wedding'.⁵¹ Without disputing his conclusions, I develop this theme by focusing on the Academy's publication activities to show how these not only served the interests of the court, but actively sought to shape the court's culture in ways beneficial to the Academy's interests. Indeed, I argue that the Academy's efforts were instrumental in the formation of Russian polite culture and thus had a far more significant impact on society than has previously been recognized.

Werrett's third major contribution has been to note that the relative failure of public lecturing led to the development of a specifically local culture of spectacular demonstrations. Later, as he suggests, the production of 'courtly spectacle' was used by Lomonosov

⁵¹ Werrett, 'An Odd Sort of Exhibition', chs. 6–9; Werrett, 'The Schumacher Affair'. The 'Ice Wedding' is traditionally seen as an expression of Anna's unenlightened despotism; Werrett highlights its role as a demonstration of Imperial power over ethnically diverse subjects, aided by Academic science. For a correction to many criticisms of Anna's rule, see A. Lipski, 'A Re-Examination of the "Dark Era" of Anna Ioannovna', *Slavic Review*, 15/4 (1956), pp. 477–88.

to secure individual patronage by essentially replicating the Academy's relationship with Anna's court on a personal level, bolstering the social claims of his patron Ivan Shuvalov.⁵² The same client-patron relationship has been the subject of Kirill Ospovat's efforts, inspired by Mario Biagioli's seminal *Galileo, Courtier*, to shed new light on the integration of scientific expertise and reputation into strategies of self-promotion at the Russian court.⁵³ His investigations of disputes between Lomonosov and Aleksandr Sumarokov, another poet and client of Lomonosov's patron Count Ivan Shuvalov, have demonstrated the extent to which Russian members of the Academy were familiar with Western tropes of polite science and sought to turn them to their advantage.⁵⁴ Similarly, Steven Usitalo's research has highlighted the extent to which Lomonosov consciously employed European models of self-presentation to secure his reputation and legacy.⁵⁵

Although valuable, the body of scholarship reviewed above shares one common shortcoming: it focuses on the Academy and its members or immediate patrons, stopping short of exploring how such tropes were appropriated by other members of the Russian elites. Thus, in my own study I have attempted to supplement my research on the Academy and its activities with case studies of their reception by members of the Russian elite: diplomats, administrators, military officers, and aristocratic grantees. I also explore, on the basis of documents produced in the course of the Second Kamchatka Expedition of 1733–46, interactions between academicians and servitors of lower rank in the provinces and colonial outposts of the Russian Empire. Throughout, I pay close attention to variations in Russian responses to what may be termed the popularization of science in eighteenth-century Russia.

The wealth of surviving materials for the history of the Academy, uncovered by Pekarskii and his colleagues in the course of the nineteenth century, provides a fertile

⁵² Werrett, 'An Odd Sort of Exhibition', chs. 10–11. See also Werrett, *Fireworks*, which provides a comparative perspective on the Russian case.

⁵³ See Ospovat, 'Lomonosov i "Pis'mo o pol'ze stekla"' and Ospovat, 'Lomonosov Writes to His Patron'.

⁵⁴ Ospovat, 'Estetika Sumarokova' and Ospovat, 'Gosudarstvennaia slovesnost'.

⁵⁵ Usitalo, *Invention of Mikhail Lomonosov*.

ground for the study of that institution, but this has resulted in an approach that privileges intentions over responses, institutions over people, and authors over readers. Similar issues have long plagued the study of scientific popularization.⁵⁶ That field has only recently seen a turn away from what has been called a linear, top-down ‘diffusionist’ model – in which scientific knowledge is produced by experts and then vulgarised for dissemination among the masses – in favour of an approach that pays more attention to processes of communication and how these are shaped by all participants.⁵⁷

The same kind of awareness must be shown in the study of the popularization of science in eighteenth-century Russia. The heavy bias in favour of institutions and ‘experts’ in the existing literature might suggest that this requires turning away from examining the Academy and its activities as a matter of principle. Moreover, as Jonathan Topham notes,

The diverse international lexicons of ‘popular science’, ‘*science populaire*’, and ‘*Populärwissenschaft*’ ... share common origins in Europe and North America in such large-scale changes as the industrialization of print communication and the emergence of the disciplinary sciences.⁵⁸

If mass print and institutionalization of science are necessary conditions for the emergence of ‘popular science’, the use of the term ‘popularization’ may even be seen as problematic in the context of the eighteenth century – and especially so for Russia, where the size of the reading public did not exceed thirty thousand at any time during the century, out of approximately twenty-eight million inhabitants.⁵⁹ Yet it is arguably precisely the small size of the reading public that gave the Academy of Sciences a much greater influence on Russian elite culture than it could otherwise have hoped for.

⁵⁶ A.W. Daum, ‘Varieties of Popular Science and the Transformations of Public Knowledge: Some Historical Reflections’, *Isis*, 100/2 (2009), pp. 319–32.

⁵⁷ J.A. Secord, ‘Knowledge in Transit’, *Isis*, 95/4 (2004), pp. 654–72.

⁵⁸ J.R. Topham, ‘Introduction’, *Isis*, 100/2 (2009), p. 313.

⁵⁹ G. Marker, *Publishing, printing, and the origins of intellectual life in Russia, 1700–1800* (Princeton, 1985), p. 190.

One quirk of the history of Russian print is that between 1727 and 1755, most secular books and the only newspaper and magazine in the country were published by a single printing press – that of the Imperial Academy of Sciences. In discussing the dissemination and reception of European texts in eighteenth-century Russia, historians have typically treated the Academy as a neutral mediator, with no agenda of its own save, perhaps, the need to escape censure by the state or the church. While this broadly reflects the view of the function of print espoused by Elizabeth Eisenstein, later scholarship has provided a wealth of evidence showing how the printer's motives can be as important as, and indeed may trump, the intentions of the author or translator.⁶⁰ In this light, the Academy's virtual monopoly over print takes on a new significance – all the more so since, as Werrett has demonstrated, the expansion of academic printing facilities during the 1730s must be seen in the context of its administrators' efforts to secure the Academy's position in Russian society.⁶¹ More than just protecting the Academy by serving the needs of the court, as Werrett suggests it did, the press served the needs of the Academy by giving it the means to shape the culture of the court.

That books, newspapers, and magazines served as major conduits of European cultural concepts for the reading elites of eighteenth-century Russia has long been recognized by cultural historians. Despite this, there are relatively few full-length studies of the history of the Russian book in the eighteenth century – especially in Anglophone

⁶⁰ E. Eisenstein, *The Printing Press as an Agent of Change: Communications and Cultural Transformations in Early Modern Europe* (Cambridge, 1980). R. Darnton, *The Business of Enlightenment. A Publishing History of the Encyclopédie, 1775–1800* (Cambridge, MA, 1987) is perhaps the best-known study of the complexities of print in the eighteenth century; for a recent overview of developments in the field, see R. Darnton, "What is the History of Books?" Revisited', *Modern Intellectual History*, 4/3 (2007), pp. 495–508. For a view of the relationship between printers and producers of natural knowledge, see A. Johns, *The Nature of the Book: Print and Knowledge in the Making* (Chicago and London, 1998); pp. 6–57 contain a cogent critique of Eisenstein's thesis in regards to science.

⁶¹ Werrett, 'An Odd Sort of Exhibition', 120–3.

scholarship, where Gary Marker's 1985 monograph remains unsurpassed.⁶² Marker's well-sourced and nuanced book presented an important corrective to earlier assumptions about Russian print culture, highlighting the many ways in which it differed from the more developed book markets of Western Europe. His narrative, which covers the period between 1700 and 1800, describes the gradual development of private commercial publishing that served a variety of tastes among the reading public – not just the courtly elites of St Petersburg, but also, by the end of the century, the provincial nobility and the merchant class.

However, Marker's work, valuable as it is, has a number of flaws, the most significant of which is that it ignores the multilingual nature of Academic publishing. Over the first twenty years of its operation, the output of the Academy's press, according to my calculations, was divided almost equally between titles in Russian and in other languages (mostly German, Latin, and French).⁶³ Moreover, original (rather than translated) texts in Russian comprised as little as 20.6% of the total output between 1727 and 1747. Around half were laws and regulations printed on the orders of the Senate, so that only a tenth of all titles were produced in Russian specifically for publication by the Academy.⁶⁴ By contrast, three quarters of foreign-language volumes were originals rather than translations. In total, original texts in languages other than Russian came to 43.8% of the press' total output.

These figures suggest that, by omitting foreign-language publications, Marker's analysis missed a very significant portion of the Academy press' output. Similarly, Marker's apparent omission of a large number of ephemeral publications is corrected in this thesis.

⁶² In Russian, the most significant contributions have been made by the Soviet scholar Sergei Luppov (S.P. Luppov, *Kniga v Rossii v pervoi chetverti XVIII veka* (Leningrad, 1973) and S.P. Luppov, *Kniga v Rossii v poslepetrovskoe vremia* (Leningrad, 1976)). Marker, *Publishing, printing, and the origins of intellectual life* is the seminal work in English.

⁶³ Specifically, 41.7% and 46% of the output in 1727–47 are in Russian and foreign languages, respectively. The rest are multilingual titles that included Russian texts.

⁶⁴ Another 22 titles were originally composed in Russian and printed side-by-side with translations into German, French, or Latin, bringing the total share to 14.5%.

The pattern of Academic printing that emerges when these omissions are taken into account is very different from what Marker described, showing how foreign-language publications by the Academy shaped Russian approaches to print culture. Instead of imposing artificial distinctions between Russian and foreign texts or ‘proper’ books and marginal publications, we must approach the Academy’s publishing activities as a unified process. Thus, for example, when foreign-language titles are included in the analysis of genre distributions, scholarly texts – on science, history, and geography – emerge as one of the largest groups, casting doubt on Marker’s assertion that ‘the repertoire of published books [was] completely unrepresentative of the prominence of science within the Academy.’⁶⁵

Control over print gave the Academy an unprecedented opportunity to shape attitudes towards natural science and thus protect its position. In that light, the exact content of the texts published by the Academy’s was less significant than the cultural role they ascribed to natural knowledge. Accordingly, I am less interested in whether scientific ideas presented to the Russian public were ‘correct’, by modern or contemporary standards, than I am in claims about the function and value of these ideas, as well as the reception of these claims by the public. In the pages that follow, there will be no discussion of Newtonian theory, Euler’s mathematical formulas, or the significance of Lomonosov’s scientific contributions. These topics have already been explored in quite a lot of detail and I have little new to contribute here.⁶⁶ Moreover, the inevitable caveat to every study of this kind is that the number of native Russians with the background knowledge necessary to participate in contemporary scientific debates was vanishingly small.

⁶⁵ Marker, *Publishing, printing, and the origins of intellectual life*, 58–9. For my analysis of the Academy’s publication programme, see Chapters 3–4 of this thesis (pp. 102–146).

⁶⁶ See, respectively, Boss, *Newton and Russia*; R. Calinger, *Leonhard Euler: Mathematical Genius in the Enlightenment* (Princeton and Oxford, 2016); B.N. Menshutkin, *Russia’s Lomonosov: Chemist, Courtier, Physicist, Poet* (Princeton, 1952).

This is not, then, a thesis about Russian science or even science in Russia. Instead, it looks at how claims about natural knowledge were internalized, appropriated, and debated within Russian society and considers the complex relationship between competing discourses around the cultural purpose of science. In particular, it treats attitudes towards science as a particularly revealing facet of the process of the Europeanization of Russian elites. The nature of this process has been the subject of much debate over the past several decades. Since the 1980s, the dominant view has been that formulated by adherents of the Tartu-Moscow ‘school of semiotics’, led by Iurii Lotman. Lotman’s highly influential thesis posited a divide between the everyday ‘natural’ and the ceremonial ‘public’ modes of behaviour, suggesting that Russian Europeanization was marked by the imposition of essentially alien forms of everyday behaviour on the Russian nobility of the eighteenth-early nineteenth centuries. As a result, Lotman believed, nobles were faced with a choice between familiar Russian ways and a variety of Europeanized ‘roles’, which nonetheless remained ‘foreign’ to the nobility and the performance of which was highly theatrical.⁶⁷ From that perspective, the nobility’s interest in science – given its explicit links to European culture – must be seen as ‘a kind of performance ... the adornment of the fop (*shchegol*’), imitating foreign ... enlightenment for pleasure and distinction.’⁶⁸

However, Lotman’s dialectical view of Russia’s Europeanization has recently challenged by a succession of scholars. As Werrett notes elsewhere, the ‘theatricalization’ of life was a general feature of early modern life not limited to Russia.⁶⁹ More importantly, Lotman’s view of Russian nobility as locked into a binary opposition between ‘Russian’ and ‘European’ behaviour has been rightly criticized as reproducing a narrative of cultural conflict that can be traced back to the nineteenth century. Instead, his critics suggest,

⁶⁷ Lotman, Iurii, ‘Poetika bytovogo povedeniia v russkoi kul’ture XVIII veka’, in *Izbrannye stat’i v trekh tomakh*, i: *Stat’i po semiotike i tipologii kul’tury* (Tallinn, 1992), pp. 248–68.

⁶⁸ Werrett, ‘An Odd Sort of Exhibition’, 176.

⁶⁹ Werrett, *Fireworks*, 5.

... the worldview of much of the Russian elite was characterized by unproblematic cultural bilingualism [that] permitted nobles of both sexes to participate to varying degrees in European culture without detracting from their feelings of belonging to Russia and to experience both forms of behaviour as natural.⁷⁰

This view reinstates to the Russian elite (not confined to the nobility, but largely belonging to it) a significant degree of agency in choosing how and to what extent to ‘participate in European culture’. In a similar vein, the editors of a recent volume on Russian Europeanization argue persuasively for paying more attention to ‘what happens when the values and attitudes imposed by decree become interiorized and begin to affect the mental world of the elite’.⁷¹ This thesis adopts a similar approach. Rather than portray Russians as a passive audience that either accept or reject the ‘foreign’ European values being thrust upon them, it seeks to demonstrate the complexity and variety of responses to the successive and sometimes conflicting messages about the nature of European science promoted through state-sponsored institutions.

Nonetheless, the imposition of attitudes ‘by decree’ was carried out through institutions like the Academy – which were not, as we have seen, a neutral mediator but rather an active participant in the process. This alone justifies exploring how they functioned alongside a focus on the reception of prescribed attitudes. Moreover, a better understanding of what these attitudes were allows us to go beyond familiar sources in judging the influence of European science on the mental world of the Russian elite. Accordingly, the thesis has a dual focus: on the one hand, to describe the attitudes promoted by state-sponsored institutions and how these changed across time periods, various media, and different audiences; on the other hand, to trace, as far as possible, the reception

⁷⁰ M.L. Marrese, “‘The Poetics of Everyday Behavior’ Revisited: Lotman, Gender, and the Evolution of Russian Noble Identity’, *Kritika: Explorations in Russian and Eurasian History*, 11/4 (2010), p. 705.

⁷¹ A. Schönle and A. Zorin, ‘Introduction’, in A. Schönle, A. Zorin and A. Evstratov (eds.), *The Europeanized Elite in Russia, 1762–1825: Public Role and Subjective Self* (DeKalb, IL, 2016), p. 5.

of these attitudes, their internalization by various members of Russian society, and the ways in which such responses shaped, in their turn, the presentation of science. It will do so by unpacking the meanings with which the notion of science as a cultural phenomenon was invested over the period roughly between 1717 and 1765.

On the surface, 1717 is an inconspicuous year to begin with. Peter I spent much of the year away from Russia on a diplomatic mission to Western Europe, including France (where he visited the *Académie Royale des Sciences*). No major political events, military victories, or defeats shook the country. And yet the year 1717 arguably marks the beginning of a concerted effort to prescribe a specific, constructed, secular ‘European’ identity to the Russian elites, at least in St Petersburg. As part of this programme, and for the first time in the Petrine era, natural philosophy was presented as something other than the foundation of practical skills like ballistics or navigation – a topic of conversation or contemplation, the acceptance of which was a mark of a true European.⁷² In 1718, the Tsar mandated compulsory attendance at European-style assemblies and the collection of exhibits for public display in the Tsar’s cabinet of curiosities – the *Kunstkamera* – in St Petersburg.⁷³ From that point onwards, the idea that science could play a role in the culture of the court became the subject of a constant and surprisingly prominent debate.

Over the course of several decades, we can trace the development of three distinct discourses of the value of natural knowledge. The first, most vividly embodied in Peter’s *Kunstkamera* and closely linked to the emblematic language and imagery of his court, is curiosity – an approach to nature that prized above all the rare and the unusual as

⁷² Among other events in 1717–18, we can point to the publication of a set of translations from Dutch made by Jacob Bruce: an etiquette manual, a dictionary, and Christiaan Huygens’ *Kosmotheoros* (as *Kniga mirozreniia ili mnenie o nebesnozemnykh globusakh*). For the latter’s significance to Petrine cultural reform, see Gordin, ‘The Importation of Being Earnest’. For the connection between all three titles, see Werrett, ‘An Odd Sort of Exhibition’, 39–42.

⁷³ *Kunstkamera* is the Russian name of Peter I’s collection of natural curiosities, now comprising a part of Peter the Great Museum of Anthropology and Ethnography in St Petersburg. Throughout the text, I use ‘*Kunstkamera*’ to refer to Peter’s collection, in contradistinction to *Kunstammer* as one of the terms for cabinets of curiosities.

the subjects of philosophical study. When considering curiosity as a discourse of natural enquiry, one need not consider merely the occurrence of the word ‘curious’ and its cognates (in Russian, *liubopytnyi* or, in frequently in the eighteenth century, the loan word *kuriozny*) in texts.⁷⁴ Indeed, that might be counterproductive: as Neil Kenny rightly says, the meanings of curiosity were so hotly contested in the early modern period that it can only be understood ‘in the sense in which the later Wittgenstein used the term, that is, as a rope composed of numerous interwoven fibres that are neither identical nor unrelated to each other, with no ... ineliminable core ... running through the whole rope’.⁷⁵ By focusing on the reception of one of these ‘fibres’ – curiosity as a privileged form of natural enquiry focused on the extraordinary – we can go beyond textual use and consider instead the evidence for the adoption and internalization of this form of curiosity as an attitude even in those cases where the word itself does not appear. Following the lead of other scholars, I identify this process as the development of a ‘culture of curiosity’.⁷⁶

After Peter I’s death in 1725 and the inauguration of the Academy of Sciences in the same year, the significance of curiosity quickly faded. In public representations, it was supplanted, through circumstances the contingency of which must be acknowledged, by an alternative discourse of polite cameralism. This combined, sometimes uneasily, a Leibnizian belief in good order and the practical utility of natural knowledge with an emphasis on science’s function as a form of refined leisure. Over the next several decades, polite cameralism was promoted by first and foremost by foreign members of the Academy, particularly through its printing press, but its development was driven to

⁷⁴ That, unfortunately, is the approach adopted in K. Bogdanov, ‘Novye slova – novye veshchi’, in *O krokodilakh v Rossii* (Moscow, 2006), pp. 19–48, which otherwise contains a number of illuminating remarks on Russian responses to European natural knowledge.

⁷⁵ N. Kenny, *The Uses of Curiosity in Early Modern France and Germany* (Oxford, 2004), p. 10.

⁷⁶ See, for example, Whitaker, Katie, ‘The culture of curiosity’, in N. Jardine, J.A. Secord and E.C. Spary (eds.), *Cultures of Natural History* (Cambridge, 1996), pp. 75–90 and P. Fontes da Costa, ‘The culture of curiosity at The Royal Society in the first half of the eighteenth century’, *Notes and Records of the Royal Society*, 56/2 (2002), pp. 147–66.

a significant extent by specifically local circumstances: the centrality of state service to the lives of the nobility and the changing tastes of the imperial court. This produced an imaginary hybrid culture that encompassed ideas and practices characteristic of a variety of contemporary Western European elite groups, presented to Russian audiences as a model for emulation – the mark of belonging to Europe. The internalization of this hybrid culture, even as the Academy itself lost much of its relevance in the eyes of the court, played an important role in the Europeanization of Russian elites in the period between the two ‘great’ rulers of Russian historiography, Peter I and Catherine II.

The death in 1765 of Mikhailo Lomonosov, the dominant figure of Russian scientific and literary culture of that era, serves as an appropriate end point to the story told in this thesis. Catherine II’s reign, which began in 1762, saw significant changes in the everyday lives and intellectual concerns of the nobility and as such deserves its own study.

###

The focus on the discourses of curiosity, utility, and pleasure offers a novel interpretative framework for the role of European science in the Europeanization of Russian elites. What each had in common was an emphasis on the fact that science was not just a source of technical expertise or knowledge about nature, but a prestigious cultural phenomenon. To be European meant accepting the value of science, in whichever guise it was presented to the Russian public. This thesis traces the efforts to promote such attitudes and their reception over three parts arranged in a roughly chronological order.

Part I (‘The Curious Tsar’) considers the place of European natural philosophy in Petrine Russia and proposes a new approach to views of nature held and promoted by Peter and his followers. It disputes the standard claim that Peter’s sole or even primary concern was with technical training that promoted ‘useful’ applied disciplines at the expense of ‘abstract’ knowledge.

Chapter One demonstrates that views of nature held by Peter and his retinue were closely connected to the dominant political culture of his court. I argue that Petrine

attitudes towards natural knowledge were shaped by a Northern European ‘culture of curiosity’, which suggested that rare and unusual objects should be the focus of natural study and complemented the emblematic Baroque culture of the Petrine court. The focus on curiosity allows us to see certain idiosyncratic features of the Petrine era as representative of a characteristic view of the cultural, rather than purely practical, role of science with an internal logic of its own. A close reading of extant Russian responses to natural phenomena such as eclipses shows that this culture of curiosity was embraced by members of Russian elites and provided a mainstay of a Europeanized cultural identity even at this early stage.

Chapter Two examines the foundation of the Imperial Academy of Sciences in St Petersburg in 1725. By showing how the Academy’s foundation fit within the culture of institutional entrepreneurship recently postulated for the Petrine court, I demonstrate the contingent and fluid nature of this enterprise. A close reading of the Academy’s founding document shows how its idealized vision of European science reflected changing views of natural philosophy in the late Petrine era. Finally, I examine the gap between designs for the Academy and their implementation. Unable to attract prominent members of the Republic of Letters, the Academy was composed of younger scholars whose views diverged sharply from the Petrine culture of curiosity. Such contingent circumstances set the tone for the public representation of natural knowledge over the following two decades.

Part II (‘The Useful Academy’) examines the history of the St Petersburg Academy of Sciences and its interaction with Russian elites up to 1747. Building on earlier scholarship on the Academy’s efforts to secure patronage, I propose a new interpretive framework for the Academy’s interactions with Russian society within and beyond the court, built around its efforts to promote the discourse of *dulce et utile*.

Chapter Three suggests that the Academy’s embrace of the printing press allowed it to address the difficulties it faced in attracting interest in its educational institutions and public lectures. From 1727, the Academy’s professors, students, translators, and

administrators established a virtual monopoly over secular print, proving very adept at controlling the flow of knowledge to different audiences. Building on the Petrine separation of secular and religious printing, the Academy developed a tacit demarcation of spheres of intellectual influence with the Church, presenting itself as an arbiter of elite European culture. A concerted effort to develop a scientific Russian language with a more or less unified terminological system lowered barriers to the consumption of natural knowledge, but made access to it dependent on an implicit acceptance of Academic attitudes to science.

Chapter Four proposes a new approach to the Academy's printing activities that takes into account the multilingual and frequently ephemeral nature of its print production. By accepting private commissions, the Academy press served as an exemplar of the uses of print to Russian audiences. The Academy used its control over paratexts to share in the prestige of courtly literary production, police the dissemination of natural knowledge, and situate science within the context of polite European culture. The resulting discourse of 'polite cameralism' emphasized science's role as a form of refined leisure and its utility for state service and imperial expansion. I focus in particular on its promotion in the *Notes*, a bi-weekly journal produced by a group of academicians under Schumacher's supervision. Taken together, the Academy's printing activities contributed to the creation of a sphere of intellectual and literary activity separate, though not yet independent, from state service and attendance at court.

Chapter Five addresses the issue of the Academy's interaction with Russians outside the elite circles of St Petersburg, using the example of the Second Kamchatka Expedition (1732–44). On the basis of previously unexamined official instructions to local assistants, I show how academicians constructed and struggled to maintain hierarchies of knowledge production designed to control the flow of data. In particular, I point out the contrast between representations of science to elite audiences in St Petersburg (a pleasant, culturally prestigious diversion) and provincial and colonial servitors (an imperial duty). The case of Stepan Krashenninnikov, a Russian student of the Academy of Sciences

who spent several years carrying out research on the Kamchatka Peninsula, shows the challenges of employing European modes of knowledge production without easy access to requisite materials, such as instruments. It also highlights the importance of local observers to Krasheninnikov's research and their disappearance from the printed outputs of the expedition as academic hierarchies reasserted themselves.

Chapter Six considers the Academy's relationship with the Petrine culture of curiosity. It explores the strategies employed by academicians to discredit 'inappropriate' forms of natural knowledge in print and overcome readers' resistance to these efforts. On the basis of a previously unexamined source, annual almanacs composed at the Academy, I show how sections devoted to astrological knowledge in Petrine calendars were appropriated to promote an empirical approach to the study of nature. Astrology was first reconfigured as a form of polite (but useless) entertainment and later cast as an outdated and, crucially, un-European belief. Changes in the structure of the calendar and its treatment of astrology are used as a proxy to judge the extent of resistance to Academic discourses of natural philosophy and trace the marginalization of curiosity in official discourse.

Part III ('The Enlightened Elite') attempts to trace the reception of the Academy's discursive practices by members of Russian society. The Royal Charter of 1747, granted by Empress Elizabeth (r. 1742–1762), enshrined the idea of scientific utility formulated by the Academy but left little room for its participation in court culture. The Academy's diminished role allows us to shift the focus of attention to the influence of its earlier activities on Russian elite culture and the development of alternative attitudes to science.

Chapter Seven focuses on Prince Antiochus Cantemir (1708–1744), whose interest in natural sciences is well known. The chapter reconsiders this interest in the context of the framework of curiosity, utility, and pleasure developed in earlier parts of the thesis. Cantemir rejected the cameralist element inherent in the Academy's approach, emphasizing instead the cultural prestige of European sciences and its political uses in a meritocracy based on learning. Examining Cantemir's interactions with a circle of

Italian immigrants in Georgian London, I propose a new view of his decision to revisit a decade-old translation of Fontenelle's *Entretiens sur la pluralité des mondes*. Although Cantemir disagreed with Fontenelle's Cartesianism, he appreciated the cultural value of the perspective on the production of natural knowledge expressed in *Entretiens*. Ultimately printed by the Academy of Sciences, the text simultaneously challenged its intellectual authority by implying the validity of alternative approaches to natural knowledge.

Chapter Eight considers the social mobility strategies of Russian scientific practitioners in the 1740s–50s. It contrasts the careers of Stepan Krasheninnikov, who accepted Academic hierarchies of knowledge production, and Mikhailo Lomonosov, who maintained a link with the Academy while seeking outside patronage. Lomonosov's efforts to balance the discourses of pleasure and utility in his representation of science were only partially successful, particularly as he failed to adapt to the polite sociability of the court. At the same time, I suggest that Lomonosov's standing in society was determined by his membership of the Academy, which also provided a measure of political protection even where patron-client relationships did not.

Chapter Nine examines the role and cultural uses of science in the lives of Elizabethan nobility. Contrary to claims about the elites' rejection of scientific learning, it is shown to be an important element in the public performance of European polite culture. An examination of correspondence from the Grand Tour of Baron Aleksandr Stroganov, undertaken in the early 1750s, shows a conflict between his father's view of science as a form of polite leisure and Stroganov's initial enthusiasm for natural philosophy, as well as his gradual assumption of the role of an enlightened patron of arts and sciences – a role he reprised in St Petersburg where his nobility was questioned by others within the court society. Similar conclusions about the cultural role of science may be drawn from an examination of its effect on the material culture of the elites. Finally, the death of Professor Georg Richmann in the course of an electrical experiment in 1753 serves to demonstrate the variety of attitudes towards science available to members of the

Russian elite, including one example that demonstrates how the Petrine culture of curiosity, internalized in childhood, continued to shape some noblemen's views of scientific research at the Academy.

The conclusion presents a brief overview of the interpretive framework proposed in this thesis, which suggests that the culture of Russian elites between Peter I and Catherine II was inextricably linked with the activities of state-sponsored institutions like the Academy of Sciences. In the absence of pre-existing notions of what the study of nature should involve, the official discourses of such institutions played an outsized role in determining Russian views of science. And yet, as the century wore on, members of the Russian elite began to develop their own attitudes towards the value and function of sciences, which were often informed by these 'official' discourses but could also conflict with them. All too often, Europeanization is seen as a linear narrative, starting with a moment at which European values are imported and then tracing their gradual acceptance. As my research hopefully demonstrates, the real picture is far more complex and arguably more fascinating. A focus on science as a cultural phenomenon helps to illuminate many of the intricacies of such intercultural transfer in a unique manner.

Part I: The Curious Tsar

In 1682, Peter Alekseevich (1672–1725) became a co-Tsar of Muscovy alongside his older half-brother Ivan under the regency of their sister Sophia. He spent his teenage years in what was effectively an exile near Moscow; through frequent visits to its ‘German suburb’, an area set aside for foreign immigrants, he familiarized himself with European culture and developed a network of advisers from among their number. After securing undivided power in the early 1690s, Peter spent a year and a half in the German states, the Netherlands, and Britain in what was, for Muscovy, an unprecedented royal Grand Tour. There, he encountered at first hand the culture of Northern European countries at the turn of the century and recruited large numbers of foreign experts. Returning to Russia in 1698 to put down a revolt against his rule, he embarked on a wide-ranging programme of reforms intended to close what he perceived as a gap between Russia and the rest of Europe.¹

Among the more productive turns in the historiography of the period since the fall of the Soviet Union is the growing recognition of the symbolic or semiotic function of many Petrine innovations alongside their practical implications.² To take one example, Peter was determined to introduce printing on a large scale. From 1698, a small number of Dutch printers began to produce books in Russian, having cast Cyrillic letters to the designs used in Church Slavonic publications (*poluustav*) (ILL. 1, p. 285). Importing books from the Netherlands proved burdensome, so Peter decided to expand the printing facilities in Moscow, previously controlled by the Church.³ The expansion of the Moscow printshop was accompanied by the introduction of a new alphabet, a hybrid

¹ A good summary of many of the reforms is found in J. Cracraft, *The Petrine Revolution in Russian Culture* (Cambridge, MA and London, 2004).

² E.A. Zitser, ‘Post-Soviet Peter: New Histories of the Late Muscovite and Early Imperial Russian Court’, *Kritika: Explorations in Russian and Eurasian History*, 6/2 (2005), pp. 375–92.

³ S.P. Luppov, *Kniga v Rossii v pervoi chetverti XVIII veka* (Leningrad, 1973), pp. 57–69.

of *poluustav*, contemporary Latin type, and the scribal hand used in the Muscovite civil service (ILL. 2, p. 285). Work on the new design, known as the civil script (*grazhdanskii shrift*), was overseen by Peter I personally; cast in Amsterdam, the new letters were first used in 1708 to print a textbook of geometry.⁴ Practical considerations certainly played a role in this decision: as scholars have noted, typesetting with *poluustav*, with its abundance of diacritics and other typographical complications, was slow and laborious, ‘a real compositor’s nightmare’.⁵ The introduction of the civil script also helped to accelerate the transition to Arabic numerals, first introduced in Russian print in 1703. However, as Viktor Zhivov has convincingly argued, there was another dimension to the use of the civil script.

Soon after the introduction of the civil script, Peter I determined that it should be used for secular publications (grouped under the heading of ‘historical and manufacturing books’), with *poluustav* retained for religious texts (since, without its diacritics, the use of the civil script threatened the integrity of holy texts).⁶ As Zhivov shows,

The division of the alphabet into church and civic variants superimposed the opposition of secular and religious onto all printed texts ... Consequently, the old alphabet became semiotized as the sign of an ecclesiastical culture that hung onto the past, while the new one symbolized change.⁷

The use of the civil script not only made the transfer of secular concepts easier on a practical level but also emphasized the existence of a separate cultural sphere, almost

⁴ For a history of the design, see I.L. Kaldor, ‘The Genesis of the Russian *Grazhdanskii Shrift* or Civil Type – Part I’, *Journal of Typographic Research*, 3 (1969), pp. 315–44. As Kaldor notes, there were precedents for the Latinization of *poluustav* in some engraving of the late seventeenth century.

⁵ *Ibid.*, 316.

⁶ *PiB*, x, 27, 476–7.

⁷ V. Zhivov, *Language and Culture in Eighteenth-Century Russia*, trans. M.C. Levitt (Boston, 2009), p. 357. Zhivov first addressed this subject in V. Zhivov, ‘Azbuchnaia reforma Petra I kak semioticheskoe preobrazovanie’, in I. Lotman (ed.), *Semiotika prostranstva i prostranstvo semiotiki* (Tartu, 1986), pp. 54–67.

aggressively juxtaposed to the old religious mindset. Anything printed in the civil script was postulated to belong to the same conceptual domain and address the same audience. If the first title in the civil script was a geography textbook, the second was an epistolary manual compiled from two German sources. Its first edition, in April 1708, contained fifty-five model letters between ‘princely persons’; the second, issued in November 1708, added twenty-nine more, including some between correspondents of lower social standing.⁸ The Latinized appearance of these volumes marked both mathematized natural knowledge and polite sociability as shared elements of a common cultural identity.⁹ That this identity was a European one is borne out by the frontispiece to *Novaia manera, ukrepleniiu gorodov* (1711), a fortification textbook and another early use of the civil script. In the engraved image, the goddess Athena is sitting in front of a pile of maps and scientific instruments, on top of which is a globe with vague outlines of Russia’s territorial gains in the Great Northern War with Sweden (1700–21). Lest readers are left in any doubt, the word ‘Europe’ is scrawled across that part of the globe (ILL. 3., p. 285).¹⁰

Thus, the practical functions of Petrine innovations were closely intertwined with their symbolic and cultural meaning. Similar insights have recently begun to emerge about the more carnivalesque elements of Petrine culture, of which there were many. In particular, this has been the case with Peter’s Most Comical and All-Drunken Council, which staged regular alcohol-fuelled ceremonies that mocked all forms of established authority, from the church to Peter’s own rule. Long thought of as either a form of

⁸ D.G. Polonskii, ‘Pervyi russkii pechatnyi pis’movnik i ego rol’ v formirovanii epistoliarnoi kul’tury Novogo vremeni’, in *Starodruky i ridkisni vydannia v universytetskii bibliotetsi: Materialy II mizhnarodnykh knygoznavchykh chytan (Odesa, veresnia 2012 r.)* (Odessa, 2013), pp. 244–60. Polonskii also notes that not a single of the 84 model letters is by a female correspondent.

⁹ On the negative perception of the civil script as ‘Latin’ by Peter’s opponents, who called it ‘foreign-looking’, see Zhivov, *Language and Culture*, 58–63. By contrast, the head of the Ambassadorial Chancery Gavriil Golovkin wrote to Peter that the new books look ‘beautiful and regal, like in Latin’ (*PiB*, vii.2, 716).

¹⁰ N.-F. Blondel, *Novaia manera, ukrepleniiu gorodov*, trans. I.N. Zotov (Moscow, 1711).

entertainment or a throwback to the barbarous mores of Muscovy, the sacred parodies performed by this group are now understood to have been closely linked to the ‘enactment of charismatic authority at the court of Peter the Great’ and

...an important reference point for every member of the tsar’s inner circle ... an allegorical realm [that] marked off those who had come to believe in Peter’s personal gift of grace ... from those who remained unconvinced or hostile.¹¹

Zitser’s excellent study demonstrates how the apparently blasphemous and invariably licentious activities of the All-Drunken Council were closely connected to Muscovite religious notions. At the same time, he highlights the ‘didacticism of the ... spectacles staged at Peter’s court’ – that is, the connection between the symbolic and the practical. Zitser describes a 1715 mock wedding held in St Petersburg, the new capital founded on lands conquered from Sweden in 1703, as ‘the apogee of the court-sponsored programme that was first revealed with utmost clarity in the jester weddings staged ... at the end of the seventeenth century’ and points out the affinity between such carnivalesque exercises and ‘other measures designed to create a cosmopolitan service elite – such as the 1718 decree on “assemblies”’.¹² Indeed, we can point to the period around 1715–19 as the moment at which the focus of Peter’s cultural reforms shifted from the acquisition of skills to the internalization of social norms. Where, in 1708, European sociability was represented by a collection of model letters that instructed readers in how to express themselves appropriately, 1717 saw the publication of *Iunosti chestnoe zertsalo* (‘The honourable mirror of youth’), which expounded on the inner character of a ‘true courtier’.¹³

¹¹ E.A. Zitser, *The Transfigured Kingdom: Sacred Parody and Charismatic Authority at the Court of Peter the Great* (Ithaca and London, 2004), p. 4.

¹² Ibid., 109. Zitser is referring to a decree which made the organization of European-style balls or assemblies compulsory for the nobility of St Petersburg (PSZ #3246, v, 597–8). These were attended by both men and women, contrary to Muscovite customs which segregated women of noble birth.

¹³ See Cracraft, *The Petrine Revolution in Russian Culture*, 228–33 for some extracts from the text.

In the same year, a Russian translation of Christian Huygens' *Cosmotheoros* was printed, remarkable not so much for its embrace of Copernicanism, as per other scholars, as for its complete lack of interest in the practical applications of natural knowledge.¹⁴ Thus, it was in 1717 that European natural knowledge was first presented to members of Russian elites as a cultural phenomenon rather than a source of practical expertise.¹⁵ From that point onwards, attitudes to science would be inextricably linked with the development of a Europeanized elite identity.

¹⁴ [C. Huygens], *Kniga mirozreniia ili mnenie o nebesnozemnykh globusakh*, trans. J. Bruce (St Petersburg, 1717). Only thirty copies were printed by the man responsible for its publication, who had been horrified by what he saw as the author's heresy (see V.J. Boss, *Newton and Russia: The Early Influence, 1698–1796* (Cambridge, MA, 1972), pp. 61–6). A second edition came out in Moscow in 1724.

¹⁵ Werrett convincingly argues for considering *Iunosti chestnoe zertsalo*, *Kniga mirozreniia*, and Jacob Bruce's Russian-Dutch dictionary of the same year as manifestations of the same cultural programme (S. Werrett, 'An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia', PhD dissertation, University of Cambridge, 2000, pp. 39–42).

Natural cabinets and unnatural eclipses: the Petrine culture of curiosity

The history of science and education in the Petrine era has not yet seen the kind of close attention to the interplay of practical aims and the broader political, religious, and social features of the age that has been so fruitful in the study of court ritual or the semiotics of language reform.¹ Most literature on the subject has focused on the kinds of technical and scientific expertise that Russians were able to acquire as a result of Peter's activity, emphasizing the utilitarian bias of his educational reforms.² This chapter proposes a different approach to Petrine views of natural knowledge, based on the Tsar's embrace of curiosity and its connection to the wider culture of Peter's court.³

The most exciting development in the field of Petrine education studies in recent years can be found in the work of Igor Fedyukin, who has suggested that 'institutional entrepreneurship' was the driving force behind the development of Russian schools. Fedyukin emphasizes the role of individuals who seek to mobilize financial, administrative, symbolic, and other resources of the state in order to take control of

¹ One exception is Simon Werrett's examination of the connection between Dutch military civility and the embodiment of 'good order' in mechanical machines and the organization of urban spaces (S. Werrett, 'An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia', PhD dissertation, University of Cambridge, 2000, pp. 19–60).

² M.J. Okenfuss, 'Technical Training in Russia under Peter the Great', *History of Education Quarterly*, 13/4 (1973), pp. 325–45; A.J. Rieber, 'Politics and Technology in Eighteenth-Century Russia', *Science in Context*, 8/2 (1995), pp. 341–68; I. Gouzévitch, 'The Editorial Policy as a Mirror of Petrine Reforms: Textbooks and Their Translators in Early 18th Century Russia', *Science & Education*, 15/7–8 (2006), pp. 841–62; I. Gouzévitch and D. Gouzévitch, 'Introducing Mathematics, Building an Empire: Russia Under Peter I', in E. Robson and J. Stedall (eds.), *The Oxford Handbook of the History of Mathematics* (Oxford, 2009), pp. 353–73.

³ A part of this chapter was published in A. Iosad, 'Curiosity, Utility, Pleasure: Official Discourses of Natural Philosophy and Their Alternatives in Russia in the Run-up to 1762', in A. Schönle, A. Zorin and A. Evstratov (eds.), *The Europeanized Elite in Russia, 1762–1825: Public Role and Subjective Self* (DeKalb, IL, 2016), pp. 46–65.

government-sponsored institutions. In an autocratic state, this can be accomplished by ‘elaborating the unspoken and, perhaps, as yet unconscious intentions of the ruler and, in competition with other entrepreneurs, finding the best expression of the ruler’s train of thought’.⁴

According to this model, Peter’s cultural preferences determined the overall direction of reform but he could not be expected to become personally involved in its implementation at every stage. This was carried out by other individuals – ‘projectors’ – at court and within the state apparatus, who competed to present the Tsar with proposals for institutions that would promote his agenda. If successful, they were rewarded with administrative control over the new institution – a school, for example – and all the resources that this entailed.⁵

The model proposed by Fedyukin and his collaborators has the advantage of situating Petrine schools in the broader political context without reducing their role to the importation of technical expertise. This polyphonic view of Petrine education goes a long way towards explaining its apparently haphazard nature: different schools were founded by different people, each in pursuit of their own agenda. This explains, for example, the active role played in the foundation of the Moscow Navigation School by a circle of conservative literati (*knizhniki*) generally opposed to the Petrine approach to Europeanization – in this particular case, the interests of that circle briefly aligned with the general direction of reform.⁶

⁴ I. Fedyukin, “Prozhektery” kak administrativnye predprinimateli: stanovlenie rannemodernnykh gosudarstvennykh institutov i individual’naia initsiativa’, in I. Fedyukin and M. Lavrinovich (eds.), *‘Reguliarnaia akademiia uchrezhdена budet...’: Obrazovatel’nye proekty v Rossii v pervoi polovine XVIII veka* (Moscow, 2014), p. 20.

⁵ The role of ‘projectors’ in the foundation of several technical, religious, and noble schools during the reigns of Peter I and his successors is discussed in a recent edited volume (I. Fedyukin and M. Lavrinovich, *‘Reguliarnaia akademiia uchrezhdена budet...’*).

⁶ I. Fedyukin, ‘Rol’ administrativnogo predprinimatel’sтва v petrovskikh reformakh: Navigatskaia shkola i pozdnemoskovskie knizhniki’, *Rossiiskaia Istorii*, 4 (2014), pp. 80–101. On *knizhniki*, see V. Zhivov, *Iz tserkovnoi istorii vremen Petra Velikogo* (Moscow, 2004).

Nonetheless, this approach focuses on the administrative history of education. The place of European natural knowledge in the culture of Petrine elites remains less well explored. Partly, this is the function of available sources: while the content of printed textbooks, for example, is easy to determine, contemporary ideas of the role and value of science are more difficult to trace. One way around this difficulty is to examine the effect that the importation of European science had on the material culture of the age.

The most tangible of Petrine importations in the field of natural philosophy, both as an institution and as a collection of material objects, was a curiosity cabinet known as the *Kunstkamera*. The foundation of the 'Imperial Cabinet' in St Petersburg has been widely discussed in the historiography of the period for its scientific, educational, political, religious, and medical significance.⁷ *Kunstkamera* exhibits – especially the large Gottorp Globe, the anatomical collection of Frederik Ruysch, and the remains of the French 'giant' Bourgeois, all of them imported from Europe – possess a certain symbolic value as a representation of the often dramatic processes of cultural transfer catalyzed by Peter I. At the same time, scholars have sometimes struggled to reconcile Peter's interest in the preternatural, evident from the contents of his collection, with the Tsar's image of an enlightened modernizer. Some have chosen to ignore that aspect of the *Kunstkamera* altogether.

Although the collection is often discussed in the context of the Imperial Academy of Sciences, the *Kunstkamera* itself was opened to the public in 1718 and thus arguably belonged to the same 'wave' of cultural imports as the introduction of compulsory public assemblies and the publication in 1717–18 of a range of titles that signalled a shift towards

⁷ Examples include T.N. Staniukovich, *Kunstkamera Peterburgskoi Akademii nauk* (Moscow, 1953); Werrett, 'An Odd Sort of Exhibition'; R. Nikolosi, 'Mikrokosm novogo: Kunstkamera, Peterburg i simvolicheskii poriadok Petrovskoi epokhi', trans. T. Lastovka, in E.V. Anisimov (ed.), *Petr Velikii* (Moscow, 2007), pp. 156–74; K. Bogdanov, 'Petr Pervyi o meditsine: igra prirody, poriadok pravleniia', in E.V. Anisimov (ed.), *Petr Velikii* (Moscow, 2007), pp. 175–109; O.A. Baird, 'I Want the People to Observe and to Learn! The St Petersburg Kunstkamera in the Eighteenth Century', *History of Education*, 37/4 (2008), pp. 531–47.

the internalization of European cultural values. In that context, it is significant to note, as Marc Raeff first did, that a significant proportion of Petrine imports are best seen as representative of the European culture and ‘intellectual concerns’ of the seventeenth rather than the eighteenth century (broadly interpreted).⁸

In natural philosophy, in particular, the difference between the ‘intellectual concerns’ of the seventeenth and eighteenth centuries is crucial. This difference can be expressed in terms of the *epistemes* of the Renaissance and Classical Ages as identified by Michel Foucault, who saw a transition from ‘a knowledge based upon similitude’ to ‘a knowledge based upon identity and difference.’⁹ The natural philosophy of ‘the Renaissance’, with its strong links to the humanist project, strived to uncover connections between different elements of the natural world, which could be discovered through – for example – the juxtaposition of contrasting objects within the space of a *Kunstkammer* or curiosity cabinet. In fact, the cabinet has assumed in modern historiography the character of a quintessential space of ‘pre-Enlightenment’ natural knowledge and its rejection of classification:

The systematic arrangement of objects into kinds according to some method of classification, which was adopted in eighteenth-century natural history collections, would have been inappropriate in a seventeenth-century curious collection, since an object surrounded by similar but slightly different species would have seemed unsurprising and ordinary. Instead, specimens were arranged to display their variety and contrast.¹⁰

At the turn of the century, however, especially in the context of scientific academies, a new approach to the cabinet began to ‘emphasize the importance of collecting the whole of nature rather than its most unusual and rarest elements,’ turning it into a space

⁸ M. Raeff, ‘Seventeenth-Century Europe in Eighteenth-Century Russia? (Pour prendre congé du dix-huitième siècle russe)’, *Slavic Review*, 41 (1982), p. 614.

⁹ M. Foucault, *The Order of Things: An Archaeology of the Human Sciences* (London, 2002), p. 64.

¹⁰ K. Whitaker, ‘The Culture of Curiosity’, in N. Jardine, J.A. Secord and E.C. Spary (eds.), *Cultures of Natural History* (Cambridge, 1996), p. 87.

where the totality of the world could not only be contemplated but catalogued and described.¹¹ Because it is the latter approach that has shaped modern perceptions of what science is, generations of scholars have dismissed the Petrine Kunstkamera as, at best, a proto-museum or, at worst, another one of Peter's personal quirks. In that sense, the collection's historiography is analogous to that of the All-Drunken Council before the latter's close connection to the Petrine religious and political culture was demonstrated.

To better situate the Kunstkamera within the context of Peter's reforms, we need to consider its purpose as an institution open to the public. A large number of studies of the cabinet focus on the grotesque and monstrous elements of the collection, which could certainly be off-putting to their viewer.¹² However, fear or disgust were not the emotions Peter wanted visitors to experience; indeed, such feelings were explicitly described as ignorant and even heretical in the well-known Kunstkamera edict of 1718.¹³ The key passion that the cabinet was supposed to arouse was curious wonder.

Curiosity has come to be seen as the quintessential component of visitors' experience of *Wunderkammern* and an important element of the Baroque mode of knowledge. As a concept, it has a complex history in the early modern era. Often condemned by Christian religious authorities (Catholic, Protestant, and Orthodox alike), curiosity enjoyed a sudden resurgence in the seventeenth century as it was used in new institutional contexts of knowledge production to legitimise such knowledge.¹⁴ This did not mean that curiosity from a vice turned into an absolute virtue, but 'as relative consensus about

¹¹ P. Findlen, 'Anatomy Theaters, Botanical Gardens, and Natural History Collections', in K. Park and L.J. Daston (eds.), *The Cambridge History of Science*, iii: *Early Modern Science* (Cambridge, 2006), p. 288.

¹² A. Anemone, 'The Monsters of Peter the Great: The Culture of the St. Petersburg Kunstkamera in the Eighteenth Century', *The Slavic and East European Journal* (2000), pp. 583–602 is a representative example.

¹³ *PSZ* #3159, v, 541–2.

¹⁴ An overview of attitudes towards curiosity and related concepts in Russia can be found in K. Bogdanov, 'Novye slova–novye veshchi', in *O krokodilakh v Rossii* (Moscow, 2006), pp. 22–37. Unfortunately, he is not sensitive enough to variations and changes in understandings of curiosity in the Petrine and post-Petrine era.

the badness of curiosity disappeared, it became even more of a battle-ground for efforts to distinguish good knowledge or behaviour from bad.¹⁵ Neil Kenny identifies three contexts in which these arguments took place: the university, the church, and what he terms ‘a cluster of institutions’ that constituted alternative sites of knowledge production and dissemination. These included learned academies, courts, informal networks of savants, publishing houses – and collections. Precisely these secular institutions, particularly in Northern Europe, were the sources of many of Petrine cultural imports, including in the area of natural philosophy.

The elite ‘culture of curiosity,’ which came to dominate these institutions for a brief moment in the middle of the seventeenth century, ‘privilege[d] certain phenomena and things above others as objects of scientific investigation – namely, the new, rare, unusual, or secret.’¹⁶ This preference for the extraordinary is, in fact, codified in the *Kunstkamera* edict of 1718. In listing the kinds of objects that had to be sent to the collection, the law specifically notes the need to collect unique objects. Moreover, the greater the difference between the known and the new, the more valuable (literally) is the object in question: ‘If it is very wondrous, one will receive more [money], but if there is little difference with what is usual, then [the payment will be] less.’¹⁷

Thus, the culture of the *Kunstkamera* is a culture of curiosity as it developed under the auspices of secular institutions of knowledge production in the seventeenth century. This is hardly surprising for what was, after all, a ‘cabinet of curiosities’. But the importance of curiosity to Petrine views of the natural world extends beyond this particular example. In fact, curiosity as a mode of study of nature provides a crucial link between natural philosophy and the emblematic worldview that has been identified as a key component of Petrine Europeanization of the elites.

¹⁵ N. Kenny, *The Uses of Curiosity in Early Modern France and Germany* (Oxford, 2004), pp. 4–5.

¹⁶ K. Park and L.J. Daston, *Wonders and the Order of Nature, 1150–1750* (New York, 1998), p. 315.

¹⁷ *PSZ* #3159, v, 542.

Kirill Rogov has identified a rift between the ‘word’-oriented Catholic Baroque culture, mediated to the restricted Muscovite court circle through the Kiev intellectuals in the late seventeenth century, and the ‘object’-oriented Protestant Baroque of Northern Europe, introduced on a wider scale during the Petrine era.¹⁸ This latter culture relied to a large extent on the symbolic language of Renaissance *emblemata*, which sought to uncover knowledge of the universe through the juxtaposition or comparison of disparate elements. Ideally, an emblem consisted of an image (frequently allegorical), a motto or caption, and a textual commentary (in prose or poetry). Only by considering all three in combination could their meaning be fully comprehended. In Rogov’s opinion, a major point of difference between the panegyric cultures of pre-Petrine and Petrine Russia was Peter I’s enthusiastic embrace of the richly symbolic language of *emblemata*, which came to play a crucial role in the fashioning of the new court. To give one example, one of the few books printed for Peter in the Netherlands to have a lasting impact on Russian culture was a collection of emblems (ILL. 4, p. 286).¹⁹

William Ashworth notes the link between emblematic thinking and the approach to natural philosophy that typified the Renaissance *episteme*.²⁰ By bringing together disparate elements, the natural philosopher created the conditions for their interpretation: objects reinforced each other’s meanings much like the three composite parts of *emblemata*. The *Wunderkammer*, alongside other sites of natural knowledge production, was closely associated with the visual culture of *emblemata*, especially in Northern Europe, through its characteristic display of natural and artificial objects. Dutch

¹⁸ K. Rogov, ‘Tri epokhi russkogo barokko’, in M.O. Chudakova (ed.), *Tynianovskii sbornik. Desiatye – Odinnadtsatye – Dvenadtsatye Tynianovskie chteniia. Issledovaniia. Materialy*. (Moscow, 2006), pp. 9–101.

¹⁹ *Symbola et emblemata* (Amsterdam, 1705). See also A. Hippius, ‘Introduction’, in A. Hippius (ed.), *Emblemy i simvol’y (1788): The First Russian Emblem Book* (Leiden, New York, Copenhagen, and Cologne, 1989), pp. xi–xlvi.

²⁰ W.B. Ashworth, ‘Emblematic Natural History of the Renaissance’, in N. Jardine, J.A. Secord and E.C. Spary (eds.), *Cultures of Natural History* (Cambridge, 1996), p. 23.

anatomical theatres, for example, were decorated with allegorical compositions and the Leiden theatre was itself turned into a cabinet of curiosities.²¹ This confluence found its highest expression in the collection of Frederik Ruysch, whose elaborate displays ‘of babies and foetuses were arranged ... in an allegorical manner intended to illustrate the transience of life’, with Latin mottos resembling the textual parts of *emblemata*.²² It was precisely this culture of curiosity, centred on the material manifestations of the rare and unusual, that formed the backdrop to the foundation of the Kunstkamera in St Petersburg. After all, it was no accident that Ruysch’s collection, purchased at a significant cost in 1717, was relocated to St Petersburg in its entirety to become the basis of the Imperial Cabinet.

The subjective experience of the St Petersburg Kunstkamera in the Petrine era, unfortunately, remains out of our reach. Although a few accounts are preserved in foreign memoirs, I know of no Russian record of a visit to the imperial cabinet in the first quarter of the century.²³ However, the close connection between curiosity and the emblematic culture of the Petrine court allows us to approach the issue of contemporary Russian perceptions of European science from a different angle. To what extent did Russians display the same kind of curiosity about other forms of natural knowledge?

It is a well-known fact that Peter I’s scientific interests extended beyond the Kunstkamera. For example, John Perry’s account of his time in Russia mentions that

²¹ Findlen, ‘Anatomy Theaters, Botanical Gardens, and Natural History Collections’, 278.

²² A.M. Luyendijk-Elshout, ‘Death Enlightened: A Study of Frederik Ruysch’, *JAMA: The Journal of the American Medical Association*, 212/1 (1970), p. 123.

²³ Staniukovich, *Kunstkamera Peterburgskoi Akademii nauk* mentions Kurakin among visitors who left a description of their experience, but I have been unable to locate any such text. Foreign accounts of the Kunstkamera can be found, for example, in P.H. Bruce, *Memoirs of Peter Henry Bruce, Esq., a Military Officer, in the Services of Prussia, Russia, and Great Britain*. (London, 1782), pp. 152–3 and A. de La Mottraye, *The Voyages and Travels of A. de la Mottraye in Several Provinces and Places of the Kingdoms and Dukedoms of Prussia, Russia, Poland, &c.* (London, 1732), pp. 158–63. The latter in particular, dating from 1726, shows that the late tsar’s collection was seen as a typical, if unusually well stocked, princely curiosity cabinet by European visitors familiar with this kind of display.

His Majesty [Peter I] has always his Lords about him, and is himself very curious in observing the Eclipses that happen, and in describing and discoursing of the natural Cause of them ... and of the Motions of those other Heavenly Bodies within the System of the Sun ... as the great Sir Isaac Newton has indisputably demonstrated to the modern World. And wherever his Majesty is, or intends to be, whether in Poland, at Petersburg, at Veronize [Voronezh], or at Azoph [Azov], he always appoints an Order ... to send him a Draught and Account how the Eclipses, *particularly those of the Sun*, will happen in such Place.²⁴

The use of the word ‘curious’ here is not in and of itself significant – this is clearly Perry’s own perception of Peter’s behaviour, so it does not tell us whether the category of curiosity was relevant to the Tsar or his circle. Indeed, the veracity of this account is not guaranteed. However, a closer examination of Peter’s correspondence shows that he did, in fact, order mathematicians in Moscow to send him such accounts. For example, a letter from Voronezh sent to Admiral Fedor Apraksin on 6 February 1709 includes such a request.²⁵ Similarly, Jacob Bruce sent Peter an instruction on how to observe solar eclipses as early as 1699, when the Tsar was near Azov.²⁶ Given that both of those cities are mentioned in Perry’s account, it appears to be reasonably accurate in this instance. There is, however, one question: why was it that solar eclipses in particular interested the Tsar?

It seems that the answer to this lies in the motivation behind Peter’s interest – his acceptance of the culture of curiosity. As we have seen, a rare object was seen as more curious. In the eyes of Peter and his circle, the same principle applied to natural phenomena. In a letter describing the appearance of sunspots, sent to Peter I on July 18, 1716, for example, his close associate Jacob Bruce justified his decision to distract the Tsar at a busy time by noting that they were last seen over thirty years ago and referring specifically to ‘the curiosity and particular care your majesty has for things that do not

²⁴ J. Perry, *The State of Russia, Under the Present Czar* (London, 1716), p. 212. Emphasis mine.

²⁵ *PiB*, ix.1, 79.

²⁶ P.P. Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom* (2 vols., St Petersburg, 1862), i, 291.

happen often.’²⁷ Thus, a rare astronomical phenomenon was as worthy of curiosity as an unusual exhibit in a *Wunderkammer*. The ‘object-oriented’ curiosity of the ‘new sciences’ extended not simply to material objects, but also to events – like eclipses.

In March 1706, *Vedomosti* (‘News’), the sole Russian newspaper of the time, printed ‘A proclamation of eclipses’, which contained the dates and times of the one solar and three lunar eclipses in that year. As the article noted, the solar eclipse, expected on 1 May 1706, ‘will be observed ... here with great surprise and fear for over two hours’. In advance of the eclipse, the Tsar also wrote to one his military commanders, Admiral Fedor Golovin (1650–1706):

On the first day of the next month, there will be a great solar eclipse; thus, I need certain telescopes and instruments. Be so kind as to send them ... here immediately. Be so kind also as to inform our people of this, so they do not consider it a miracle, for when people know of something [in advance], it is no longer a miracle.²⁸

Both the government’s official – only – paper of record and Peter’s personal correspondence recognized the potential of eclipses to cause ‘surprise and fear’. As with the *Kunstkamera* a decade later, this did not agree with Peter’s own view of the phenomenon. The purpose of this letter to Golovin was to acquire the appropriate instruments for the eclipse observation – the hallmark of the new, Europeanized approach to natural knowledge. On the other hand, the letter is quite revealing of Peter’s dismissal of the traditional view of eclipses as portents of doom. An event that is mathematically predictable (recall the reference to Newton in John Perry’s account) could not, Peter implies, be considered a miracle (though it may be symbolically related to other events or phenomena through emblematic logic). This mirrored the treatment of monsters in the *Kunstkamera* edict: pointing out the natural causes of the unusual removed it from the domain of the divine or satanical.

²⁷ Quoted in *ibid.*, 298–9.

²⁸ Peter I to Fedor Golovin, 7 April 1706 (reprinted in *PiB*, iv, 209).

The culture of curiosity shaped attitudes towards natural phenomena as well as objects. As Robert Collis has demonstrated, many of Peter's advisers had a keen intellectual interest in what are now seen as marginal practices of early eighteenth-century natural philosophy such as astrology and alchemy.²⁹ In his study, Collis contrasts the almanacs printed on Peter's orders from 1708 onwards (naturally, in the civil script), based on German models that embraced 'reformed astrology [and] utilized contemporary mathematical techniques', with the 'mystical' calendars translated for his father.³⁰ The latter approach, he suggests, survived in the calendars produced in the south of Russia where Rogov's first, Polonized Catholic Baroque persisted well into the eighteenth century. Indeed, an almanac for 1714 printed in Kiev suggests that 'eclipses ... are seen by us not without fear, for we do not hope for good tidings from this.'³¹ Collis also struggles to reconcile Peter's rejection of the significance of celestial portents with his interest in eclipses. At one point, he suggests that the passage from Perry's account, quoted earlier, hints 'that [eclipses] could have played a role in planning his actions'.³² The link between curiosity and emblematic thinking helps to resolve this apparent contradiction without reading too much into the Tsar's desire to know when eclipses occur. If we accept astrology's role as a valid element of the corpus of natural knowledge as constituted within the seventeenth-century culture of curiosity, we see that Peter had no reason to reject it. It was possible to tolerate and even embrace astrology, as Peter did, without relying on it for practical recommendations regarding specific actions. (Indeed, we have no record of Peter doing the latter).

²⁹ R. Collis, *The Petrine Instauration: Religion, Esotericism and Science at the Court of Peter the Great, 1689-1725* (Leiden, 2011). Ernest Zitser has also written about the role of astrology in the self-fashioning of one prominent Petrine courtier (E.A. Zitser, 'The Vita of Prince Boris Ivanovich "Korybut"-Kurakin: Personal Life-Writing and Aristocratic Self-Fashioning at the Court of Peter the Great', *Jahrbücher für Geschichte Osteuropas*, 59/2 (2011), pp. 163–94).

³⁰ Collis, *The Petrine Instauration*, 485.

³¹ Quoted in D.O. Sviatskii, 'Ocherki istorii astronomii v Drevnei Rusi. Chast' III', *Istoriko-astronomicheskie issledovaniia*, 9 (1966), p. 99. See also Collis, *The Petrine Instauration*, 477–82.

³² *Ibid.*, 483.

As for the connection between Peter's embrace of emblematic thinking and astrology, we can point to a revealing example. Peter's marginal remarks in a copy of a translated 1670 German calendar show him deciphering the political meaning of its astrological predictions. Among other things, Peter noted that foxes in one prediction stood for the Dutch; that the bull could represent any one of many states; that Mars wishing to visit a monastery boded well for the fortunes of Catholics.³³ Astrology served as a kind of textbook of emblematic thinking, reinforcing in Peter's mind the connection between the latter and science. Similarly, the rejection of the miraculous nature of eclipses or the 'mystical' astrological motifs of the pre-Petrine Baroque did not diminish their value in the semiotic systems of *emblemata*, where the sun, the moon, the stars, and other celestial phenomena like shooting stars and eclipses were recurring, popular images. On the frontispiece of the 1705 *Symbola et emblemata*, for example, there were no less than three emblems depicting either the sun or the moon and the stars, all in the context of glorifying Peter's rule.³⁴ The book itself contained numerous emblems derived from European sources which made use of the symbolic power of astronomical phenomena and their astrological associations (such as emblem 68, which depicts a solar eclipse with the motto '*Praesentia nocet*', 'Its presence is hurtful' (ILL. 5, p. 286)). Through its role in emblematic thinking, astrology could be integrated into the literary practices of the Petrine court while remaining within the bounds of the culture of curiosity. After all, as natural phenomena eclipses could also be observed and admired for their rarity. Peter's astronomical interests were driven by the same belief in the value of the unusual that underpinned the foundation of the Kunstkamera. The shared experience of observing rare phenomena could even foster a sense of belonging to the same social group – Peter's 'company'. In three other letters sent on 7 April 1706 (to Gavriil Golovkin, Aleksandr Menshikov, and Kirill Naryshkin), Peter informed his courtiers of

³³ Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom*, i, 283–5.

³⁴ E. Sashalmi, 'The Frontispiece of Peter the Great's *Simvoly i Emblemata* (1705): An Iconographical Analysis', *Canadian-American Slavic Studies*, 47/4 (2013), pp. 459–72.

the coming eclipse, noting specifically that this time it will be ‘greater’ than the one they had observed together at Azov in 1699.³⁵ Such observations, however, required appropriate instruments and the right attitude.

A comparison of records of the eclipse of 1 May 1706 produced in two different institutional contexts, illustrates the rapid adoption by the Tsar and his closest circle of European attitudes towards the natural world as knowable and measurable. These are reports of the eclipse in monastery chronicles, representative of pre-Petrine literate culture, and Kirill Naryshkin’s reply to Peter’s note about the eclipse. The so-called Third Novgorod Chronicle described the event as follows:

In the eighth hour of the day, in its third quarter, the light disappeared from the heavens and the air, and there was great darkness in all the universe on the earth, in length an hour less a quarter; and it was so very dim that hardly a man could recognise another man standing face to face and very close, and not at all if in a room; and from this portent (*znamenia*) some people ... almost lost their sight.³⁶

A similar account, though one that shows a better understanding of the physics of an eclipse, was produced near Arkhangelsk:

There was a portent in the sky in the ninth and tenth hours of the day: the sun was eclipsed and turned black, and at that time it was very dark, as if at night; the edge of the sun was light, like a crescent, [with] two stars at the edge of the sun; and the darkness lasted for half an hour or an hour, and then it began to get light, as before.³⁷

Both of the monastery chronicles, as we can see, treat the eclipse as a portent. Their authors, it seems, shared the attitudes typical of the Ukrainian Baroque originating at the Kiev Mohyla Academy. By contrast, Naryshkin’s brief note shows what, in the eyes of Peter’s supporters, the Tsar expected to learn from eclipse observations:

³⁵ *PiB*, iv, 206–8.

³⁶ *Polnoe sobranie russkikh letopisei, izdannoe po vysochaishemu povelenniu arkheograficheskoiu kommissiei*. iii: IV. *Novgorodskiiia letopisi* (St Petersburg, 1841), p. 276.

³⁷ Quoted in Sviatskii, ‘Ocherki istorii astronomii’, 90–1.

I thank your majesty for the letter about the solar eclipse. In Pskov, it occurred on 1 May; it began to darken at 10 h. 43 m. after midnight and everything was dark at 11 h. 35 m. It was so dark that you could not see a man's face at 10 *sazhen'*. Such darkness lasted for 9 minutes.³⁸

Here, the emphasis is on the quantification of information about the eclipse, including the duration of different phases. Naryshkin specifies that his observations were made in Pskov, recognising the importance of geography to the experience of an eclipse (contrasting with the Novgorod account's 'in all the universe'). Even the 'qualitative' description of the darkness, which uses the same category as the Novgorod chronicle (the visibility of a man's face), is mathematized by referring to the distance at which a face is no longer visible. Whether Naryshkin actually measured the distance at which he could recognize other people is beside the point; what this letter demonstrates is that, at least in correspondence with the Tsar, his courtiers were prepared to adopt a mathematized mode of engagement with natural phenomena like eclipses.

###

So far, the discussion of attitudes towards nature has focused on Peter I himself and members of his closest circle, which was to a large extent defined by their loyalty to the Tsar. A case from the life of Prince Artemii Volynskii (1689-1740), who did not belong to that circle, affords us a closer look at the gap between the emotions experienced in viewing rare natural phenomena and their representation in official documents. In 1715, having previously taken part in peace negotiations with the Ottoman Empire, the twenty-seven-year-old lieutenant-colonel was sent on a mission to Persia to sign a trade treaty with the Safavid Empire and gather intelligence in preparation for the

³⁸ Ibid., p. 93. *Sazhen'* was a Russian unit of measurement, equivalent to approximately 1.5 metres.

Russo-Persian War of 1722–3. On 6 March 1718, Volynskii saw an unusual total lunar eclipse, which he described in a letter from Schemacha (in modern-day Azerbaijan) to an unidentified correspondent.³⁹

Before his departure from St Petersburg in 1715, the ambassador had received a letter of instruction from Peter I, in which the Tsar instructed his envoy to keep a daily journal of his observations, ‘describing everything truthfully’.⁴⁰ The diary survives in the Russian State Archive of Ancient Documents (RGADA) in Moscow.⁴¹ As it was intended to be shown to Peter I at the conclusion of the embassy, the Journal can be seen as an ‘official’ representation of events. Among other entries, there is one for 6 March 1718, recording the same eclipse. A comparison of the descriptions of the same event in the letter sent by Volynskii and in his record of the embassy, therefore, can shed some light on the difference between representations of natural phenomena in different genres of writing.

The first thing that draws the reader’s attention in comparing the two texts is that one is clearly based on the other, as they share a number of sentences and in some cases, the exact wording differs insignificantly. However, the two are not identical. The shorter record is the one in the *Zhurnal* and begins:

On the sixth of this month, we saw here an eclipse of the moon which was very surprising and unusual. It began at the end of the seventh hour after midday, when it at first began to darken from the north, as it usually

³⁹ S.I. Turbin, ‘Artemii Petrovich Volynskii. Materialy dlia ego biografii (1711–1718).’, *Russkaia starina*, 3 (1872), pp. 934–51. Volynskii only mentions the day of the eclipse, not its month. To date the letter, I consulted a catalogue of lunar eclipses provided by NASA. Between 1717 and 1725, only one total lunar eclipse (no. 08961) fell on the sixth day of a month by the Julian calendar – that of March 1718 (NASA, ‘Lunar Eclipses: 1701 to 1800’, *Five Millenium Catalog of Lunar Eclipses*. <<https://eclipse.gsfc.nasa.gov/LEcat5/LE1701-1800.html>> last accessed 9 March 2017).

⁴⁰ Quoted in P.P. Bushev, *Posol’stvo Artemiia Volynskogo v Iran v 1715–1718 gg. (Po russkim arkhivam)* (Moscow, 1978), p. 24.

⁴¹ RGADA, f. 77 (‘Snosheniia Rossii s Persiei’), op. 1, 1715–1718, ed. khr. 2. (Hereafter *Zhurnal ... Artemiia Volynskago*).

happens. But then, when it was fully eclipsed, [the moon] became entirely red as fire and there appeared at times a light as if from a real fire.

The entry goes to describe in detail the various stages of the eclipse, describing the duration of each, until

...a Natural light began [to appear], so straight as if cut off. But as light from the bottom brightened, at the top it Turned redder. And so, at last, it ended at the start of the tenth hour.⁴²

In the letter, the description of the eclipse as ‘very surprising and unusual’ is preserved, but its focus shifts from the recounting of different phases to what was ‘surprising’ about them. Most significantly, Volynskii at one point characterizes a light that resembles a first-quarter moon as ‘unnatural’ and more frequently employs colourful epithets such as ‘bloody’ in his description. He concludes with the following remark, entirely absent from the *Zhurnal*:

I have happened before now to see several [eclipses], and we have seen [one] here during our time in Kashan, however, not just I, [but] also others have not seen any like it (the one that happened now).⁴³

Thus, a lunar eclipse in and of itself did not have to be surprising or unusual. In fact, the *Journal* also contains an entry dated from Kashan on 9 September 1717, which simply notes the times of an eclipse’s beginning and end and that ‘more than half of the moon’s face was covered’⁴⁴ It was the unusual nature of the observation at Schemacha that warranted a more detailed description, but in the ‘official’ record Volynskii chose to largely limit himself to a narrative of events (‘first’, ‘then’, ‘at last’). In a personal letter, however, he made known the feelings of surprise, curiosity, and perhaps fear that he experienced in observing this particular phenomenon – one unlike any he or others had seen before.

⁴² *Zhurnal ... Artemiia Volynskago*, fol. 389v.

⁴³ Turbin, ‘Artemii Petrovich Volynskii’, 948.

⁴⁴ *Zhurnal ... Artemiia Volynskago*, 313.

In many ways, the two accounts are quite similar to one another: both show the internalization of an empirical and quantifying approach to natural phenomena, where the duration, location, and specific characteristics of an event matter more than what it may portend while its distinguishing feature is its singular curiosity. However, a comparison of the two also shows how the representations of the same event in the embassy's record and the ambassador's letter diverged in terms of content and style. In a sense, by excising himself from the official account and reserving the expression of emotions that the spectacle provoked in him for the letter, Volynskii begins to draw a distinction between his roles as a diplomat in the service of the Tsar and a private observer of the natural world in all its wonder. This suggests not only the internalization of the new attitude, *contra* Lotman's binary juxtaposition of 'private' traditional behaviour and the public performance of Europeanization, but also a role for science in the emergence of alternative identities not wholly tied to state service.

Indeed, the *Zhurnal* illustrates the extent to which the ability to observe natural phenomena calmly, without falling prey to 'superstition', became associated with the adoption of a rational, Europeanized self-identity at this early stage. Several days after the Kashan eclipse, Volynskii copied into the *Zhurnal* a letter from Semen Avramov, a member of the embassy who had stayed behind in the Persian capital, in which the latter described how Persians responded to the same event. According to Avramov, they carried out a number of rituals to ward off the bad influence of the eclipse, which included waving bags of money over the Shah's head, ringing bells through the night, and 'other foolishness'.⁴⁵ The Persians' superstition or 'foolishness' was clearly juxtaposed with the 'rational' approach espoused by Volynskii, his retinue, and members of the Petrine court more generally. This was wholly in line with the culture of curiosity, where

...unreasoning astonishment in which causes were not understood was seen as the fate of the non-Christian whose superstition led him 'to think

⁴⁵ *Zhurnal ... Artemiia Volynskago*, 315v.

all strange things Supernaturall' and not to distinguish wonders of nature from genuine miracles.⁴⁶

Russians like Volynskii and Avramov saw themselves as responding to natural phenomena with, to borrow a phrase from Whitaker, reasoned and articulate wonder. Moreover, their ability to approach potentially frightful events from that point of view separated them, in their own eyes, from the 'foolish' Persians. That is, it made them feel European.

In the reign of Peter I, supporters of his programme of Europeanization came to accept a view of the natural world that was distinctly different from that typical of Muscovite literate culture. This culture of curiosity, dominant in the European Republic of Letters in the mid- to late seventeenth century, was on the wane but remained influential both among the European immigrants of the Moscow German suburb and in the Northern European countries that were the initial source of Petrine cultural importations. Although it may appear quaint to modern eyes, curiosity was, in the sense of the word proposed in the Introduction, 'scientific': that is, it offered a conceptual system within which natural objects and phenomena could be understood. This was a system that valued, above all, the rare and the curious. Through its rejection of classification and emphasis on the possibility of revealing hidden meaning through contrast and juxtaposition, curiosity was closely connected with emblematic thinking – the dominant literary culture of the Petrine court.

These views of nature appear to have been shared by members of Peter's 'company' and the Tsar himself, with evidence of their acceptance going back to the 1700s. By the late 1710s, other members of the developing noble elite appear to have begun to internalize this attitude, displaying it – as Volynskii's example demonstrates – both in public and in private communication. Curiosity shaped both official and private representations of natural phenomena in this social stratum (although the pride of a 'Europeanized' noble in his rationality could be shaken by especially spectacular displays of nature's power).

⁴⁶ Whitaker, 'The culture of curiosity', 87.

We can see the foundation of the Kunstkamera as an effort to institutionalize and codify this attitude towards nature, undertaken, starting from 1717, in concert with a host of other measures intended to create a service elite that would internalize rather than simply imitate European culture. From now on, to be European meant accepting the view of nature and its study promoted by state-sponsored institutions. However, the Kunstkamera and its culture of curiosity were soon replaced in the public representation of science by a new institution with a new set of attitudes: the Imperial Academy of Sciences.

CHAPTER TWO

'We have made the beginning': The foundation of the St Petersburg Academy of Sciences

The extensive literature on the foundation of the first scientific society in Russia has shared the assumption that Peter I himself first proposed this idea, but scholars have disagreed on the timing of that decision.¹ Throughout his reign, and particularly during his sojourns abroad, the Tsar sought to attract foreign specialists to the Russian service. These efforts largely served practical purposes: the new immigrants were employed as military and naval officers, engineers, civil servants with experience of Swedish and German models of government, school teachers, and so on. The discussions with the European natural philosophers Christian Wolff (1679–1754) and Joseph-Nicolas De L'Isle (1688–1768), which began in the late 1710s and led to the foundation of the Imperial Academy of Science in 1724, appear to have begun in the same manner.

On a visit to Paris in 1717, Peter met Guillaume De L'Isle, a renowned French map-maker and member of the Académie Royale des Sciences. During the same trip, Peter first came into contact with his younger brother, Joseph-Nicolas, who helped to choose books and mathematical instruments for the Tsar's collection.² Afterwards, the younger De L'Isle – who had run into trouble for attacking Cassini over the shape of the earth – enthusiastically pursued employment at the Russian court, proposing an ambitious programme of mapping the Empire in 1721.³

¹ In English, a comprehensive overview is A. Lipski, 'The Foundation of the Russian Academy of Sciences', *Isis*, 44/4 (1953), pp. 349–54 and more detail can be found in S. Werrett, 'An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia', PhD dissertation, University of Cambridge, 2000, pp. 57–70; more detailed accounts in Russian can be found in P.P. Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom* (2 vols., St Petersburg, 1862), i; P.P. Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge* (2 vols., St Petersburg, 1870–3), i; and Iu.Kh. Kopelevich, *Osnovanie Peterburgskoi Akademii nauk* (Leningrad, 1977).

² N.I. Nevskaiia, *Istochniki po istorii astronomii Rossii XVIII v.* (St Petersburg, 2000), pp. 12–13.

³ De L'Isle to Blumentrost, 8 September 1721 (reprinted in *ibid.*, 24–33).

Similarly, Peter's first contact with Christian Wolff concerned an eminently practical matter, or rather a phenomenon at the intersection of the Tsar's interest in technology and his love of the rare and unusual. Like many European princes, he was intrigued by the perpetual motion machine designed by Johann Bessler (better known as Orffyreus) and installed in 1717 in plain view in a room at the Landgrave of Kassel's castle of Weissenstein.⁴ In December 1719, the tsar's personal physician Laurentius Blumentrost (1692–1755) wrote to Wolff, then a professor at Halle University, because the latter had published articles on Orffyreus' machine in the *Acta eruditorum*. Blumentrost wanted to know whether the wheel could be improved and put to practical use, requesting the German philosopher's 'sincere judgment' and bowing to his superior expertise.⁵ A year later, Wolff's reply that as his books had earlier demonstrated there was little to be expected from perpetual motion at that time, especially as Orffyreus had not made it possible to study the mathematical principles underlying the machine's operation, began a lengthy correspondence.⁶ In its course, Blumentrost endeavoured to enlist Wolff's mathematical expertise in the service of the Russian state.

In February 1721, Johann-Daniel Schumacher (1690–1761), the Russian royal librarian who also oversaw the Kunstkamera collection, was sent on a tour of Europe.⁷ Peter gave him a set of instructions, a kind of philosophical to-do list of twenty-two items. Schumacher was to visit as many *kunstkammern* and libraries as possible and report back on what he saw. He was to inspect and purchase new machines and instruments.

⁴ The Orffyreus episode, including perpetual motion's dual connection to technology and courtly curiosity, is treated at length in S. Schaffer, 'The Show That Never Ends: Perpetual Motion in the Early Eighteenth Century', *The British Journal for the History of Science*, 28/2 (1995), pp. 157–89.

⁵ Blumentrost to Wolff, January 1719 (C. Wolff, *Briefe von Christian Wolff aus den Jahren 1719–1753 ein Beitrag zur Geschichte der Kaiserlichen Akademie der Wissenschaften zu St. Petersburg* (St Petersburg, 1860), pp. 161–2).

⁶ Wolff to Blumentrost, 20 January 1720 (*ibid.*, 1–2).

⁷ Schumacher, a controversial figure in the history of Russian science, was born in Alsace and studied philosophy at the University of Strasbourg, where he submitted a dissertation entitled 'De Deo, mundo et anima' in December 1710.

His other function was to serve as the Tsar's scientific representative, establishing correspondence with the Académie des Sciences and the Royal Society and recruiting Wolff, De L'Isle, the anatomist Pierre Duverney (1653–1728), a botanist from Leiden, and a British instrument-maker, to the Tsar's service. Finally, Schumacher was instructed to again consult with Wolff about Orfyrreus' *perpetuum mobile* machine and, if the necessary improvements were possible, to agree with Bessler on a price.⁸ There was no mention of any design for a scientific academy.

Upon his return to Russia in 1722, Schumacher produced a lengthy report of his activities for the Tsar.⁹ In detailed descriptions of the various museums and cabinets he had visited, Schumacher followed closely the dictates of the culture of curiosity. He praised objects and collections that were 'wondrous', 'extraordinary', 'incomparable', 'worthy of astonishment'. Some cabinets, by contrast, came in for criticism as not possessing anything out of the ordinary; indeed, a single collection could excel in one area (such as minerals), but fall flat when it came to, for instance, medals. Schumacher also paid attention to the arrangement and display of objects: 'It is a great pity', he wrote of a collection in Dresden, 'that it is very much divided. The room of *naturalia* contains various natural things. The *kunstkammer* has different ancient works of craft. The room of antiquities has Greek and Roman medals ... engravings are in a separate room'.¹⁰ Here, again, the Baroque aesthetic of curiosity, which emphasized contrasts between exhibited objects, was preferred to the strictures of separation by type. In comparison to what he had seen, Schumacher summed up, the Tsar's own Kunstkamera was well-stocked as far as minerals and animals were concerned, but was lacking in plants; the anatomical collection was unparalleled; but the stock of instruments, works of art, medals, and engravings was meagre. In the logic of curiosity, the value of a collection was not just in

⁸ The document is reprinted in Nevskaia, *Istochniki*, 19–24.

⁹ Reproduced in Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom*, i, 533–58.

¹⁰ *Ibid.*, 548.

the objects that it contained, but also in its standing among the cabinets of Europe – that is, a worthy cabinet had to be a curiosity in its own right and only a truly extraordinary collection was worthy of the Tsar.

On other fronts, Schumacher reported that he had succeeded in enlisting the services of De L'Isle and establishing correspondences with fifty scholars. He had spent time with Wolff and, it seemed, had persuaded him to move to Russia. Schumacher also visited Kassel soon after Willem 's Gravesande's examination of Orffyreus' wheel led the inventor to disassemble the machine. He tried to negotiate with him, but when Schumacher proposed hiring two mathematicians to test the engine, Orffyreus refused. In the end, the librarian wrote, 'Your Imperial Majesty will please to understand why the inventor broke his machine'. But his first-hand experience of the complexities of the European natural philosophical scene seems to have left quite an impression on Schumacher. In the report, he noted with surprise how 'it is scarcely to be believed what disputes *perpetuum mobile* has engendered!' before recounting at length the various views on perpetual motion advanced by German, Swiss, Dutch, and British mathematicians. As his survey of the libraries and cabinets of Europe demonstrates, Schumacher was well versed in the culture of curiosity; faced with a different approach to perpetual motion, that adopted by Wolff, 's Gravesande, and other natural philosophers, he faced up to the limits of his expertise.¹¹

It was perhaps at this moment that the idea of establishing a scientific academy – as opposed to a school or university – began to take shape. Notably, Schumacher's initial instructions had been to entice Wolff to enter the Tsar's service 'as a mathematician' (*iako matematika*), the same term that was used to describe immigrant Navigation School teachers like Henry Farquharson (1674–1739). Similarly, De L'Isle was invited to

¹¹ A similar point is made in S. Werrett, 'The Schumacher Affair: Reconfiguring Academic Expertise across Dynasties in Eighteenth-Century Russia', *Osiris*, 25/1 (2010), pp. 109–10. As Werrett notes, Wolff 'recognized [the wheel's] potential as a courtly marvel', but also demonstrated to Schumacher an alternative point of view that the librarian does not appear to have considered previously.

come to Russia to carry out astronomical observations and improve local observatories, not join an academy. However, writing to Wolff from Berlin in July 1722, Schumacher alludes to the Tsar's desire to establish a learned society (of which there had been no mention in the instructions).¹² It seems plausible that the Academy was yet another example of Petrine institutional entrepreneurship – a well-placed member of an existing institution (in this case, the *Kunstkamera*) finding a way to advance a personal agenda by aligning it with the Tsar's wider cultural programme. Even if no explicit plan for an academy existed, Schumacher knew that Peter could be persuaded to support such an idea, if it were presented to him correctly. This required a practical justification (in this case, the need to develop appropriate expertise) and, ideally, the support of an authoritative figure like Wolff.¹³

The librarian's final report thus strongly emphasized the idea of a Russian scientific academy. Schumacher begins the document with a reminder of what Peter's instructions had been, condensing Peter's twenty-two items into thirteen. The last item somewhat reimagines the librarian's mission by claiming that he had been told to establish scientific

¹² Schumacher to Wolff, 10 July 1722 (Wolff, *Briefe*, 164). Kopelevich notes that although Wolff mentions a plan for an Imperial Academy in a letter to Blumentrost from January 1721, this likely refers to an invitation extended by the Holy Roman Emperor Charles VI, as Peter had not yet assumed the title of a Russian Emperor at the time of Wolff's letter (Kopelevich, *Osnovanie Peterburgskoi Akademii nauk*, 46). Her belief that plans for the Russian Academy were made before Schumacher's European trip is based on the librarian's final report and the nature of his tasks, but she admits that there is no archival evidence for this conclusion. Kopelevich does not refer to Peter's instructions for Schumacher, suggesting she was not aware of that document and therefore of the fact that it made no mention of such plans.

¹³ This is consistent with the list of factors that influences the success of a project proposed by Fedyukin (I. Fedyukin, "Prozhektery" kak administrativnye predprinimateli: stanovlenie rannemodernnykh gosudarstvennykh institutov i individual'naia initsiativa', in I. Fedyukin and M. Lavrinovich (eds.), *'Reguliarnaia akademiia uchrezhdена budet...': Obrazovatel'nye proekty v Rossii v pervoi polovine XVIII veka* (Moscow, 2014), p. 19). For an overview of the concept, see Ch. 1, pp. 44ff. Werrett also suggests that Schumacher's involvement was a significant factor in Peter's decision to establish a scientific academy ('The Schumacher Affair', 109–10), but Fedyukin's framework allows us to pinpoint Schumacher's role and situate it within the broader context of Petrine administrative initiatives.

correspondence ‘for the multiplication of arts and sciences in your majesty’s lands, and above all for the composition of a society of sciences, such as the ones in Paris, London, Berlin, and other places’.¹⁴ In this, he claims an unqualified success:

[Wolff] promises to perfect, if it proves possible, perpetual motion, to establish a scientific society and run it for the benefit and pleasure of scholars, foreign and local, and promises likewise to turn all his studies and sciences to the benefit of the people and of students, and only awaits from Your Imperial Majesty a signed contract.¹⁵

In describing his visit to the Académie des Sciences in Paris, Schumacher suggests that a letter from Blumentrost that had been read at a meeting of the academy spoke of the Tsar’s plans to establish a scientific society in Russia.¹⁶ In fact, the letter had made no mention of such plans.¹⁷ The report concludes with a list of several dozen European scholars Schumacher established contact with and ends on a triumphant note: ‘We have made the beginning, and it is only in Your Majesty’s will and power for things to proceed and to end with utility and pleasure’.¹⁸ The groundwork had been laid, all that remained was for the Tsar to approve of the new project.

If Schumacher’s autobiography is to be believed, Peter settled on the idea of the Academy after reading and discussing this report with him.¹⁹ To cast this in the terms of the institutional entrepreneurship model, the librarian succeeded in recruiting to his side

¹⁴ Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom*, 534.

¹⁵ Ibid., 539.

¹⁶ Ibid., 535.

¹⁷ ‘Addition a l’Histoire de MDCCXX’, *Histoire de L’Académie Royale des Sciences* (1722), pp. 125–31.

¹⁸ Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom*, i, 558.

¹⁹ Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, i, 19–20. Notably, in the autobiography Schumacher includes among the aims of his voyage the recruitment of people who could carry out correspondence with the Paris Academy ‘which His Majesty wished to maintain with the said Academy as its member’ rather than of members for a future Russian academy in its own right.

other influential members of the Russian intellectual elite (most notably, Blumentrost) and securing the Tsar's approval for the new institution – thus mobilizing the political and financial capital without which the project would never get off the ground.

Once the idea had been accepted, things moved characteristically quickly. In April 1723, Wolff and Blumentrost began to discuss other scholars to approach as potential members. Schumacher, Blumentrost, and the Russian ambassadors in Berlin and Paris Count Aleksandr Golovkin and Prince Boris Kurakin spent the next two years busily recruiting professors for the new Academy, immersing themselves in the Republic of Letters. Peter himself took an active part in the development of the concept of the new institution. This was recorded in a document now known as the 'Project', which was approved by the Imperial Senate on 20 January 1724.²⁰ Its thirty clauses set out the Academy's structure and purpose, revealing much about Blumentrost's and Peter's vision of the role it could play in the development of Russian society.

The 'Project' is largely aligned with the dominant Petrine view of natural philosophy (described in the previous chapter). According to Schumacher, it was composed by Blumentrost on the Tsar's orders following the discussion of the librarian's report. Schumacher made this claim both in his autobiography and in a letter to Baron Nikolaus Friedrich von Korff, written after Blumentrost's death in 1755.²¹ In her account of the Academy's foundation, Kopelevich struggles to reconcile the timing in Schumacher's memoirs with the dates of his European voyage and concludes that the librarian must have conflated two different conversations, one before and one after the trip.²² If, as I suggest here, the idea of the Academy was conceived by Schumacher *during* the voyage and then presented by Blumentrost and him to the Tsar after his return, the contradiction is resolved.

²⁰ PSZ #4443, vii, 220–4. The text of the manuscript is reproduced in K. Ostrovitianov, *Istoriia Akademii nauk SSSR* (Leningrad, 1958), pp. 429–35.

²¹ P.P. Pekarskii, 'Dopolnitel'nyia izvestiia dlia biografii Lomonosova', *Zapiski Imperatorskoi Akademii nauk*, 8 (1865), p. 6.

²² Kopelevich, *Osnovanie Peterburgskoi Akademii nauk*, 52–3.

The manuscript of the Project was presented to the Tsar in January 1724, and Peter added his own notes before submitting it for approval by the Senate. Blumentrost became the Academy's first president (confirmed by Catherine I in December 1725, before the society's first public assembly). Schumacher's influential position in the new institution was also assured thanks to the provision that charged the librarian both with overseeing the institution's library and the Kunstkamera, now given over to the Academy, and with carrying out correspondence with scholars overseas.²³ Finally, the Project specified an annual budget of 24,912 rubles for the Academy, control over which passed to Schumacher and Blumentrost.²⁴ This was about a quarter of the country's total budget for education and the Medical Chancery in 1725 and more than the Academy's closest competitor – the navigation school known as the Naval Academy, itself the fruit of Petrine institutional entrepreneurship.²⁵ Moreover, it seems that Peter seriously considered merging the two institutions not long before his death, making the Naval Academy subservient to the Academy of Sciences and thus doubling the latter's budget.²⁶

In the end, Peter I did not live to see this institution come to life. He died on 28 January 1725, after the first contract had been signed with Jakob Hermann (1678–1733) for the chair of higher mathematics but before the arrival of any of the academicians. Understandably, the Tsar's death was a cause for some concern about the Academy's

²³ Ostrovitianov, *Istoriia Akademii nauk SSSR*, 432. According to contemporaries, Schumacher made full use of this provision, requiring all letters to go through him if academicians wanted to avoid paying postal fees (*MIAN*, vi, 108-109).

²⁴ Ostrovitianov, *Istoriia Akademii nauk SSSR*, 435.

²⁵ According to S.M. Troitskii's calculations, the total budget for the Academy, various secular primary schools, and the Medical Chancellery was around 100,000 rubles in 1725 (S.M. Troitskii, *Finansovaia politika russkogo absolutizma v XVIII veke* (Moscow, 1956), p. 226). This included 20,000 *p.a.* for the Naval Academy. For the history of that school's foundation as another of Petrine 'projects', see I. Fedyukin, 'Osnovanie Morskoi akademii: dokumenty barona de Sent-Ilera i ego preemnikov, 1715–1723', in I. Fedyukin and M. Lavrinovich (eds.), *Reguliarnaia akademiia uchrezhdena budet...*, pp. 34–68.

²⁶ This was discussed during a session of the Senate in November 1724 (A.I. Andreev, 'Osnovanie Akademii nauk v Peterburge', in A.I. Andreev (ed.), *Petr Velikii. Sbornik statei* (Moscow and Leningrad, 1947), p. 328).

future, but Blumentrost moved swiftly to secure the approval of the new Empress, Catherine I, within a week of Peter's death.²⁷ The plans for the Academy proceeded apace, with the first foreign scholars arriving in June 1725 and the first academic meetings held in August of the same year. Despite significant cuts in government expenditures in the wake of Peter's death, the Academy's budget remained unchanged.²⁸ On 15 August 1725, the Academy's members were presented to the Empress and its first public assembly was held on 27 December 1725. The two academic projectors, then, were able to secure what they wanted: administrative roles of considerable prestige and independence, full control over the institution's financial resources, and a privileged position within the cultural space of the new European empire forged by the late Tsar.

###

The Project, as approved by the Senate, is a reflection on the applicability of European organizational forms in science and education to the Russian case. It contrasts academies and universities as sites of knowledge production and dissemination, respectively, and proposes a hybrid tiered structure for Russia. Academies multiply knowledge and universities help spread it, but neither would be useful on its own in the Russian context, where even primary education is not well developed. Given the disciplinary similarities between academies and university curricula, however, academicians can be induced to devote a small amount of time to teaching, if supplemented by younger student helpers. This discovery is presented with some glee: 'The Faculty of Philosophy could not be more perfect', for example, because academicians of the 'First Class' (mathematics, astronomy, and mechanics) are well-suited to teaching the relevant liberal arts.²⁹

As Michael Gordin has demonstrated, one of the functions of the Academy was to present Russian elites with a new model of sociability, where academic

²⁷ *MIAN*, i, 89.

²⁸ See Troitskii, *Finansovaia politika*, 226–8.

²⁹ Ostrovitianov, *Istoriia Akademii nauk SSSR*, 433.

controversies could be resolved publicly via collegial discussion following a specific social protocol.³⁰ The cameralist model of ‘colleges’ (*kollegii*) was an important part of Peter’s administrative reform of 1718–20, and we can posit the existence of a link between this reorganization of Russian central government along the lines of German and Swedish examples and the structure of the Academy.³¹ (As Simon Werrett points out, the regulations for academicians’ conduct introduced in 1730 were inspired by those already instituted in the Petrine government colleges).³² In both cases, legal requirements were designed to enforce good conduct. The Project’s requirement to provide technical expertise to the state was also in keeping with cameralist views of the role of science in governance.³³ Importantly, however, the Academy was placed under the sovereign’s personal authority, not subject to any of the government colleges. Any assignments for expert work, according to the Project, had to come from the Emperor. The element of self-governance proposed by the Project was also contingent on the approval of its

³⁰ M.D. Gordin, ‘The Importation of Being Earnest: The Early St. Petersburg Academy of Sciences’, *Isis*, 91/1 (2000), pp. 1–31.

³¹ See M. Raeff, ‘The Well-Ordered Police State and the Development of Modernity in Seventeenth-And Eighteenth-Century Europe: An Attempt at a Comparative Approach’, *The American Historical Review*, 80/5 (1975), pp. 1221–43 for a discussion of German inspirations behind Petrine cameralist reforms. One of the key figures in this process was Heinrich Fick (1678–1751), whose projects for an educational system in Russia are some of the forerunners of Schumacher and Blumentrost’s efforts. They are discussed in Ia. Larina, ‘Osmyslenie roli obrazovaniia v gosudarstvennom stroitel’stve: proekty Genrikha Fika pervoi chetverti XVIII veka’, in I. Fedyukin and M. Lavrinovich (eds.), *Reguliarnaia akademiia uchrezhdena budet...*, 70–97. It is also worth noting that the collegial model was at the heart of Leibniz’s numerous proposals for Peter I, although it is unclear what effect, if any, these had (Kopelevich, *Osnovanie Peterburgskoi Akademii nauk*, 32–38).

³² Werrett, ‘An Odd Sort of Exhibition’, 82.

³³ Ostrovitianov, *Istoriia Akademii nauk SSSR*, 432. Scientific study of a state’s interior was seen as crucial for effective governance, particularly in regard to mining and agriculture. An excellent recent work on the differences in the rhetoric of cameralist discourse and the realities of cameralism in practice is A. Wakefield, *The Disordered Police State: German Cameralism as Science and Practice* (Chicago, 2009).

‘protector’ – the Emperor.³⁴ This made the Academy’s continued existence entirely dependent on the will of the sovereign and, therefore, encouraged it to seek patronage at court. On the other hand, it meant that the Academy was, in many ways, *not* a state institution, because it occupied a position outside formal administrative hierarchies. Both of these factors had important consequences for the presentation of scientific knowledge to the elite Russian public.

The Project also gives us a view into Russian attitudes towards the uses of science at the end of the first quarter of the century. The discourse of utility was to play a key role in Russian discussions of the role of natural philosophy over the next few decades, but it is worth noting that utility in the Project was by no means limited to science’s promise for technological advancement. The word ‘utility’ (*pol’za*) appears in many of the Project’s clauses, in a variety of contexts. One of them does indeed concern technology – for example, academicians are charged with studying new inventions and ‘honestly express their opinion of such: 1. That is, are these inventions real, 2. are they of great use or of little. 3. were they known before now or not’.³⁵ Another form of utility is linked to education and, crucially, the production of learned books. Among other duties, academicians were charged with reading ‘good authors from other countries’ and compiling ‘extracts’ (summaries) for publication in Russia; they also had to produce textbooks in their subjects, so that these could be printed ‘in Latin at the Emperor’s expense’. Moreover, ‘since it would be not only of great utility to the Russian people but

³⁴ Ostrovitianov, *Istoriia Akademii nauk SSSR*, 434. It is worth noting that the Project’s authors preferred the scientific academy model, which relied on royal patronage, to the more independent university tradition.

³⁵ Ibid., 432. A similar focus on utility and novelty can be found in the expert reports of the early Académie Royale des Sciences (R. Briggs, ‘The Académie Royale Des Sciences and the Pursuit of Utility’, *Past and Present*, 131 (1991), p. 45), which is explicitly named as a model in the ‘Project’.

also to their glory if such books were printed in Russian', a number of translators were to be hired to serve at the Academy.³⁶ This combination of utility and glory, in fact, seems central to the Project's vision. Thus, as the Project notes early on,

It is impossible to follow the model accepted in other countries here [i.e., in Russia], but we must consider the state of this country in terms of both those who teach and those who study, and to establish such an institution that would increase the country's glory through its multiplication of sciences but also, by teaching and disseminating them, would be useful to the people.³⁷

This, in a nutshell, was the Academy's mission, which governed its structure and the public face of its activities – to perfect sciences and make this new knowledge available in Russia and abroad. Public assemblies, for example, were to be held three times a year to 'provide great entertainment' for foreign visitors to St Petersburg (*chiuzhestrannym velikaia zabava*), wherein public lectures by academicians had to 'include the praises of the protector' – that is, the Emperor.³⁸ Under the Tsar's personal protection, then, this self-governing institution was to play a dual role in the demonstration of civilization. Through its teaching and translation activities, Russians would learn about European civilization; through its perfection of sciences, public assemblies, and Latin publications, foreigners would have proof of the existence of European civilization in Russia.³⁹

³⁶ Ostrovitianov, *Istoriia Akademii nauk SSSR*, 431–2.

³⁷ Ibid., 429. A contemporary project for an academy of arts, submitted in December 1724 by the Tsar's turner Andrei Nartov (1693–1756), made a similar appeal to the glorification of Russia through the advancement of learning (*MIAN*, i, 76). Nartov was to play an important role in the Academy of Sciences' fortunes in the 1740s (see Werrett, 'The Schumacher Affair').

³⁸ Ostrovitianov, *Istoriia Akademii nauk SSSR*, 432.

³⁹ A rival project appears to have been submitted to Peter I by Petr Kurbatov, the son of a noted Petrine projector Aleksei Kurbatov, reprinted in Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom*, i, 59–60. There, the focus is on the Academy as a teaching institution, and its utility is expressed in terms of financial savings from Russians not having to travel abroad for their education. As an interesting point of comparison, both Blumentrost and Kurbatov

Although Schumacher seemed convinced that Wolff was on board, the German philosopher ultimately refused to relocate to Russia despite promises of generous reimbursement and religious toleration as well as reassurances about local climate and cuisine. The first crop of potential candidates for membership of the Academy shared his doubts, and it quickly became apparent that established scholars were unwilling to abandon their positions for the swamps of St Petersburg. Of the six names proposed by Wolff in April 1723, only the Basel mathematician Jakob Hermann (1678–1733) took up the offered position.⁴⁰ The youngest of the six – thirty-seven years old by 1725 – was Johann Leonhard Rost (1688–1727), an astronomer from Nuremberg. Of course, the Academy had already secured an astronomer in Joseph-Nicolas De L’Isle, who was the same age. The rest were all over forty, including Jacob Leupold (1674–1727), who would have been fifty-one by the time of the Academy’s inaugural meeting. Married scholars proved particularly difficult to negotiate with, as their families refused to budge or, perhaps, provided a convenient excuse to stay put.⁴¹

Unable to recruit philosophers with a proven track record, Blumentrost and Schumacher relied on Wolff and other members of the Republic of Letters such as the editor of *Acta eruditorum* Johann Mencke to recommend younger scholars who might be more open to the idea of moving to Russia. This strategy was more successful. Wolff, Mencke, and others used this chance to promote their followers who had not been successful in securing positions in European universities. Surviving correspondence indicates a fairly critical approach on the Russian side, with many of Mencke’s proteges ignored as insufficiently well qualified. In some cases, those who turned down their invitations recommended younger scholars in their stead. This was the case with Johann Gabriel Doppelmayr, who at forty-eight years of age excused himself on the grounds

insisted that the Academy had to be an independent institution, not under the purview of any of the ministerial colleges – an arrangement that would secure the projects’ authors control over their creations.

⁴⁰ Wolff to Blumentrost, 24 April 1723 (Wolff, *Briefe*, 12–15).

⁴¹ Aleksandr Golovkin to unnamed recipient, November 1724 (Wolff, *Briefe*, 180).

of poor health, but proposed the name of Nikolaus II Bernoulli, who became the first professor of general mathematics.⁴² As the first contracts were signed, the new academicians also began to speak on behalf of their acquaintances. The Bernoulli brothers, for example, were responsible for bringing Leonhard Euler (1707–1783) to Russia, although only after the latter had waited several months to learn of the outcome of his application for a vacant chair of physics at the University of Basel, for which he was deemed too young.⁴³ There were few people for whom St Petersburg was the first choice. One exception to this was Christian Goldbach (1690–1764), who travelled to St Petersburg without an invitation in the hopes of securing a position at the Academy.

The Project's provision for two students to accompany each of the academicians to Russia in order to take up teaching duties was also key to recruiting some of the most active future members of the Academy. One of them was Georg Wolfgang Krafft (1701–54), who followed his Tübingen teacher and Wolff's protege Georg Bernhard Bilfinger (1693–1750) to Russia and became a full professor in 1731. In other ways, however, the structure initially proposed by the Project had to be adjusted. In particular, the Academy quickly instituted the ranks of adjunct and extraordinary professors to accommodate the oversupply of members in certain disciplines, like mathematics and history. Some early hires were moved into different positions when more qualified candidates appeared, as was the case with Christian Martini (1699–17??), appointed to the chair of metaphysics and logic to free up the professorship of physics for Bilfinger. Other chairs, like chemistry, were much harder to fill with qualified candidates. The first professor of chemistry was Michael Bürger, a graduate of Königsberg University and an old friend of Blumentrost's. This was the last remaining unoccupied position in the Academy when Bürger was invited, and Blumentrost was keen to assuage the aspiring academician's fears of professional inadequacy:

⁴² *LAN*, p. 34. Doppelmayer lived long enough to become an honorary member in 1740. Wolff himself became the first honorary member in 1725

⁴³ R. Calinger, 'Leonhard Euler: The First St. Petersburg Years (1727–1741)', *Historia Mathematica*, 23/2 (1996), p. 125.

If you are somewhat inconvenienced by chemistry, you may cast it aside, for you will, as I have said, be mostly concerned with practical medicine.⁴⁴

After Bürger's death in 1726 (he fell out of his carriage on the way back from a social visit to Blumentrost's home), the position stayed vacant until 1731, and ultimately chemistry remained an afterthought at the Academy until Mikhailo Lomonosov in the 1740s.

Thus, the neat structures of the Project were quickly disrupted by reality. Insofar as the Academy's role as a cultural model was concerned, Schumacher and Blumentrost soon discovered that there was no single mode of sociability that would be shared by all academicians. Indeed, the Project's marriage of Western European university and academy contexts was at the root of the Bilfinger-Bernoulli controversy.⁴⁵ Georg Bernhard Bilfinger, who had studied and taught at Tübingen and Halle, did not hesitate to criticise Daniel Bernoulli's Newtonian views in strong terms; Bernoulli, on the other hand, was not used to this form of disputation, which was common in German universities. Indeed, this difference of approach was recognized by other observers at the Academy. Describing the episode in his history of the Academy, Gerhard Friedrich Müller (1705–1783), who at the time of the controversy was an adjunct professor of history, wrote:

Bilfinger's obsession with disputes, which he acquired at university and which meant he felt an obligation to not let any discourse in the Academy pass unchallenged, earned him the displeasure of other academicians ... Is it not easy for a man of university learning to let slip an offensive expression, which, according to the rules of disputation, especially if said in Latin, does not count as such? But not everyone can bear it.⁴⁶

The quarrel escalated in 1729 when Bilfinger argued against the proposal to compose and read a eulogy for Bernoulli's brother Nikolaus, a fellow academician, who had died

⁴⁴ Quoted in Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, i, 173.

⁴⁵ For an extensive discussion of the controversy and Schumacher and Blumentrost's efforts to keep it hidden from public view, see Gordin, 'The Importation of Being Earnest', 26–9 and Werrett, 'An Odd Sort of Exhibition', 79–82.

⁴⁶ *MIAN*, vi, 29, 41.

in 1726. At stake here, besides personal animosity, were again two competing visions of public representation of knowledge. Such a eulogy was entirely in keeping with the customs of scientific societies like the Paris Academy, where it served to memorialize members and create a kind of institutional history. Bilfinger argued against it on the grounds that it would be against courtly protocol to recall the death of a private person on a day of royal celebration, but was overruled.⁴⁷ In the aftermath, Blumentrost pointed out Bilfinger's failure to adapt to the social protocols of a scientific academy. He had ignored the fact that the programme was agreed to by the Academic Conference (a collegial gathering of members). As for the eulogy,

...this was nothing contrary to a day of celebration, for it was not a funerary oration, but only a eulogy for a man of merit who had been a member of the Academy, which are always read in public assemblies. In France, it is always done in this sort of assembly ... These eulogies do not intend to draw tears, but to honour the memory of the deceased and of the Academy in the person of one of its members.⁴⁸

Michael Gordin and Simon Werrett have demonstrated how the Bilfinger-Bernoulli episode presented Blumentrost and Schumacher with a challenge of keeping this sorts of academic disagreements 'backstage'. It is worth noting, therefore, that at the root of these disagreements was the Project's attempt to synthesize an idealized 'European' model of social behaviour where no such unified model existed. Because the Academy's members were drawn from a variety of backgrounds, they themselves had different views of proper academic conduct. In the end, Schumacher and Blumentrost were forced to improvise 'appropriate' protocols for the new institution.

###

The contingent nature of the hiring process also had two other important consequences. One was that the Academy's body of personnel was significantly younger than would be

⁴⁷ *MIAN*, i, p. 502.

⁴⁸ *MIAN*, i, p. 532.

expected of such an august institution. The majority of its first members were those for whom, as Johann Bernoulli put it in a letter to his sons, it was

...better to suffer a little from a harsh climate in the icy lands where the Muses are welcome than to die of hunger in a temperate country where they are mistreated and despised.⁴⁹

Of the fifteen first professors (those appointed before 1730), not counting the adjuncts, more than half were thirty-five or younger. The twenty-five-year-old Daniel Bernoulli was the youngest among them. Blumentrost, the president, was thirty-two at the time. Schumacher was a little older, at thirty-three. The first crop of adjuncts, all of whom progressed to professorships in 1730–1, were all younger than twenty-five (including Johann Georg Gmelin (1709–55), who became an adjunct when he was eighteen). All of them took an active part in shaping the Academy's self-presentation, in print and in public ceremonies. The average age of a new professor at the Imperial Academy of Sciences in the period between its foundation and the Charter of 1747 was between thirty-two and thirty-three. For comparison's sake, recall that nearly every single one of the European scholars originally thought worthy of a position at the Academy was over forty, and none were younger than thirty-seven.

This was, then, a group of scholars whose formative years fell outside the period of curiosity's greatest influence. Indeed, by the time most of them entered higher education the status of curiosity in European cultures was undergoing a significant transformation. It was fast becoming 'the preserve of discourses ... which, at least on the face of it, were more marginal, controversial, or less officially institutionalized'.⁵⁰

Thanks to the active role played by Peter I in its foundation and the centrality of Petrine views of science to its Project, the St Petersburg Academy of Sciences is often seen as one of the last institutions of the Petrine era, so its activities are equated with the continuation of his legacy. There is no doubt, too, that this was how the Academy

⁴⁹ Quoted in L.G. Du Pasquier, *Léonard Euler et ses amis* (Paris, 1927), p. 9.

⁵⁰ N. Kenny, *The Uses of Curiosity in Early Modern France and Germany* (Oxford, 2004), pp. 286–7.

itself often wished to present itself. However, it is important to bear in mind that the Academy became a part of the Russian cultural landscape only after the Tsar's death. Many elements introduced within the context of Petrine cultural reforms were seen as hopelessly outdated by the new academicians. The Kunstkamera's fate after its transfer to the Academy's authority (and building) is illustrative of the shift in the official, institutionalized approach to natural knowledge.

Kunstkamera's collections, old and new, began to be used as specimens in scientific research, rather than items of philosophic and aesthetic contemplation, almost immediately. The arrival of a newly-discovered mammoth skeleton coincided with the death of one of the elephants kept in the Summer Gardens of St Petersburg, and a simultaneous examination of the two enabled the Academy's anatomist Johann Georg Duvernoi (1691–1759) to demonstrate conclusively that the two species were related – a discovery presented at a public assembly on 28 June 1728.⁵¹ This research was only made possible by the Kunstkamera edict, which provided the motivation for the mammoth bones, and especially the unwieldy skull, to be sent to St Petersburg. Without the Kunstkamera, there was no reason to do so – as Müller pointed out, mammoth bones had never before been transported outside Siberia because they were not an item of trade.⁵² Under the gaze of a skilled anatomist, the apparently 'useless' bones were transformed into a 'useful' scientific discovery, spectacular enough to be presented at a public ceremony in keeping with the assembly's role of glorifying the Russian sovereign. Moreover, the skeleton was not used to highlight the wonderful variety of being, but instead as a tool of classification, pointing out the similarities between two species and establishing their close relationship. This was against the dictates of curiosity, but entirely in keeping with the 'Enlightenment *episteme*'.⁵³

⁵¹ *LAN*, p. 72.

⁵² *MIAN*, vi, 156.

⁵³ It is interesting to note Duvernoi's own anxiety about his research into elephant anatomy: in a letter to Blumentrost in February 1728, he conceded that others may consider this work too laborious and useless, but it was the only way forward to discovery in an age when only hard work could yield results (*LAN*, p. 67).

In order to carry out this kind of research, members of the Academy insisted on compiling a catalogue of the *Kunstkamera* collections, something that in the seventeenth century ‘usually accompanied the dismantling of the cabinet [and] sounded the death knell of a collection’.⁵⁴ They also objected to the original organisation of space in the *Kunstkamera*, which followed the principles of German *Wunderkammern* to maximise the aesthetic impact. Indeed, Schumacher (who continued to oversee the *Kunstkamera* among his many other duties) was criticised by contemporaries for showing too much concern for the aesthetics of the collection’s display at the expense of scientific accuracy.⁵⁵

Over the course of the 1730s, that approach was abandoned in favour of placing objects of the same kind in the same room, thus creating a ‘mineral’ cabinet, a ‘natural’ cabinet, and so on. Similarly, the addition of a ‘physical’ cabinet that housed a variety of scientific instruments, which could be used to put nature to test in artificial conditions, followed the wider European trend of the period – one that, as you will recall, Schumacher had observed in Dresden in 1722 and criticised in a report to Peter I. Even the Petrine (*Petrovskii*) cabinet, which turned the persona of the late Tsar into a curiosity in its own right, displaying a variety of his personal possessions as well as his likeness in wax, was, as Simon Werrett demonstrates, an early manifestation of the librarian’s efforts to secure Imperial patronage for the new institution.⁵⁶ The crowning glory of Schumacher’s work, the 1741 book of engravings of the various rooms of the *Kunstkamera*, shows all of its objects stored in separate cabinets, organized by type. The

⁵⁴ D.L. Martin, *Curious Visions of Modernity: Enchantment, Magic, and the Sacred* (Cambridge, MA and London, 2012), p. 43.

⁵⁵ T.N. Staniukovich, *Kunstkamera Peterburgskoi Akademii nauk* (Moscow, 1953), p. 80.

⁵⁶ Werrett, ‘An Odd Sort of Exhibition’, 123. As Pogosjan shows, revivals of interest in Peter I as a curiosity – with new exhibits added to the Cabinet – tended to coincide with the accession of new rulers, serving to legitimate the new regime or curry favour with it (J. Pogosjan, *Petr I – arkhitektor rossiiskoi istorii* (St Petersburg, 2001), pp. 368, 369, 390–1). These attempts were not limited to the Academy.

part of the museum with the greatest emblematic potential – the Ruysch collection – is not actually depicted: what the engravings show are the *cabinets* in which the specimens were kept (ILL. 6, p. 287).⁵⁷

In this way, the difficulty of hiring elder scholars of the highest standing led to the importation of views on what constituted appropriate natural knowledge that differed significantly from those held and promoted by Peter I. Although the academicians may have had different opinions on acceptable behaviour in the company of their peers, they largely shared this more contemporary approach to the study of nature.

A second consequence was that the corpus of scientific knowledge (*nauki*), as represented in the Academy, was the result of what were ultimately fairly random selection processes. As Simon Werrett notes, the disciplinary composition of the Academy was much closer to the German *wissenschaften* than, for example, the ‘natural knowledge’ of the Royal Society. It encompassed ‘a broad sweep of knowledge, including not only natural sciences but also humanities such as law, history, rhetoric and philosophy’.⁵⁸ But even within this broad definition, the presence and relative visibility of scholarly disciplines within the Academy varied significantly from both the Project and its European models. Several chairs, such as physiology, were not provided for in the Project. In other cases, like anatomy, several people took up work in the same discipline. And some positions proved very difficult to fill.⁵⁹ In the end, some disciplines were overrepresented – there were 4 professors of astronomy by the late 1730s; others, like chemistry, did not play anywhere near the significant role they had in European scientific societies like the Académie Royale des Sciences.

Insofar as the Academy was an exemplar of European learned culture, these contingent circumstances could not but affect the perception of sciences among its Russian

⁵⁷ *Palaty Sanktpeterburgskoi Imperatorskoi Akademii nauk biblioteki i Kunstkamery* (St Petersburg, 1741), pp. 1–57.

⁵⁸ Werrett, ‘An Odd Sort of Exhibition’, 64.

⁵⁹ See Kopelevich, *Osnovanie Peterburgskoi Akademii nauk*, 139–143, which includes a table of all professors and adjuncts up to 1747 and notes their relationship to the Project.

audience. Moreover, the Academy's public activities were in turn shaped by its internal politics (as in the Bilfinger-Bernoulli episode) and its patronage strategies. But they also depended on individual members' willingness to reach out to Russian audiences. The Academy provided a number of opportunities for this kind of 'public engagement', but not everyone made the same choices in utilising them. The Project envisioned three major ways in which the Academy could participate in the wider Russian elite culture and demonstrate its 'utility': education, public ceremonies, and the production of books. By 1747, only the latter could be said to have been wholly successful, going far beyond the Project's original intentions. All three, nonetheless, played an important role in the Academy's abandonment of curiosity as an appropriate attitude to nature and its replacement with the discourse of pleasure and utility.

Part II: The Useful Academy

Over the course of 1727–8, the St Petersburg Academy of Sciences moved into its new headquarters on Vasil'evskii Island, taking over two buildings across the River Neva from the Winter Palace. One, originally designed for the Kunstkamera in the late 1710s and still under construction at the time of the Academy's inauguration in 1725, now housed the Academy's collections and its library, as well as the Academic Chancellery (Schumacher's office). At its heart was a round chamber, the Academy's anatomy theatre; the observatory moved into the building's elegant tower, its spire topped with an armillary sphere. The second building, a former royal mansion, was chosen for its proximity to the first and secured by Blumentrost in a flurry of activity immediately after Peter I's death.¹ Meetings of the Academic Conference, lectures, and public demonstrations of scientific experiments were to be held there. By 1740, about half of the mansion was taken over by a printing press and accompanying facilities, including a letter foundry and a bookshop.²

The move to Vasil'evskii Island symbolized the Academy's supersession of the Kunstkamera as the chief scientific institution in the empire. The Academy's closest neighbour was the Twelve Colleges' complex, under construction since 1722: the administrative centre of the empire, housing the government ministries and the Senate. Next along the Neva embankment was the private residence of Prince Aleksandr Menshikov, the most powerful man in the country, who was about to celebrate the marriage of his daughter Maria to the new emperor, Peter II (Catherine I died in May 1727). Menshikov, who had no formal education but was fascinated by astronomy, was the first Russian to become a Fellow of the Royal Society.³ Charged with the young royal's education, he had arranged for Peter to live in his palace and ordered the construction of another

¹ Iu.Kh. Kopelevich, *Osnovanie Peterburgskoi Akademii nauk* (Leningrad, 1977), p. 82.

² *Palaty Sanktpeterburgskoi Imperatorskoi Akademii nauk biblioteki i Kunstkamery* (St Petersburg, 1741) contains detailed plans and engravings of the two Academy buildings.

³ A.S. Vucinich, *Science in Russian Culture: A History to 1860* (London, 1963), p. 66.

palace next door that was to serve as the Emperor's own residence. As plans were made for the Academy to relocate in 1726–7, Vasil'evskii Island would have seemed like the perfect location at the administrative and aristocratic heart of the empire.

This was not to be. In September 1727, Menshikov fell from power and was exiled to Siberia. In January 1728, Peter II travelled to Moscow for his coronation, never to return to the city on the Neva. The court and the government colleges followed him. By 1732, when they came back to St Petersburg under a new Empress, Anna Ioannovna (r. 1730–40), the Academy's ability to directly address the elite of Russian society had been severely compromised.

The Academy's survival required the demonstration of its cultural relevance. The earliest efforts to do so centred on the main form of utility envisioned in the Project: education. In the Project's idealized world, this was the most direct link between the academicians and the Russian public, a space where they could interact face-to-face in a controlled environment. The Academy's university and gymnasium were free to attend and did not discriminate on the basis of social status or rank. The success of this enterprise, however, was undermined early on by its inability to adjust to the social structures of Russian life.

As the Project's authors had noted, the lack of an established system of secondary education meant that few pupils would be prepared for the advanced subjects taught by academicians. Thus, the Academy had to find those who had gone through some schooling (ideally in German or Latin – few of the professors learnt Russian) or had private tutors. Ecclesiastical schools provided some of the former, for whom the Academy represented a path to social mobility.⁴ The latter, however, could only be recruited from among the richer noble families. From that point of view, 1728 was something of a turning point. As the nexus of political and social life shifted back to the old capital, many of the students left St Petersburg. The school's rector, the historian Gottlieb Siegfried Bayer (1694–1738), reported to Schumacher that 'the removal of the Imperial Court to

⁴ For a discussion of the career choices offered by academic science, see Ch. 8, pp. 226–250.

Moscow has been a blow to the gymnasium here, because almost all of its pupils, especially from among the nobility, have gone there with their parents'.⁵ By the time the court returned, the Academy had a strong competitor: the Noble Cadet Corps school, which took over the Menshikov Palace building. Its main advantage was that unlike academic pupils, the students at the Corps graduated with an officer's rank.⁶

The importance of rank to the Russian society in the post-Petrine era is difficult to understate. Peter I continued and codified the Muscovite practice of compulsory state service for members of the nobility. His ultimate legacy was the so-called Table of Ranks (1722), a fourteen-level hierarchy of all positions within the army, the navy, in the civil service, and at court.⁷ By reaching one of the top eight ranks, a servitor entered into hereditary nobility. Service was mandatory, lifelong (or, after 1736, limited to 25 years), and began at the bottom of the hierarchy of ranks. This was a point of some contention for the nobility, who sought any means to circumvent these strictures. One of the paths available was the Noble Cadet Corps, whose students were guaranteed ranks upon graduation. By contrast, the Academy had been placed outside this service hierarchy, so that even professors did not have official ranks. As Müller noted,

To those who wished to dedicate themselves to higher sciences, the Academy offered no prospects ... Were they to enter military or civil service afterwards, they would have had to start at the bottom ... In a state where every advantage was determined by rank ... even the greatest

⁵ Quoted in D.A. Tolstoi, *Akademicheskaia gimnaziia v XVIII stoletii* (St Petersburg, 1885), p. 5.

⁶ For a nuanced discussion of the Noble Cadet Corps, its foundation, and the connection between its pedagogic practices and Russian conceptions of nobility, see I. Fedyukin, 'Learning to Be Nobles: The Elite and Education in Post-Petrine Russia', PhD dissertation, University of North Carolina at Chapel Hill, 2009. See also L. Schulze, 'The Russification of the St. Petersburg Academy of Sciences and Arts in the Eighteenth Century', *British Journal for the History of Science*, 18/3 (1985), pp. 305–35.

⁷ PSZ #3890, vi, 486. The Table of Ranks, with some modifications, remained in place until 1917. For an overview of its significance to various social classes in the 18th century, see J. Hassell, 'Implementation of the Russian Table of Ranks During the Eighteenth Century', *Slavic Review*, 29/2 (1970), pp. 283–95.

scholars were without one. What man of noble birth would want to stick to scholarship? ... [This was] one of the greatest hindrances to the utility the Academy could and should have had.⁸

By educating the empire's elite, the Academy was supposed to produce a partisan body of graduates in the highest ranks of society whose very service could exemplify the institution's utility. The relative failure of its gymnasium and university meant that the demonstration of utility had to take forms that would be more relevant to the social reality of post-Petrine Russia.

One of these was the provision of various kinds of expertise to the state and the court, both of which had their disadvantages.⁹ By maintaining links with the cameralist institutions of the state, the Academy could make a claim to utility as a centre of technological expertise. Indeed, the Academy's cameralist roots were embedded in its physical space.¹⁰ Similarly, academicians could participate in the life of the court through the production of fireworks and panegyrics. However, as Schumacher's constant struggle to justify his focus on such 'auxiliary' activities shows, both these strategies potentially entailed a loss in status for the institution. In order to uphold the cultural prestige of sciences, the Academy needed to find a way to address the noble audience that shunned its educational establishments. This meant, first and foremost, adjusting to the tastes of Anna Ioannovna's court.

⁸ *MIAN*, vi, 175–6.

⁹ Schumacher's efforts in this area have been the focus of much work by Simon Werrett. See in particular S. Werrett, 'An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia', PhD dissertation, University of Cambridge, 2000, S. Werrett, 'The Schumacher Affair: Reconfiguring Academic Expertise across Dynasties in Eighteenth-Century Russia', *Osiris*, 25/1 (2010), pp. 104–26, and relevant chapters in S. Werrett, *Fireworks: Pyrotechnic Arts and Sciences in European History* (Chicago and London, 2010). Werrett convincingly argues for a broad definition of 'expertise' that includes both literary and technological *inventio*.

¹⁰ See Werrett, 'An Odd Sort of Exhibition', 104–26 for an analysis of the Academy's building as a 'demonstration' of cameralist good order.

'Endeavour as useful as it is difficult': Academic print culture and control over knowledge

There is some debate over whether we can postulate the existence of an *ancien régime*-style court society in Petrine Russia. As Sergei Pol'skoi suggests, Peter I had largely abandoned the social conventions of his father's court, instead relying on and reforming Muscovy's administrative machinery. Given the endless wars of the first two decades of the century and the Tsar's active personal participation in them, his court had been more akin to a coterie or 'company' of close associates. It was a community, but not a society. 'A new Europeanized court', Pol'skoi notes, 'only began to take shape in the 1730s, when the Empress Anna Ioannovna confirmed its ranks and instructions'.¹ The period saw the codification of the first five ranks' right (indeed, duty) of attendance at court, as well as a regular annual cycle of ceremonies and celebrations. Petrine assemblies, held in private homes, almost completely disappeared by 1735.² Instead, the social life of the elite revolved around the Empress' palaces. This growing divide between the 'court' and the city public was even reflected in the official calendar of celebrations.³

A new court required a new type of courtier who exercised 'control over their internal and public life [and had] the ability to observe themselves and others, which in turn led to the development of more complex psychology and encouraged the process of individualization'.⁴ As Pol'skoi demonstrates, the centrality of the court to the life of the first four or five ranks of the Russian nobility after 1730 encouraged greater interest

¹ S.V. Pol'skoi, 'Dvor i "pridvornoe obshchestvo" v poslepetrovskoi Rossii', in N.N. Petrukhintsev and L. Erren (eds.), *Praviashchie elity i dvorianstvo Rossii vo vremia i posle petrovskikh reform* (Moscow, 2013), p. 366.

² K.R. Berk, 'Putevye zametki o Rossii', in I.N. Bespiatykh (ed.), *Peterburg Anny Ioannovny v inostrannykh opisaniakh*, 1996, p. 166.

³ J. Pogosjan, *Petr I – arkhitektorskaia istoriia* (St Petersburg, 2001), pp. 338–63. On the relationship between the city and the court, see also P.R. Keenan, *St Petersburg and the Russian Court, 1703–1761* (Houndmills, Basingstoke, 2013).

⁴ Pol'skoi, 'Dvor i "pridvornoe obshchestvo"', 367. Studies of the Russian court build on the work of Norbert Elias and his later critics; for an overview of recent scholarship in this

in European conduct manuals for courtiers. These emphasised the importance of polite behaviour and a good education but advised against delving ‘into philosophy’ (*vo filozofiiu*) too deeply.⁵ In one representative example, the manual’s author noted, with disapproval, how ‘many wish with great curiosity to see how the world is created, but do not want to know themselves’.⁶ A nobleman’s ideal education was one that progressed from languages to history, to poetry and politics, and then at last to natural philosophy. The latter gave him the knowledge of ‘the creation of the world, man’s wondrous state, the properties of animals, plants, and gems’; but this was a ‘knowledge of vanities’ (*znanie suety*), which paled in comparison to a mastery of ethics – that is, of proper conduct.⁷ Indeed, one must be ‘a philosopher at court’, but ‘never seem like one. Although it is a wise man’s true duty to philosophize, this is now out of fashion’.⁸ This new type of courtier was always on display and had to adapt their behaviour to the social norms of their peers. In Russia, this led, among other things, to ostentatious displays of wealth that often threatened the livelihood of the nobility: ‘We are struck’, the Swedish traveller Karl Berck wrote, ‘by the luxurious clothes that have become habitual at court. Such excesses had been unknown in Peter’s time, first began under Catherine ... and have reached their peak under Anna ... The courtiers compete with each other in luxury’.⁹

These circumstances imposed limitations on the Academy’s efforts to promote, in accordance with the Project, a culture of public demonstrations. In 1739, the new *Regulation* produced by the astronomer Georg Wolfgang Krafft for the Academy gymnasium suggested the Academy had two purposes: to carry out research and

area see E.A. Zitser, ‘Post-Soviet Peter: New Histories of the Late Muscovite and Early Imperial Russian Court’, *Kritika: Explorations in Russian and Eurasian History*, 6/2 (2005), pp. 375–92.

⁵ Pol’skoi, ‘Dvor i “pridvornoe obshchestvo”’, 358–363.

⁶ B. Gracian y Morales, *Gratsian pridvornoi chelovek*, trans. S. Volchkov ([St Petersburg], 1742), p. 182.

⁷ *Ibid.*, 186–7.

⁸ *Ibid.*, 87.

⁹ Berk, ‘Putevye zametki’, 154. For a discussion of the personal economics of Russian courtly luxury, see A. Kahan, ‘The Costs of “Westernization” in Russia: The Gentry and the Economy in the Eighteenth Century’, *Slavic Review*, 25/1 (1966), pp. 40–66.

...publicly demonstrate the discovered and collegially confirmed (*obshchim soglasiem podtverzhdennye*) truths in all sciences and branches of knowledge, and in particular to educate the Russian youth in them, so that their utility could with time spread through the Empire.¹⁰

Krafft essentially suggests that formal teaching at the Academy was a form of public scientific lecturing of the kind that featured so prominently in Western European urban life in the eighteenth century.¹¹ Indeed, as far as the Academic university was concerned, it was difficult to tell one from the other – there were no matriculation lists and, in practice, no real definition of who counted as a student.¹² The lectures were free, open to all, and advertised as such. However, they were held on the Academy's premises and lacked the commercial component of their British coffeehouse counterpart or the salon

¹⁰ A. Kostin and T. Kostina, 'Reglament Gimnazii pri Imperatorskoi akademii nauk v Sankt-Peterburge Georga Vol'fganga Kraffa 1739 goda i ego podgotovka', in I. Fedyukin and M. Lavrinovich (eds.), 'Reguliarnaia akademiia uchrezhdена budet...': *Obrazovatel'nye proekty v Rossii v pervoi polovine XVIII veka* (Moscow, 2014), p. 239. This represented a subtle shift in the understanding of utility in education: now utility was a feature of the disseminated knowledge rather than of the process of teaching as such.

¹¹ The literature on 'public science', which frequently relied on spectacular demonstrations, in the eighteenth century ranges wide. See, in no particular order, the collection B. Bensaude-Vincent and C. Blondel, *Science and Spectacle in the European Enlightenment* (2008); S. Shapin and S. Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton, 2011); M.R. Lynn, *Popular Science and Public Opinion in Eighteenth-Century France* (Manchester, 2006); H.J. Zuidervaart, 'Science for the Public: The Translation of Popular Texts on Experimental Philosophy Into the Dutch Language in Mid-Eighteenth Century', in S. Stockhorst (ed.), *Cultural Transfer through Translation: The Circulation of Enlightened thought in Europe by Means of Translation* (Amsterdam and New York, 2010), pp. 231–62; J. Delbourgo, *A Most Amazing Scene of Wonders: Electricity And Enlightenment in Early America* (2006); M. Fissell and R. Cooter, 'Exploring Natural Knowledge: Science and the Popular', in R. Porter (ed.), *The Cambridge History of Science*, iv: *Eighteenth-Century Science* (Cambridge, 2003), pp. 129–58.; for a methodological discussion, R. Cooter and S. Pumfrey, 'Separate Spheres and Public Places: Reflections on the History of Science Popularization and Science in Popular Culture', *History of Science*, 32/97 (1994), pp. 237–67.

¹² T. Kostina, 'K voprosu o chislennosti i statuse pervykh akademichskikh studentov v Peterburge (1725–1732 gg.)', *Vestnik PSTGU. II Istorii*, 68/1 (2016), pp. 32–44. In total, there had been at least 50 'students' at the Academy's university in the period between 1725 and 1732.

associations pursued by French scientific lecturers.¹³ In its draft Charter of 1725 (composed by the professors' conference but never ratified into law), the Academy sought to ensure that a series of demonstrations would be on-going at any point in time: the physics professor was to teach a course in experimental physics in summer and theory in winter; the anatomist, on the other hand, was to alternate between public dissections in winter and medical lectures in summer.¹⁴ The public experiments and dissections were also advertised separately from the lecture programme. Academicians appreciated the importance of experimental demonstrations and their spectacular potential. It appears, however, that their audience did not. As Müller recalled, Bilfinger's programme of experiments, based on the works of 's Gravesande, initially met with the public's approval. However, 'several weeks later the interest waned. As for the anatomical demonstrations, there were few enthusiasts'.¹⁵

It is unclear how well attended and regular such public lectures were. Early in 1734, the jurist Johann Simon Beckenstein (1684–1738) suggested that lectures should be scheduled on an individual basis with students instead of publicising fixed hours for each lecture – suggesting the number of attendees was small enough for this to be a workable arrangement.¹⁶ In May 1738, a new programme of public lectures was announced, which began in the presence of 'guests,' though the lectures that followed seem to have mostly been attended by a handful of university students.¹⁷ Indeed, the physiology professor Josias Weitbrecht (1702–1747) only had two students in October 1738, and lectured

¹³ L. Stewart, 'Other Centres of Calculation, Or, Where the Royal Society Didn't Count: Commerce, Coffee-Houses and Natural Philosophy in Early Modern London', *British Journal for the History of Science*, 32/2 (1999), pp. 133–54; G.V. Sutton, *Science for a Polite Society: Gender, Culture, and the Demonstration of Enlightenment* (Boulder, CO and Oxford, 1995).

¹⁴ *MIAN*, i, 315. Throughout 1720s, the academicians referred to the Charter as if it were ratified, but this does not appear to have actually happened (see Iu.Kh. Kopelevich, *Osnovanie Peterburgskoi Akademii nauk* (Leningrad, 1977), pp. 81–8).

¹⁵ *MIAN*, vi, 114. By contrast, translations of 's Gravesande into English by John Theophilus Desaguliers played a notable role in the development of English public science.

¹⁶ *LAN*, p. 135.

¹⁷ *LAN*, pp. 214–15.

at home.¹⁸ Sporadic efforts to revive these events were also made throughout the 1740s until 1746, when Mikhailo Lomonosov (recently appointed to the professorship of chemistry) began a series of public lectures in Russian.¹⁹ What is clear is that they did not attain the same cultural significance as they did in London, Paris, colonial America, or beyond.

It seems likely that this was for reasons similar to those behind the relative failure of the Academy's educational institutions among the nobility. The court's removal to Moscow in 1728 meant that, from early on, the demonstrations' potential noble audience was much smaller. However, after the court's return Academic public lectures and demonstrations did not find a willing audience because their format and venue were out of tune with the elite's social lives.

The Academy's location on Vasil'evskii Island proved to be a serious handicap. When plans for the relocation were made, the island was supposed to become the most prestigious part of the city. By the time the court returned, Vasil'evskii was something of a ghost town, with numerous unfinished buildings. As the life of the court shifted to the mainland, where it was centred on Anna Ioannovna's Winter and Summer Palaces, the Island was not a popular destination among the courtiers.²⁰ To make matters worse, there was no bridge across the Neva until 1732; once built, it had to be taken apart in spring and autumn as the Neva River thawed or froze. The Academy's first public assembly in December 1725 had to be postponed precisely for that reason, as was the one in spring of 1731; floods were also a concern. For a courtier, there was little chance to be seen at the Academy by peers and therefore little social gain from going there, unless the occasion was a grand public ceremony. This went against the grain of the new courtly ethos of ostentatious display.

¹⁸ *LAN*, p. 221.

¹⁹ *LAN*, pp. 256, 284, 290. The Russian lectures were ordered by the Senate, and Lomonosov spent a year preparing for them. When they did take place, special invitations were sent to the Cadet Corps and all government colleges (*LAN*, pp. 310, 324, 326). The first lecture was well attended, but the second was postponed at least twice before the course resumed two months later.

²⁰ Berk, 'Putevye zametki', 172–3.

Two other types of public demonstrations were attempted by the Academy. One, designed to make the Academy's participation in court life as spectacular as possible, was the production of fireworks. Unlike Bilfinger's experiments and Duvernoi's dissections, the fireworks displays produced by the Academy were integrated into the life of the court and the annual cycle of public celebrations; they also built on a pre-existing tradition of fireworks, going back as far as the seventeenth century. This was, as Werrett notes, one of the reasons they succeeded.²¹

The other, as the Project stipulated, was the 'public assembly' (note the use of the same term as for the social events mandated in 1718). The purpose and audience of these events – to glorify the sovereign in the eyes of foreign visitors – was confirmed in the draft Charter.²² The Academy proposed holding three public meetings a year, with orations 'adapted to the understanding of the listeners' delivered by a member of each of the three academic classes in turn. Such assemblies would serve to represent the disciplinary variety at the Academy and emphasize its direct relationship with the sovereign. We have seen, however, how troublesome such assemblies proved to organize, and they finally lapsed for a full decade after 1732, as fireworks displays took precedence. Even before then, the Academy did not keep to the proposed schedule. There were at most eleven public assemblies between 1725 and 1747 – never more than two a year (in 1728, 1729, and possibly 1732), and none at all between 1732 and 1742.²³ We could, perhaps, add to this number the first of Mikhailo Lomonosov's public lectures in 1746, which was attended by 'a large gathering of listeners of many military and civil ranks [and] the Academy's President himself.'²⁴

²¹ S. Werrett, *Fireworks: Pyrotechnic Arts and Sciences in European History* (Chicago and London, 2010), pp. 9–10.

²² *MIAN*, i, 309–10.

²³ For the assembly on 31 April 1730, no record other than a printed Latin invitation survives (*MIAN*, i, 629–30); I also include in this number a public assembly under discussion in the academic conference in April–May 1732 (*LAN*, pp. 114–15). It is nonetheless entirely possible, given the lack of other records, that either one or both of these were not held.

²⁴ V.L. Chenakal, A.V. Topchiev and N.A. Figurovskii (eds.), *Letopis' zhizni i tvorchestva Lomonosova* (Moscow and Leningrad, 1961), p. 104.

When these ceremonies were held, they do seem to have been quite well attended. They were open to the public – announcements were printed and distributed beforehand, and we have a record, for example, of a Ukrainian nobleman on a visit to St Petersburg attending the first of these assemblies together with the princes Cantemir, in addition to the lofty dignitaries reported in histories of the Academy.²⁵ There was also some ‘audience participation’, as in 1729, when Admiral Peter von Sievers spoke to express some doubt about the contents of Bernoulli’s speech and promised to provide a frigate to test his theory.²⁶ Nonetheless, the assemblies never achieved the prominence envisioned for them in the Project. In the absence of the court from St Petersburg, these occasions could hardly be used to stress the direct connection of the Academy to the sovereign. Language was also an issue – few of the first academicians spoke Russian; the speeches were delivered in Latin, French, or German, depending on the professors’ abilities and preferences. This was not necessarily a problem given the official purpose of these events, the demonstration of imperial glory to ‘foreigners’. But it imposed another limitation on the Academy’s ability to engage directly with members of Russian elites.

Perhaps to address these issues, a different strategy seems to have been adopted with the return of the court in the 1730s. This was to stage ‘private’ but ceremonial demonstrations at court or for visiting dignitaries, then report such occasions in the newspaper. The first of such demonstrations, in fact, occurred as early as 1728, for Peter II and Menshikov.²⁷ After 1732, the Academy fashioned itself into something of a compulsory destination for visiting envoys and other travellers. These and other interactions between the worlds of the Academy and the court were assiduously reported in the *SPV*, helping to ‘scale’ them beyond the narrow circle of actual participants and demonstrating the

²⁵ P. Apostol, ‘Dnevnik Petra Danilovicha Apostola. (Mai 1725 g. – mai 1727 g.)’, ed. A.L. Lazarevskii, *Kievskaia starina*, 50/7 (1885), p. 128.

²⁶ P.P. Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge* (St Petersburg, 1870), i, 104.

²⁷ *LAN*, p. 60.

connection between philosophy and courtly life. Going forward, it was the Academy's control over print that enabled it to reach the noble audience so little interested in its public lectures.

###

The outsize role print came to play in the Academy's interaction with Russian elites was something of an accident. In the Project, printing was auxiliary to two of its three primary purposes: education and the pursuit of glory. The professors were charged with producing 'extracts' (a characteristically Petrine book genre) of foreign works, which would be sent to the press 'with other inventions and discourses from the Academy in due time'. They were also supposed to compose Latin textbooks 'for the benefit of studying youths', supplemented by Russian translations 'of great utility to the Russian people, and also to their glory'. (A translator was to be hired for each of the academic classes, presumably to specialize in that particular disciplinary area). In recognition of the technical expertise necessary for the production of complex works, the Academy was also to have its own artist and engraver.

One sign of how little thought seems to have actually gone into the Academy's relationship with print was the complete lack of specific censorship provisions. The production of books under Peter I was tightly controlled by the Tsar himself, and several secular and church printing presses were located both in St Petersburg and Moscow.²⁸ The Project was clearly composed under the assumption that this arrangement would continue. Given the Tsar's personal patronage of the Academy, Russian texts produced by its members could be expected to be vetted in the same manner as other Petrine publications. As far as books in foreign languages were concerned, the academicians appear to have been trusted to know best what to publish. With Peter's death, the existing

²⁸ From a legal point of view, these were all subject to the Holy Synod since its establishment in 1721. In practice, Peter often served as the sole arbiter and censor for secular book production. S.P. Luppov, *Kniga v Rossii v pervoi chetverti XVIII veka* (Leningrad, 1973), pp. 55–7.

system ground to a halt – not least because it was highly dependent on state subsidies, and Peter’s successors were determined to cut costs. ‘Confronted with the evidence of runaway budgets,’ Gary Marker writes, ‘they forced publishing to submit to an extensive consolidation, which by 1728 had almost completely dismantled the Petrine publishing edifice’.²⁹ The Academy was the main beneficiary of this reform, with major long-term consequences for its place in the Russian intellectual landscape.

Very early in its history, it became apparent that Russian printers were unable to serve the Academy’s needs. One of the reasons for this was the lack of printing expertise or indeed the founts needed for foreign-language publications. As early as May 1725, Blumentrost requested permission for the Academy to have its own print shop, referencing the Project’s provision for the production of ‘extracts’ as well as the need to publish ‘a foreign journal of its own, pertaining to sciences, for the benefit (*v pol’zu*) of the curious’.³⁰ The Academy purchased two printing presses together with founts in Europe, but these did not arrive until September 1726.³¹ In the meantime, it resorted to placing orders for ephemera (notices of public lectures and assemblies) with the Synod and St Petersburg Presses. Texts in Latin and German – speeches made at the academicians’ first reception with Catherine I and at the first public assembly – were dispatched to be printed as far afield as Reval (now Tallinn) and Königsberg.³²

The Academy’s desire to control its printing activities led to the inclusion of a separate provision for an academic print shop in the draft Charter of 1725. Unlike the Project, where print was mentioned in passing and largely in the context of education, the Charter’s authors explained the press’ purpose and, remarkably, insisted on academic freedom from censorship: ‘The Academy is to have its own print shop, with a privilege to publish and sell anything that the Academy finds to serve either the multiplication

²⁹ G. Marker, *Publishing, Printing, and the Origins of Intellectual Life in Russia, 1700-1800* (Princeton, 1985), p. 41.

³⁰ *MIAN*, i, 111–12.

³¹ *MIAN*, i, 201.

³² *MIAN*, vi, 105; *MIAN*, i, 184–5.

of sciences, or the growth and glory of the empire'.³³ Thus, printing was presented as central to both the Academy's research activities and its position within the cameralist structures of the empire. At that stage, it seems, both of these concerns looked to an audience outside Russia: recall that 'glory' in the Project was to be achieved in the eyes of the foreigners; similarly, the 'multiplication of sciences' by definition involved the transmission of research findings to scholars in Europe. Perhaps this was why the Academy felt it was able to lay a claim to editorial independence: these were the exact matters in which Peter had wanted to rely on academic expertise. According to the draft Charter, editorial decisions were to be made collegially by the Academic Conference.³⁴

In the course of the post-Petrine reform of publishing, this vision had to be adjusted. In October 1727, following a request by the Synod, the Senate instituted a geographical and institutional separation of religious and civil printing. All church and monastic presses were consolidated into one, which would hereafter publish 'only church books, as it was of old, in one place in Moscow under the authority of the Synod'. As for secular books,

There are to be two presses in St Petersburg, that is: one at the Senate, for the printing of laws, and, for the printing of historical books translated into Russian and approved by the Synod, one at the Academy.³⁵

From a legal point of view, therefore, the Academy's press was subjected to Synodal censorship, while the adjective 'historical' alluded to Peter I's original designation of all subject matter that was to be printed with the civil script.³⁶ We may assume, therefore, that, with the exception of legal texts, the Senate intended for all secular books to

³³ *MIAN*, i, 303.

³⁴ *MIAN*, i, 307.

³⁵ *PSZ* #5175, vii, 873.

³⁶ 'These letters [are to be used] to print historical and manufacturing books' (*PiB*, x, 27). See also the introduction to Part I of this thesis (pp. 39–43).

be first approved by the Synod.³⁷ In reality, this particular choice of words – ‘historical books translated into Russian’ – gave the Academy some much-needed wiggle room to escape total oversight and gradually expand the limits of its autonomy.

With the transfer of all secular printing presses to its authority, the Academy took over the publication of the only newspaper in Russia, the *Sanktpeterburgskie vedomosti* (‘St Petersburg news’, hereafter *SPV*).³⁸ This had never been subject to Synodal censorship and did not come under it now. The Academy was also able to quickly secure its first exemption on the basis of subject matter rather than form and genre. In February 1728, with the court, Senate, and Synod in Moscow for Peter II’s coronation, Schumacher consulted one of the Academy’s early patrons, the Senate ober-secretary Ivan Kirilov, on whether its new Russian magazine and its plans for dictionaries and grammar books fell under Synodal censorship, since they were not, strictly speaking, ‘historical’. Kirilov’s responded that they did not need to go through the Synod.³⁹ Notably, the Synod itself was not consulted on this matter.

³⁷ For a comprehensive overview of the censorship of Academic books throughout the century, see D.V. Tiulichev, ‘Tsenzura izdanii Akademii nauk v XVIII v.’, in Moiseeva, Kopanев and Stepanov (eds.), *Sbornik statei i materialov biblioteki AN SSSR po knigovedeniiu*, pp. 71–114. For some reflections on the effectiveness of church censorship in eighteenth-century Russia, see O.A. Tsapina, ‘Voiny za Prosveshchenie? Moskovskii universitet i dukhovnaia tsenzura v kontse 50-kh - nachale 70-kh gg. XVIII v.’, in R. Bartlett and G. Lehmann-Carli (eds.), *Eighteenth-Century Russia: Society, Culture, Economy* (Berlin, 2007), pp. 157–71.

³⁸ The *SPV* was a successor to the first Russian printed newspaper of the same name; the Academy began to issue its own newspaper in German in January 1727 (through the old St Petersburg Press), around the same time its Russian counterpart stopped (G.A. Kniazev and K.I. Shafranovskii, ‘Akademicheskaiа gazeta 1727 g.’, in A.A. Moiseeva, A.I. Kopanев and A.N. Stepanov (eds.), *Sbornik statei i materialov biblioteki AN SSSR po knigovedeniiu* (Leningrad, 1970), pp. 139–53). The two publications essentially merged into one from 1728, with the Russian and the German version sharing much of the material.

³⁹ *MIAN*, i, 354–5. Ivan Kirilov (1689–1737) was a civil servant who rose through the ranks in the Petrine era. At the Senate, he coordinated the state’s cartographic projects, which put him in close contact with De L’Isle; he also began to compile an atlas of Russia, parts of which were published by the Academy in the 1730s. For a brief English biography, see L. Bagrow, ‘Ivan Kirilov, compiler of the first Russian Atlas, 1689–1737’, *Imago Mundi*, 2/1 (1937), pp. 78–82; or, in Russian, M.G. Novlianskaia, *Ivan Kirilovich Kirilov. Geograf XVIII veka* (Moscow and Leningrad, 1964).

From that point onwards, the authorities (or, more frequently, individual patrons at court) were approached on a case-by-case basis when the Academic Chancellery (or Schumacher personally) had doubts about specific works. Most books in Russian were produced, as far as we can tell, with no real regard for the Synod's opinion. Certain kinds of texts – historical documents, especially monastic chronicles; calendars – were, indeed, a contested ground. It is worth noting, however, that contrary to most narratives of religious obscurantism the Russian Orthodox Church was in no position to seriously oppose the Academy or the cultural reforms it represented.⁴⁰

Throughout the century, the Church experienced a sustained assault on its standing in society, its administrative independence, and its property. This pressure from the government coincided with significant internal divisions, inherited from the Great Schism of the mid-seventeenth century as well as arising from early eighteenth-century conflicts between traditionalists, 'latinizers', and 'Protestant sympathizers'. At the same time, rapid imperial expansion led to the growth of Muslim, Jewish, and pagan populations in Russia, all of which presented new challenges to the church. In these circumstances, the encounter of a small, elite part of society with European natural philosophy could hardly rank high among the Synod's pressing concerns. Modern historians of Russian Orthodoxy have done much to correct the outdated perception of the post-Petrine church as a 'handmaiden of the state', which always sat uneasily with the idea of its determined opposition to Europeanization.⁴¹ Instead, in the words of a pioneer in the field, the arc of church-state relations in the Imperial era represented 'a

⁴⁰ Representative of such narratives is A.S. Vucinich, *Science in Russian Culture: A History to 1860* (London, 1963), pp. 87–8, but the 'conflict thesis' is, to this day, a recurring feature of scholarship on science, religion, and education in eighteenth-century Russia. It goes back to Pekarskii, who was writing at the height of Russian Orthodox opposition to Darwinism in the mid-nineteenth century. In the twentieth century, it had an obvious appeal for Soviet scholars: a major contribution to the genre was the otherwise excellent B.E. Raikov, *Ocherki po istorii geliotsentricheskogo mirovozzreniia v Rossii: iz proshlogo russkogo estestvoznaniia* (2nd ed., Moscow, 1947).

⁴¹ This call to reinterpretation was first sounded in G.L. Freeze, 'Handmaiden of the State? The Church in Imperial Russia Reconsidered', *The Journal of Ecclesiastical History*, 36/01 (1985),

systematic and conscious exclusion of the Church from secular matters and confinement to strictly “spiritual” affairs’. As a result, the Synod became ‘an institution parallel to, not inside, the state apparatus’.⁴²

The same description – parallel to, but not inside – could be applied to the Academy. As a result, when the Synod and the Academy clashed, it was usually in the context of an institutional struggle over the demarcation of what each saw as its sphere of influence. The Synod’s influence was on the wane and the Academy’s on the rise, but the former sought to defend those areas of learning where it felt it still held sway. In 1734, for example, the Academy requested, through the Senate, the Synod’s permission to print verbatim material from monastic chronicles. In doing so, it specifically referenced the 1727 edict’s emphasis on ‘historical’ books – thus asserting its autonomy in other areas of knowledge.⁴³ Given this chance, the Synod objected to the publication on the basis that the texts ‘contained obvious lies ... which may be a temptation to the people’.⁴⁴ Similarly, calendars – which traditionally served the needs of the Church and contained saints’ days and other potentially sensitive material – were not only a lucrative best-seller, but also an important cultural battleground.⁴⁵ In other cases, the Academy’s administrators and scientists, born and educated abroad, held publications back because of their own

pp. 82–102; for an overview of the results, see G.L. Freeze, ‘Russian Orthodoxy: Church, People and Politics in Imperial Russia’, in D. Lieven (ed.), *The Cambridge History of Russia*, ii: *Imperial Russia, 1689–1917* (Cambridge, 2006), pp. 284–305.

⁴² Freeze, ‘Handmaiden of the State? The Church in Imperial Russia Reconsidered’, 89–90.

⁴³ *MIAN*, ii, 458.

⁴⁴ Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, i, pp. lxvii–lxviii.

⁴⁵ For a fascinating discussion of the importance of ‘time ownership’, see V. Zhivov, ‘Vremia i ego sobstvennik v Rossii rannego Novogo vremeni (XVII–XVIII veka)’, in V. Zhivov (ed.), *Ocherki istoricheskoi semantiki russkogo iazyka rannego Novogo vremeni* (Moscow, 2009), pp. 27–100. The desecularization of the annual calendar is described in J. Pogosjan, “‘Desekuliarizatsiia’ ofitsial’nogo kalendaria v pravlenie Elizavety Petrovny’”, in M.O. Chudakova (ed.), *Tynianovskii sbornik. Vypusk 13. Dvenadtsatye–Trinadtsatye–Chetyrnadtsatye Tynianovskie Chteniia. Issledovaniia. Materialy* (Moscow, 2009), pp. 11–28. The Academy’s history with printed Russian calendars is addressed in Ch. 6, pp. 169–189.

expectations about the potentially difficult relationship between religion and science.⁴⁶ This was despite the fact that, given the Russian Orthodox Church's limited prior exposure to European natural philosophy, such a rejection could not be assumed *a priori*. Indeed, until his death in 1736, most of the censorship duties fell to Feofan Prokopovich, then head of the Synod and a patron of the Academy who regularly borrowed telescopes and other instruments from it and was sympathetic to the institution's aims.⁴⁷

Finally, the Academy's publishing activities had another side which fell almost entirely under its control. Neither the Synod nor the Senate seem to have had any interest in exercising censorship over foreign-language publications.⁴⁸ Their production did not usually require the involvement of translators, since members of the Academy and the wider public could often supply the original material to be published. Perhaps this was why foreign-language publications were predominant in the early output of the Academy and its printing press, and it was not until the 1740s that Russian material began to reliably outnumber that in other languages.

###

In the twenty years between its establishment and the approval of the Academy's first official Charter in 1747, the press produced a total of at least 621 titles or volumes: 286 in foreign languages, 259 in Russian, and 76 multilingual publications with Russian texts (dictionaries, panegyrics, fireworks prospects in bilingual Russian-German editions, and so on). From the beginning, this was a commercial endeavour as well as a way to

⁴⁶ This was the case, for example, with Antiochus Cantemir's translation of Bernard Le Bovier de Fontenelle's *Dialogues sur la pluralité des mondes*, completed in 1730 but not printed, at Schumacher's discretion, until 1740 – an episode addressed in Ch. 7, pp. 214–223.

⁴⁷ Feofan Prokopovich (1681–1736) was a Ruthenian cleric who played a key role in Peter I's church reforms. On Prokopovich's friendly relationship with the Academy, see I. Chistovich, *Feofan Prokopovich i ego vremia* (St Petersburg, 1868), pp. 617–25.

⁴⁸ The same chronicles that Synod had objected to were published in German as *Sammlung Russischer Geschichte* (8 volumes between 1732 and 1737), without any apparent trouble.

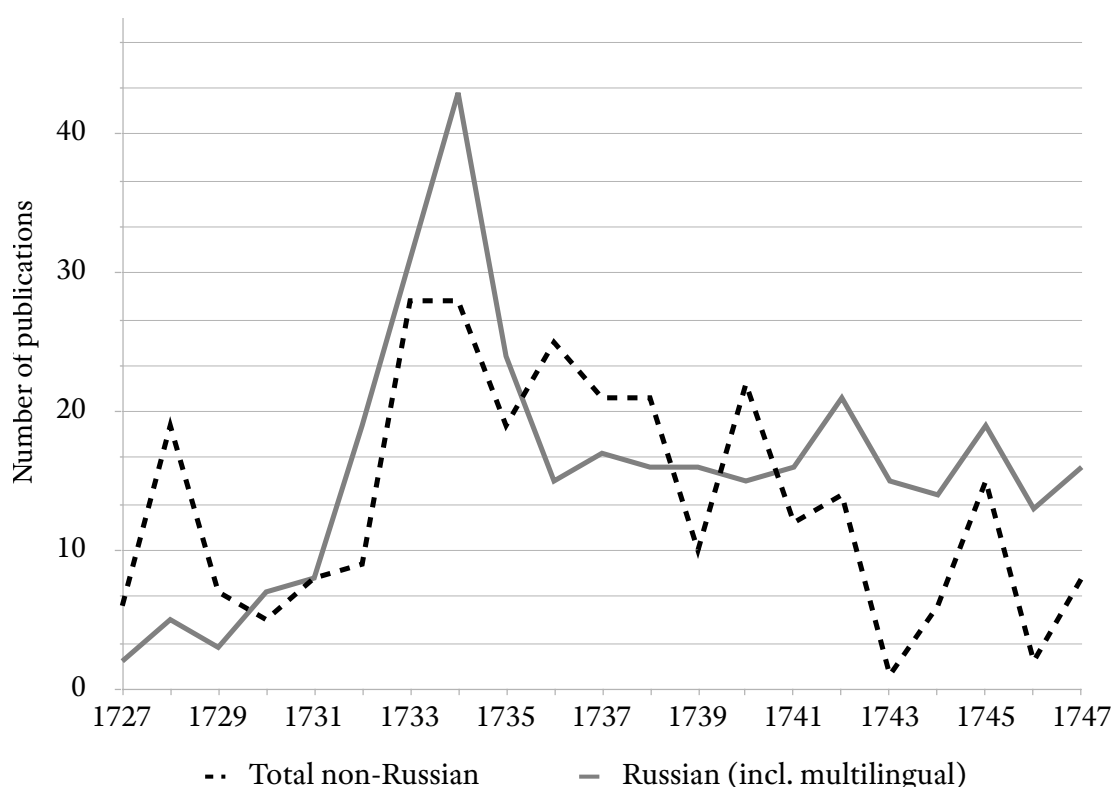


FIG. 1. Volumes published in each year by the Academy of Sciences press (1727–47), by language of publication.

disseminate knowledge and shape elite culture. The edict of 1727 secured a captive audience for the press and it was patently obvious that the market had an appetite for more than just the academicians' research output.

Nonetheless, the earliest publications of the Academy served primarily its own purposes. These included notices of upcoming public assemblies and lectures and early German and Latin panegyrics by the jurist Johann Simon Beckenstein (1684–1742) and the historian Bayer. One of the first orders of business was the production of the Academy's own Latin journal, modelled on the *Philosophical Transactions* and the *Mémoires de l'Académie des Sciences*. In April 1728, after some debate, the Conference

settled on *Commentarii Academiae scientiarum imperialis Petropolitanae* for its title.⁴⁹ This new journal, conceived as an annual publication, was to serve as the Academy's public face in Europe, demonstrating the fruits of academicians' works to their peers abroad. The title page of the first volume, which was dedicated to Peter II, sported an allegorical vignette demonstrating the unity of natural sciences and humanities, accompanied by the image of a tree and the motto 'Paullatim' – 'Gradually'.⁵⁰ The volume was divided into three 'classes': mathematical, physical, and historical, with the addition of a stand-alone section for astronomical observations. The dedication and the preface were written by Goldbach, the Academy's secretary, who made sure to include a separate compliment to Heinrich Ostermann, the then royal favourite.⁵¹ In short, here was the typographical representation of the Academy and a record of its collegial concerns and labours.

The Academy also began to pursue the publication of its members' research in standalone volumes, printing Latin works by Bayer, the botanist Johann Christian Buxbaum (1694–1730), and the professor of mechanics and optics Johann Georg Leutmann (1667–1736). These were often complex, expensive projects requiring numerous engravings of plants and, in Bayer's case, Chinese characters. Throughout the next two decades, the Academy continued to publish its *Commentarii* and standalone scientific works (mostly medical and botanical, but also in mathematics and physics as well as history) at a steady rate of about two to four volumes a year.⁵² In doing so, it was mostly concerned with the

⁴⁹ The issues under debate included whether the word *scientia* was an appropriate description for the Academy's fields of study; academicians were also choosing between *Petropolitanae* and *Russica* (Kopelevich, *Osnovanie Peterburgskoi Akademii nauk*, 145).

⁵⁰ *Commentarii Academiae scientiarum Imperialis Petropolitanae*, i (St Petersburg, 1728).

⁵¹ Heinrich Johann Friedrich Ostermann (1687–1747) was born in Bochum to a Lutheran pastor. He was expelled from Jena University for duelling and in 1704 entered Russian service, rising quickly to prominence. He was among the chief ministers of Anna Ioannovna's reign, overseeing foreign policy. Sentenced to death at the accession of Elizabeth I, he was pardoned and exiled to Siberia, where he died five years later.

⁵² The average between 1728 and 1747 is 2.3 volumes a year: there were no such books in 1730, 1734, 1743, and 1746. New volumes of *Commentarii* were often delayed when the Academy faced financial or political difficulties: the volume for 1730–1 came out in 1738, for example, and by 1747 the journal had only caught up to 1738.

scholarly audience abroad, enhancing the reputation of the Academy's members among their peers. Such publications often included dedications to Russian rulers and royal favourites – especially at times of regime change – but these tended towards the formulaic rather than inventive. Nonetheless, the Academy could claim that its publications promoted an enlightened image of Russia abroad.

Addressing the Russian market, however, presented new opportunities to demonstrate the Academy's utility and pursue patronage at the imperial court. While, as we have seen, the school and the university did not prove a great success with the Russian elites, especially as the court left St Petersburg, the Academy had another opportunity to shape pedagogic ideas and practice. As early as April 1726, Blumentrost presented Goldbach to the Empress and Prince Menshikov (then at the zenith of his power) as a potential tutor for the future Emperor Peter II. Goldbach, it seems, was less than enthused about this idea. It took numerous dinners with Menshikov and Ostermann for Goldbach to reluctantly agree in April 1727.⁵³

For the Academy, this was something of a coup. Catherine I was gravely ill, as the royal physician Blumentrost knew better than anyone. Goldbach's appointment was a way to please two powerful patrons at court, Menshikov and Ostermann, and maintain a direct link to the throne in Peter, the heir, as well as his sister Princess Natalia. (On a personal level, Goldbach received a rank at court and a significant salary bump – from 600 to 2,000 rubles a year).⁵⁴ Although Menshikov soon fell out of favour and the young Emperor preferred to spend his time away from books and in the woods, hunting, Goldbach's role in representing the Academy grew ever more important with the court in Moscow.⁵⁵

⁵³ A.P. Iushkevich and Iu.Kh. Kopelevich, *Khristian Gol'dbakh. 1690–1764* (Moscow, 1983), pp. 74–5.

⁵⁴ Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, i, 158–64.

⁵⁵ Goldbach's appointment and its connection with the Academy's publication of Peter II's textbooks is also touched on by Werrett ('An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia', PhD dissertation, University of Cambridge, 2000, pp. 76–7), who errs in proposing that this was Ostermann's idea. As discussed below, evidence suggests the initiative belonged to Blumentrost, instead.

In July 1727, Blumentrost ordered academicians to begin work on textbooks on history (Bayer), jurisprudence (Beckenstein), and mathematics (Hermann).⁵⁶ By August, as Schumacher's report to the Emperor shows, the list of subjects also included civil and military architecture (also by Hermann), geography and astronomy (De L'Isle), politics, ethics, and experimental philosophy (Bilfinger), and heraldry (Beckenstein). Even at this early stage, Schumacher expressed the hope that 'because everyone knows that Your Imperial Majesty has a great eagerness for sciences, the nobility – seeing this – [will be] driven to follow the example of so virtuous a sovereign'.⁵⁷ In the absence of noble interest in its school from the nobility, the Academy resorted to the printing press to publicise its royal connection and make visible the Project's notion of education as a form of utility.

Although initially prepared for Peter II, the textbooks on mathematics and astronomy, history, and heraldry went into print. These 'extracts' were written in French and German so that they would be 'particularly helpful to His Majesty in learning the sciences themselves as well as both languages'.⁵⁸ Blumentrost and Schumacher, keen to reach the wider Russian public, repeatedly called on the authors to expedite their work and its publication.⁵⁹ The first fruits of this project – Hermann and De L'Isle's French

⁵⁶ G. Smagina and M. Lavrinovich, 'Uchilsia li imperator Petr II i chemu? "Raspolozhenie uchenii imperatora Petra II" v politicheskoi i akademicheskoi kontekstakh epokhi', in Fedjukin and Lavrinovich (eds.), *Reguliarnaia akademiia uchrezhdenna budet...*, p. 129.

⁵⁷ *MIAN*, i, 271–86.

⁵⁸ Goldbach to Ostermann, 6 July 1727 (reprinted in N.I. Pavlenko, *Petr II* (Moscow, 2006), pp. 177–8). This was a problem for Bayer who, as Müller recalled, 'was not used to writing in the German language, especially when the question-and-answer teaching method was prescribed' (*MIAN*, vi, 46).

⁵⁹ Smagina & Lavrinovich, 'Uchilsia li imperator Petr II i chemu?', 128–9. Blumentrost's instructions at his departure with the court in January 1728 called for the speedy completion of work on the textbooks (*LAN*, p. 66). In February 1728, in the midst of preparations for Peter II's coronation, Blumentrost asked for an immediate report on the progress of textbooks on geometry and astronomy (*MIAN*, i, 355–6). Müller claimed that Schumacher's demands for 'extracts' exceeded his authority and were motivated by his desire to boss the academicians around (*MIAN*, vi, 161). It seems more likely that Schumacher understood the importance of this project to the Academy's standing at court.

textbooks on mathematics, astronomy, and geometry with their Russian translations – came off the presses in the same year, in 1728.⁶⁰ These volumes, together with an attempt at a Russian translation of the *Commentarii* in the same year, represented the first effort to engage Russian audiences in their own language.⁶¹ They were complex typographical endeavours: handsomely produced, with emblematic representations of arts and sciences at the top of each chapter, engraved initials, and mathematical notation.⁶² The original volumes on mathematics and astronomy had print runs of 1,060 copies each; on fortifications, history, and (in 1731) heraldry – of 530 copies. All of the translations had print runs of 630 copies.⁶³

As with education and demonstration, the language barrier hindered the Academy's efforts to attract a broader elite audience. However, the nature of print made it

⁶⁰ J. Hermann, *Abregé des mathematiques pour l'usage de sa Majesté Imperiale de toutes les Russies. Tome I. Contenant l'arithmetique, la geometrie et la trigonometrie* (St Petersburg, 1728) and J. Hermann, *Sokrashchenie matematicheskoe ko upotrebleniiu Ego Velichestva Imperatora vseia Rossii. Chast' pervaiia. Soderzhashchaia Arifmetiku, Geometriiui, i Trigonometriiui*, trans. I.S. Gorlitskii (St Petersburg, 1728); J.-N. De L'Isle, *Abregé des mathematiques pour l'usage de sa Majesté Imperiale de toutes les Russies. Tome II. Contenant l'Astronomie et la Geographie* (St Petersburg, 1728) and J.-N. De L'Isle, *Sokrashchenie matematicheskoe dlia upotrebleniia Ego Velichestva Imperatora vseia Rossii. Kniga pervaiia. Soderzhashchaia astronomiiui i geografiiui*, trans. I.S. Gorlitskii (St Petersburg, 1728); J. Hermann, *Abregé des mathematiques pour l'usage de sa Majesté Imperiale de toutes les Russies. Tome III. Contenant la fortification* (St Petersburg, 1728) (followed by J. Hermann, *Sokrashchenie matematicheskoe ko upotrebleniiu Ego Velichestva Imperatora vseia Rossii. Chast' tretiiia, soderzhashchaia fortifikatsiiui*, trans. I.S. Gorlitskii (St Petersburg, 1730)); G.S. Bayer, *Auszug der älteren Staats-Geschichte zum Gebrauch Ihro Kayserl. Majestät Petri des II* (St Petersburg, 1728). The latter only came out in the original German and no translation followed.

⁶¹ *Kratkoe opisanie kommentariiev Akademii nauk. Chast' pervaiia na 1726 god* (St Petersburg, 1728).

⁶² Mastery of print was considered a sign of belonging to European civilization, as a 1730 Academic panegyric to the visiting Portuguese prince Emmanuel proclaimed: 'The press and the founts say clearly: muses have made this place their home' (*MIAN*, vi, 198–9).

⁶³ *MIAN*, i, 698–700. Information about print runs is often hard to come by for this period, but it seems that the accepted range was between 300 and 1250 copies; the only secular publications with higher known print runs were calendars, laws, and dictionaries or grammars.

possible to produce translations over time periods that would have been impractical in the classroom or the anatomy theatre. Schumacher and the translators working under his direction were acutely aware of the issues posed by the introduction of new and complex topics, each with their own language and terminology. There had been no uniform approach to the translation of texts in the Petrine era. Instead, individual translators, in the spirit of institutional entrepreneurship, had worked on their own or in small, ideologically motivated groups and then had to defend their choices before the public and the sovereign.⁶⁴ With the centralization of printing, the translation of printed works was centralized, too.

Translators were among the Academy's first hires – experienced hands like Johann Paus (1670–1735) and Ivan Il'inskii (?–1737) as well as younger Russians of the first Petrine generation like Ivan Gorlitskii (1690–1777). Vasilii Adodurov (1709–1780), another translator, was a student at the Academy university and later rose to the rank of adjunct in mathematics. These textbooks became their first major assignments. In terms of language, the early translations display many of the features characteristic of the Petrine approach: they lack a settled terminology, make heavy use of synonyms and loan words, and occasionally depart from the source material in the name of 'clarity'.⁶⁵ However, the fact that the authors, the translators, and the printers were all brought together under one roof created the conditions for a major innovation in translation practices.

As work on the textbooks progressed, Gorlitskii, who worked on Hermann's and De L'Isle's *Abregé des mathematiques*, read out his translations of each chapter in the presence of the authors, Schumacher, and other translators. Initially, this seems to have been an expedient suggested by Schumacher to ensure that the first translated edition of the

⁶⁴ One example of this was the translation of Bernhard Varenius' *Geographia generalis* published in 1718 after a long row with Peter I over the translator's linguistic choices. See V. Zhivov, *Language and Culture in Eighteenth-Century Russia*, trans. M.C. Levitt (Boston, 2009), pp. 68–83; E.V. Lukicheva, 'Fedor Polikarpov – perevodchik "Geografii general'noi" Bernarda Varenii', *XVIII vek*, 9 (1974), pp. 289–96.

⁶⁵ For some reflections on Petrine practices of translation, see Nikolaev, S. I., 'O stilisticheskoi pozitsii russkikh perevodchikov petrovskoi epokhi (k postanovke voprosa)', *XVIII vek*, 15 (1986), pp. 109–22; Kopanov, N. A., 'Petr I – perevodchik', *XVIII vek*, 16 (1989), pp. 180–3.

Academy Press was as free of errors as possible.⁶⁶ The same approach was employed for *Kratkoe opisanie kommentariiev*: authors prepared short versions of their contributions to *Commentarii*, which were read out publicly and then translated into Russian.⁶⁷ By 1729, this collegial approach became the norm.⁶⁸ Moreover, Schumacher made a point of highlighting this method of verification in his correspondence with Russian patrons like Kirilov: ‘It was read out and witnessed in the presence of the author and other translators ... and then, by consensus (*po obschemu soglasiuu*), [they] corrected that which was translated incorrectly’.⁶⁹ Similarly, Schumacher’s preface to *Kratkoe opisanie* emphasised how

...to each translator we gave such dissertations (discourses) as were on the subject we knew he understood the best, and also the translation itself was read out in the presence of all translators and reviewed by them.⁷⁰

Thus, the mode of sociability displayed in the Academic Conference and the public assembly not only served as an exemplar to the Russian nobility but also extended to other activities within the Academy – including, crucially, the community of translators that was at the heart of Russian literary culture in the 1730s–40s. This new approach was emphasised to the readership to reassure them of the translation’s quality.

In 1735, as part of broader reforms introduced by the Academy’s new president Baron Johann Albrecht von Korff (1697–1766), the translators were reorganized into the so-called ‘Russian Conference’ (*Rossiiskoe sobranie*). This codified existing practices: translators were to meet several times a week to read out their work to each other and correct it collectively. To mark the occasion, the Conference’s leading translator and court poet Vasilii Trediakovskii (1703–1769) delivered a speech, published by the

⁶⁶ *LAN*, p. 67.

⁶⁷ *MIAN*, vi, 156. The translations were also heard and edited collectively (*MIAN*, i, 392).

⁶⁸ *MIAN*, i, 439.

⁶⁹ Schumacher to Kirilov, 4 April 1728 (*MIAN*, i, 369).

⁷⁰ *Kratkoe opisanie kommentariiev*...

Academy in the same year.⁷¹ This was a kind of linguistic manifesto for the Conference. Trediakovskii proclaimed their task ‘as useful as it was difficult’ and promised that it would ‘further glorify the Russian people and their language’.⁷² He noted that Russian had improved immeasurably since the time of Peter I and emphasised the need to take into account its usage at court, in sermons and civil service, as well as by educated people. The scientific society in St Petersburg, Trediakovskii stressed, was only one of the many groups in Europe to embark on the journey of linguistic improvement, citing the models of Florence, Paris, and Leipzig.⁷³ Finally, he offered his speech for judgment by members of the Conference, highlighting the collective nature of this endeavour. In print, this read as an invitation to readers to join this new community of Russian literati.

The creation of a stable and sufficient vocabulary was at the heart of this project.⁷⁴ The institutionalization of translation had a lasting effect on the development of Russian. The fact that translators had direct access to the authors somewhat mitigated their lack of scientific expertise – although Peter I had insisted that translators should be experts, there were no native experts on the topics now discussed in the Academy (this was, after all, its *raison d’être*). Now translators could consult the authors directly if they found particular points difficult to understand; authors also had the chance to correct translations before they went to press. At the same time, because translators met regularly and worked together, they could work out terminological differences and arrive at a more unified lexical system. Thus, throughout the 1730s, we observe a gradual decrease in the use of synonyms or even in the variability of scientific terminology (i.e., the use of different terms by different translators). The language of Petrine scientific texts had been,

⁷¹ V. Trediakovskii, *Rech’, kotoruiu v Sanktpeterburgskoi imp. Akademii nauk, k chlenam Rossiiskago sobraniia, vo vremia pervago onykh zasedaniia, marta 14 dn., 1735 goda, govoril Vasilii Trediakovskii...* (St Petersburg, 1735). Reprinted in V. Trediakovskii, *Sochineniia i perevody kak stikhami, tak i prozoiu*, ed. N.Iu. Alekseeva (Moscow, 2009), pp. 145–50.

⁷² Ibid., 145.

⁷³ Ibid., 148–9.

⁷⁴ Ibid., 150.

as Kutina described it, ‘a review of every kind of resource made available by language for the needs of expressing scientific ideas’.⁷⁵ Petrine readers would routinely encounter passages such as this:

*A flexuosa or tortuosa line, a twisting or serpentine line, it consists mostly of different parts of the circle coupled together.*⁷⁶

It may be suggested that, in keeping with the dominant emblematic culture of this period, Petrine translators avoided one-to-one signification in the hope that the use of numerous terms would better illuminate the meaning of the original. The 1730s, on the other hand, saw ‘the beginnings of semantic and grammatical specialization of terms [and the breakdown] of many of the synonymy relationships observed in the language of the previous two decades.’⁷⁷ This was made possible by the unusual circumstances where

...the formation of scientific terminologies in Russia at the time was akin to a laboratory experiment ... [They were] created by people with similar educations and language skills, united in a group and coordinating their activity, in a very brief, by historical standards, period of time.⁷⁸

Thus, instead of seeking to uncover meaning by enlisting ‘every kind’ of linguistic ‘resource’ at once, the Academy’s translators pursued certainty and clarity by developing a systematic terminology and imposing order. In effect, the Russian Conference epitomised Russia’s transition to Foucault’s Classical *episteme*, just as the Academy’s cataloguing work or Duvernoi’s mammoth represented a shift from ‘Renaissance’ curiosity to ‘Classical’ classification as the dominant attitude towards nature within state-sponsored institutions. By the 1740s, we find Lomonosov consciously settling

⁷⁵ L.L. Kutina, *Formirovanie iazyka russkoi nauki (terminologiya matematiki, astronomii, geografii v pervoi treti XVIII veka)* (Moscow and Leningrad, 1964), p. 194.

⁷⁶ A.E.B. von Pürkenstein, *Priemy tsirkulia i lineiki, ili Izbranneishee nachalo v matematicheskikh iskusstvakh*, trans. J. Bruce (Moscow, 1709), p. 21.

⁷⁷ L.L. Kutina, *Formirovanie terminologii fiziki v Rossii. Period predlomonosovskii: pervaya tret’ XVIII veka* (Moscow and Leningrad, 1966), p. 264.

⁷⁸ *Ibid.*, 265.

on specific terms and placing high value on their consistent use in his translation of *Vol'fianskaia eksperimental'naia fizika* ('Wolffian experimental physics').⁷⁹ Prescribed attitudes and the language that expressed them went hand in hand; changes in the former were not simply publicised through translations but reflected in their linguistic choices. It was no accident that among the main projects of the Academy's translators was the composition of a grammar of Russian based on formal principles – in the same way that the Port-Royale grammarians symbolized for Foucault the difference between the Renaissance and Classical *epistemes*.⁸⁰

The project of imposing a clear and consistent terminological structure also had another consequence. As Joel Mokyr has suggested,

Although knowledge is a public good in the sense that the consumption of one does not reduce that of others, the private costs of acquiring it are not negligible, in terms of time, effort, and often other real resources as well.⁸¹

These 'access costs', as Mokyr calls them, differ depending on the type of knowledge under scrutiny. The Petrine era, with its influx of European experts and books, original and translated, represented a dramatic lowering of access costs to European technical and scientific knowledge for members of Russian elites compared to the seventeenth century. (Indeed, in Muscovy such costs can be said to have been prohibitively high for all but a few individuals). As Mokyr goes on to suggest, 'language, mathematical

⁷⁹ V.V. Zamkova, 'Fizicheskaia terminologiiia v "Vol'fianskoi eksperimental'noi fizike" M.V. Lomonosova', in I.S. Sorokin (ed.), *Materialy i issledovaniia po leksike russkogo iazyka XVIII veka* (Moscow and Leningrad, 1965), pp. 87–115.

⁸⁰ For Foucault's view on differences between linguistic representation in the Renaissance and Classical *epistemes*, see M. Foucault, *The Order of Things: An Archaeology of the Human Sciences* (London, 2002), pp. 70–4. See also reflections on a similar theme regarding German in A.S. Lifschitz, 'The Arbitrariness of the Linguistic Sign: Variations on an Enlightenment Theme', *Journal of the History of Ideas*, 73/4 (2012), pp. 537–57. Work on grammars and dictionaries went on throughout the 1730s–40s, culminating in Lomonosov's 'first' Russian grammar of 1755.

⁸¹ J. Mokyr, *The Gifts of Athena: Historical Origins of the Knowledge Economy* (Princeton and Oxford, 2002), p. 7.

symbols, diagrams ... are all means of reducing access costs. Shared symbols ... reduce the costs of accessing knowledge held by another person or storage device.⁸² In that sense, the Academy's translation project continued to lower access costs by creating a shared language of natural knowledge and utilising complex technical printing at large scale – such as that of mathematical treatises with formulae and illustrations. And yet, Mokyr notes,

Access costs ... depend not just on technological variables. They also depend on the *culture* of knowledge: if those who possess it regard it as a source of wealth, power, or privilege, they will tend to guard it more jealously ... Language, notation, and jargon are also barriers to access.⁸³

In that light, the creation of a unified scientific terminology can be seen to serve a dual purpose. On the one hand, the dissemination of natural knowledge in Russian made it available to a greater portion of the population, particularly those outside the court and beyond St Petersburg. On the other hand, by couching this knowledge in a highly specialized language increasingly divorced from everyday use – as documented by Kutina – the Academy also raised access costs while presenting itself as a kind of gatekeeper. The Petrine translations could be difficult to read and the choice of words differed from one translation to the next, but they presupposed no knowledge on the part of the reader. Now, learning about nature in print meant doing so through the Academy and on its terms. To gain access to knowledge construed as culturally prestigious, readers had to buy into Academy-prescribed attitudes towards natural philosophy, its uses, and its role in elite society. In that way, the print monopoly allowed academicians to effectively control what would and would not constitute acceptable and elite forms of cultural and intellectual life.

In all likelihood, the immediate royal circle itself was not the primary target audience of such translations. Peter II's teachers relied on the original, non-Russian textbooks; indeed, there is reason to believe that others at court were also able to read

⁸² Ibid., 7.

⁸³ Ibid., 8.

the Academy's output in German, French, or Latin, and therefore had no immediate need for the translations. To celebrate Peter II's coronation, the Academy held a public assembly where De L'Isle and Daniel Bernoulli discussed Copernican cosmography. As Goldbach reported from Moscow in July 1728,

The Grand Duchess asked me yesterday about Monsieur De L'Isle's speech concerning the movement of the earth, which she has almost finished reading, and I have no doubt she will keep reading today.⁸⁴

This was almost certainly in French – the Academy printed the original texts of the speeches, but no Russian translation.⁸⁵ A Russian text had been prepared, but Schumacher worried that its defence of Copernican doctrine might be opposed by readers or the authorities on religious grounds. On 11 July, he wrote to Blumentrost in Moscow asking for permission to print the translation: 'This matter', he said, 'deserves the Synod's approbation.' Keen to establish precedent and further relax the bounds of censorship, Schumacher noted: 'If the Synod permits [this publication], we will not have to worry about other philosophical matters that will appear in the future.'⁸⁶ In parallel, Schumacher reassured his Russian correspondents that there was nothing inappropriate about the speeches, where Copernicanism was 'presented and interpreted in such a manner that it could lead to no offence or temptation in anyone.'⁸⁷ Because the translation was never published, scholars have assumed that religious opposition could not be

⁸⁴ Goldbach to Schumacher, 29 July 1728 (quoted in Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, i, 163).

⁸⁵ J.-N. De L'Isle and D. Bernoulli, *Discours lu dans l'assemblée publique de l'Académie des sciences, le 2 mars 1728, par Mr. De l'Isle, avec la réponse de Mr. Bernoulli* (St Petersburg, 1728). The volume was being printed in early July (*MIAN*, i, 388–9) and had a print run of 1,220 copies.

⁸⁶ *LAN*, p. 72.

⁸⁷ *MIAN*, i, 388–9.

overcome.⁸⁸ However, as the reply from Blumentrost made clear, the decision to keep the Russian text out of public circulation was made in consultation with Ostermann rather than any member of the Synod.⁸⁹

Thus, the (self-)censorship observed in this case was the result of anxieties shared by Schumacher, a graduate of Strasbourg's theology faculty, and Ostermann, the son of a Lutheran pastor. In fact, it is not clear that the Synod would have objected at all – Prokopovich was clearly a Copernican, and later that year another influential cleric, the archbishop of Nizhnii Novgorod Pitirim, paid an official visit to the Academy and its observatory; as his correspondence shows, he was keen to receive Russian translations of *Commentarii* and other scientific works.⁹⁰ Other heliocentric texts that came off the Academy presses did not face any overt opposition until a much later point in time.⁹¹ And yet Schumacher and others were not prepared to risk rejection on religious grounds.

For a clear illustration of the Academy's ability to adjust its stance depending on the audience it addressed in print, we can look to De L'Isle's textbook on astronomy, which was written, translated, and published in French and Russian editions in the same year as the Copernican dispute. As far as the translator's ability and the linguistic resources at his disposal made possible, the Russian version was an accurate rendition of the French original. Gorlitskii still relied heavily on the use of synonyms, but these were placed in the side margins – that is, typographically presented as supplementary aids to understanding. Synonyms used by De L'Isle in the original text were not called out in this way: thus, the original French '*par tas, ou constellations*' was rendered in the Russian text as 'in bunches or constellations' (*po kuchkam ili konstelliatsiiam*) with a sidenote '*sozvediiam*' (which is the modern Russian word for a constellation) (ILL. 7, p. 287).⁹²

⁸⁸ Vucinich, *Science in Russian Culture*, 87.

⁸⁹ LAN, p. 72.

⁹⁰ LAN, p. 75. MIAN, i, 484–5.

⁹¹ See Ch. 8, pp. 246ff.

⁹² De L'Isle, *Sokrashchenie matematicheskoe ... Kniga pervaiia*, 6.

Most instructive by far is the difference between the presentation of the Ptolemaic-Copernican controversy in De L'Isle's speech, delivered orally in the first instance and never published in Russian in full, and the textbook, intended for wider dissemination among the country's nobility – including those who could not read French. In both texts, De L'Isle suggests that there can be three opinions on the 'true system' of the universe: unshakeable belief in geocentrism; unshakeable belief in heliocentrism; or an enlightened scepticism. It is the latter attitude that De L'Isle adopts in the dispute with Bernoulli, suggesting that contemporary science is yet to answer the question decisively.⁹³ Nonetheless, both academicians were openly critical of what they called the religious prejudice and even superstition of Ptolemy's followers. As De L'Isle noted,

There are those who, out of deep respect and total submission to the holy text believe only in that which is permitted, ... holding that to question anything that is positively stated in the Scripture is a sin against faith. Others, in the belief that they do not in any way sin against the requirements of religion, think that this question may be discussed on the basis of human knowledge ... I myself hold this latter opinion and do not believe this to be a sin against my religious duties.⁹⁴

Despite his epistemic scepticism, the astronomer clearly leans towards the system of Copernicus as one that has its basis in nature instead of blindly following the Scripture. In the textbook, however, De L'Isle is more evasive. Having discussed the impossibility of coming to a certain conclusion on the basis of astronomical observations alone, he poses the question of why some believe so stridently the correctness of either system:

Among those who think so, and are educated enough not to judge without knowledge of causes, some believe in the immovability of the Earth out of submission to the literal sense of the Scripture, and others only examine this question according to natural principles; they give in to the beauty and simplicity of the Copernican system, judging that a system with such qualities cannot but be true.⁹⁵

⁹³ In his reply, Bernoulli took the view that Copernicus' system had in fact been proved beyond all doubt. Müller ascribed De L'Isle's equivocation to his Catholic faith (*MIAN*, vi, 153).

⁹⁴ N.I. Nevskaja, *Istochniki po istorii astronomii Rossii XVIII v.* (St Petersburg, 2000), p. 46.

⁹⁵ De L'Isle, *Abregé des mathematiques ... Tome II*, 47. In Gorlitskii's translation, the final clause is 'a system with such qualities is the one that is most true' (De L'Isle, *Sokrashchenie matematicheskoe ... Kniga pervaja*, 49).

These two attitudes are presented on an equal footing – both appear to be acceptable as long as they have a basis in some form of reflection. And yet the rest of the chapter on astronomy refers to geocentrism only once. Implicitly, the textbook endorses heliocentrism – but the strong statements against Ptolemy’s followers that De L’Isle’s and Bernoulli’s made in their dispute are conspicuously absent.

That the French text of the De L’Isle–Bernoulli dispute could be published with no anxiety about the Synod’s opinion shows how the Academy considered non-Russian printing its sole prerogative, exempt from the censorship provisions of the 1727 decree. Schumacher knew that the foreign-language works would find a receptive if small audience at court and did not seem to worry about its attitude towards their content. He was less sure about the wider Russian readership, and the multilingual environment in which the Academy operated made it possible to protect what he saw as the institution’s interests by controlling the flow of information in various languages. In Mokyr’s terms, he manipulated costs of access to certain forms of knowledge, and in particular natural philosophical knowledge, by only publishing ‘risky’ texts in foreign languages. This restricted their consumption to particular audiences: readers abroad and highly educated Russians who could be expected to respond appropriately. Knowledge of foreign languages thus opened the way for Russian readers to see themselves on par with their European counterparts and indeed as Europeans. At the same time, the production of texts for circulation throughout European book markets – and conscious efforts to establish links with booksellers abroad – gave the Academy press a right to claim the status of a European printshop.⁹⁶

⁹⁶ In 1730–1, when Müller received permission to travel to Germany for personal reasons, he was also tasked with making arrangements for the sale of Academic books in Germany, the Netherlands, and England (Iu.Kh. Kopelevich, ‘Pervaia zagranichnaia komandirovka peterburgskogo akademika (iz zapisok G.F. Millera o ego puteshestvii 1730–1731 gg.)’, *Voprosy istorii estestvoznaniia i tekhniki*, 2 (43) (1973), pp. 47–52). By 1741, the press was known well enough to feature in a list of the ‘most active booksellers’ in the German lands, highlighting St Petersburg’s role as an important, if peripheral, site of German literary culture (C.F. Gessner, *Der so nöthig als nützliche Buchdruckerkunst und Schriftgießerey. Dritter Theil*. (Leipzig, 1741), pp. 329–37).

This linguistic diversity was just as marked in genres other than science and history, and the Academy had a keen understanding of the linguistic complexities of the book markets served by its press. St Petersburg, in particular, was a multilingual city: in addition to courtiers, who could often read German and French as well as Russian, there was a sizeable immigrant community in the city. Its members were among the first to make use of the opportunities presented by the new printing press. Educated Russians soon began to follow their example. At the same time, the Academy utilized its editorial control in order to promote specific views of what it meant to partake of European elite culture. This was done both through its own publications and in the paratextual commentary that accompanied translated and original works originating outside the Academy. These parallel and complementary processes are the subject of the next chapter.

CHAPTER FOUR

Europeanization in the margins: ephemera and paratext in the formation of an elite Russian public

Writing in 1735, Berck recorded his impression of the Academy's print output:

One must admit there are very few works published by the academicians unless one counts odes and poetry, which they come up with for every suitable occasion and which are flattering in the extreme.¹

Throughout the 1730s, the Academy's print output was indeed dominated by panegyric literature.² These odes and other poems were typically composed for celebrations of the Empress' birthday, name-day, and coronation day as well as the New Year. Alongside the Academy's regular fireworks displays, these publications were essential to securing patronage for the institution. By the end of Baron Korff's tenure as its president, the Academy had not one but two professors who had been hired specifically to compose odes and allegorical devices for the fireworks.³

As a medium, print was uniquely suited to the needs of those who wished to curry private favour while publicizing their relationship with the court. In fact, academicians were not alone in exploiting these possibilities. With the press largely free of

¹ K.R. Berk, 'Putevye zametki o Rossii', in I.N. Bespiatykh (ed.), *Peterburg Anny Ioannovny v inostrannykh opisaniakh*, 1996, p. 181.

² Out of 621 Academy publications known for the period between 1727 and 1747, 127 titles represented some form of panegyric literature; of these, 92 were printed between 1730 and 1740. The second largest group – 85 titles – were librettos of operas performed at the court between 1733 and 1738 in Russian and German translations, published in print runs of just 100 copies each. The largest groups of non-ephemeral literature (excluding laws and regulations) were academic books on topics in natural sciences and humanities (44 and 39 respectively between 1727 and 1747), mostly but not exclusively in foreign languages.

³ These were Gottlob Friedrich Wilhelm Juncker (1703–46), adjunct from 1731 and professor of poetry from 1733, and Jakob Stählin (1709–85), adjunct from 1735 and professor of rhetoric from 1737. See P.P. Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge* (St Petersburg, 1870), i, 479–91 and 538–67; also S. Werrett, 'An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia', PhD dissertation, University of Cambridge, 2000, pp. 94–103.

censorship from the outside, private commissions became more and more commonplace. As early as 1728, the Academy began printing foreign-language texts (a domain where the Academy's decisions went unchallenged) submitted by members of the public. These tended to be various forms of ephemera: theatre playbills, texts of sermons by the Lutheran pastors of Moscow and St Petersburg, wedding announcements.⁴

Among the first to recognize the potential of the press in advancing one's personal agenda at a geographically distant court was Count Burkhard Christoph von Münnich (1683–1767). As the governor of St Petersburg, he could not attend Peter II's coronation in Moscow. To compensate for this, he enlisted Beckenstein's expertise in devising a fireworks display to celebrate the occasion. As the tsar and the court were not there to see it, he also commissioned a printed prospectus of the display to serve as a virtual witness. As Pogosjan notes, the description's title emphasised that the display was organized personally by von Münnich, highlighting it as an act of individual loyalty.⁵ However, even at this early stage von Münnich was not the only member of St Petersburg's German-speaking community to make use of the patronage opportunities that the Academy press opened up. Another panegyric text, written in honour of the coronation by Christian Everhard Morian (1658–1736), was also printed at the Academy in the same year.⁶

⁴ See, for example, R.M. Tonkova, 'K istorii peterburgskikh teatrov. Pechatanie "tsettelei" (afish) v tipografii Akademii nauk s 1727 po 1771 god', *XVIII vek*, 4 (1959), pp. 385–94. An early experiment with commissions from outside the Academy almost ended in catastrophe when Blumentrost approved the publication of a Catholic sermon without realising it made a case for Jacobite claims on the British throne, making it a politically sensitive issue (Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, i, 89–90).

⁵ This episode also marked the beginning of a long and fruitful collaboration between Münnich and Schumacher centred on the production of fireworks displays. See J. Pogosjan, *Petr I – arkhitektori rossiiskoi istorii* (St Petersburg, 2001), pp. 347–55 and S. Werrett, *Werrett, Fireworks: Pyrotechnic Arts and Sciences in European History* (Chicago and London, 2010), ch. 4.

⁶ Morian, a native of Reval (Tallinn), returned from exile in Sweden in 1724 and in 1726 applied for a Russian patent of nobility, which was granted in 1733. He continued to avail himself of the Academy press after 1728, publishing a further two panegyrics in 1730 (for Anna Ioannovna's coronation) and 1736.

By the mid-1730s, non-Academic texts in foreign languages were a staple of the press, as local members of the Lutheran clergy, Baltic Germans, and assorted European visitors made use of print to strengthen their position in Russian society. Mostly, this took the form of panegyrics, either to the Empress or to potential patrons at court, particularly other non-Russians. These varied in format from *folio* to *octavo* and rarely exceeded eight pages in length. Such private offerings seem to have quickly become a part of the general culture of Anna's court.⁷ In some cases, newly arrived visitors to St Petersburg would try to attract the attention of several grandees in parallel, as was the case with Salomon Seeman's twin panegyrics to Münnich and Count Karl Gustav von Löwenwolde, printed in octavo in 1734. Such texts could ease entry into the court society: in 1737, for example, the seventeen-year-old Johann Benjamin von Fischer came to St Petersburg to live with his father, the Empire's chief medical officer. Fischer Jr had earlier composed and printed in Riga a German oration in honour of Anna. The Academy Press issued the same speech in a bilingual Russian and German *folio* edition, apparently calculated to introduce the youngster to the court.⁸ In modern terms, all of this literature belonged to the genre of ephemera: it was utilitarian, in that it served a very specific purpose at a particular point in time, and could be largely disregarded once the author achieved their aims or moved on to other things.⁹

⁷ The peak of this activity is around 1736–8; there are almost no foreign-language panegyrics after 1742, when Elizabeth became the Empress. After 1735, the presentation of panegyrics by the Academy, the Cadet Corps, and individual authors was effectively institutionalized (see J. Pogosjan, 'Vostorg russkoi ody i reshenie temy poeta v russkom panegirike 1730–1762 gg.', PhD dissertation, Tartu University, 1997, pp. 23–85).

⁸ See SK #7797. After 1737, we find Johann Benjamin continuing his studies in the company of Ernst Johann Biron's sons before going to Leiden University, so the effort seems to have paid off.

⁹ For an excellent discussion of the complexity surrounding the concept of ephemera in eighteenth-century studies, see P. McDowell, 'Of Grubs and Other Insects: Constructing the Categories of "Ephemera" and "Literature" in Eighteenth-Century British Writing', *Book History*, 15/1 (2012), pp. 48–70.

Other writers had greater literary or scientific ambitions. Johann Christian Trömer (1697–1756), a self-described ‘Franco-German’, spent a year and a half in St Petersburg as a member of von Münnich’s retinue. During this time, the Academy press issued two of his works, which blended praises of his protector with poetic descriptions of St Petersburg and its courtly luxuries.¹⁰ Significantly, Trömer (who also went by his French name of Jean Chretien Toucement) republished his St Petersburg poems in Leipzig a year later, in 1736, after his return from Russia, suggesting that he saw them as more than just a way to secure his position at the Empress’ court.¹¹

The press was also open to submissions from fellow natural philosophers. These, unlike the more ephemeral works, were subject to significant scrutiny since, in this case, publication by the Academy would be seen as an endorsement of the volume’s contents. In February 1734, for example, Damianus Sinopeus, a Greek-born doctor in the Russian navy, submitted a manuscript of medical observations made at the Kronstadt naval base. Schumacher asked the then chief doctor, Johann Christopher Rieger, and the Academy’s professor of botany Johann Amman (1707–1741) to assess whether it was worthy of publication. Having received their approval, he also consulted the Academy’s bookseller Gottlieb Clanner on whether ‘it would be of any use to the bookshop if this book were printed’. The decision on whether to print or not to print was thus a collegial one, shared between Schumacher, experts in the discipline, and the bookseller; the latter also decided what the eventual print run would be.¹² The book, *Parerga Medica*, came out in 1736; on this basis, Sinopeus was able to claim a further hundred roubles a year in salary.¹³

In other cases, the publication of scientific texts could serve as a way for outsiders to establish professional links with the Academy. Johann Georg Siegesbeck (1686–1755),

¹⁰ See *SK (In.)* #2926, #2927. For the circumstances surrounding Trömer’s sojourn, see A.L. Gol’dberg, ‘Pervaia poema o Peterburge’, *Pamiatniki kultury. Nove otkrytiia* (Leningrad, 1980).

¹¹ J.C. Toucement, *Des Deusch François Jean Chretien Toucement Adieu von alle Rarités was ßu St. Peterburg* (Leipzig, 1736).

¹² *MIAN*, ii, 448.

¹³ D. Sinopeus, *Parerga medica* (St Petersburg, 1734).

a German naturalist who came to Russia in 1735, published three books on botany during his tenure overseeing the botanical garden on St Petersburg's Aptekarskii ('Pharmacy') Island. This was done at the author's expense, which was likely the case with most private commissions.¹⁴ When Amman died in 1742, it was Siegesbeck who took up the vacant post of the professor of botany at the Academy – partly through this connection and partly on the recommendation of the new royal physician and favourite Johann Hermann L'Estocq. In fact, his history of publishing books through the Academy press was one of the arguments he deployed in a conflict with rival naturalist Gmelin after the latter's return from a decade-long scientific expedition.¹⁵ On the other hand, Siegesbeck's first attempt at publication through the Academy press – a manuscript entitled *Dubia contra systema Copernicarum* – was, perhaps unsurprisingly, rejected.¹⁶

It seems natural that the immigrant community was the first to recognize the opportunities that access to print opened up in St Petersburg. After all, the manifold uses of publishing, especially when it was not subject to state or church censorship, were well known to them from their European experience. (Indeed, many of the authors published by the Academy had previously issued books through presses in Riga, Leiden, Marburg, and so on). For Russians, this was a less familiar concept. Thus, the 'non-Academic' publications of the press served as an exemplar that native authors could and did follow. The first instance of a Russian publication that was not the text of a law, a translation, or a notice issued by the Academy itself (with the erstwhile exception of the *SPV*) came in 1730. This, unsurprisingly, was a panegyric: a 'Song, composed in Hamburg' to celebrate Anna's coronation by Vasilii Trediakovskii. Trediakovskii studied at the Sorbonne and the Collège Mazarin between 1727 and 1729, gaining a degree of familiarity with the salon culture of Paris. Returning to St Petersburg, where he shared lodgings with Vasilii

¹⁴ *MIAN*, vi, 463.

¹⁵ Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, 726–7.

¹⁶ *MIAN*, vi, 433. During his professorship, Siegesbeck also made a name for himself as a determined opponent of Linnaeus.

Adodurov, in 1730, Trediakovskii had the ‘Song’ printed at the Academy together with *Ezda v ostrov liubvi*, a translation of Paul Tallement the Younger’s allegorical *Le Voyage de l’Isle d’Amour* (1663).

Thus, the first instance of an original Russian work submitted by an outsider and published by the Academy press was in the same mould as much of the press’ foreign-language output: a panegyric work printed by a newly arrived author in the hopes of making a name for himself. As someone who had spent several years abroad, Trediakovskii was familiar with how print could be used to improve his position in society. Indeed, *Ezda* appears to have been a spectacular success both for the author and for the Academy. Its popularity helped to secure for Trediakovskii the position of *de facto* court poet. This was also the beginning of his connection with the scientific society: he became its secretary in 1733, joined the Russian Conference at its inception, and was finally appointed to the Academy’s chair of rhetoric in 1745 – the first Russian to become a full professor, alongside Lomonosov.

The original and translated Russian works published over the next few years followed the same general pattern. From 1735, the number of original works submitted for publication by authors from outside the Academy grew steadily. In particular, we can point to a series of panegyrics composed by students of the Cadet Corps and published by the Academy Press in bilingual editions from 1735 onwards. These presented a venue for the Cadets to practice their literary skills and shape a corporate identity separate from that of the Academy or other members of the Russian elite public.¹⁷ The same can be said of translations into Russian made not by order of the Academic Conference but on the translator’s own initiative. Gradually, the number of non-academic publication in Russian began to exceed that of academic ones (see FIGS. 2–3, overleaf). As with works in foreign languages, this was a mix of genres, largely dominated by panegyric ephemera but not limited to it.

¹⁷ For an incisive discussion of the differences between Academic and Cadet Corps panegyrics, see Pogosjan, ‘Vostorg russkoi ody’, 55–82.

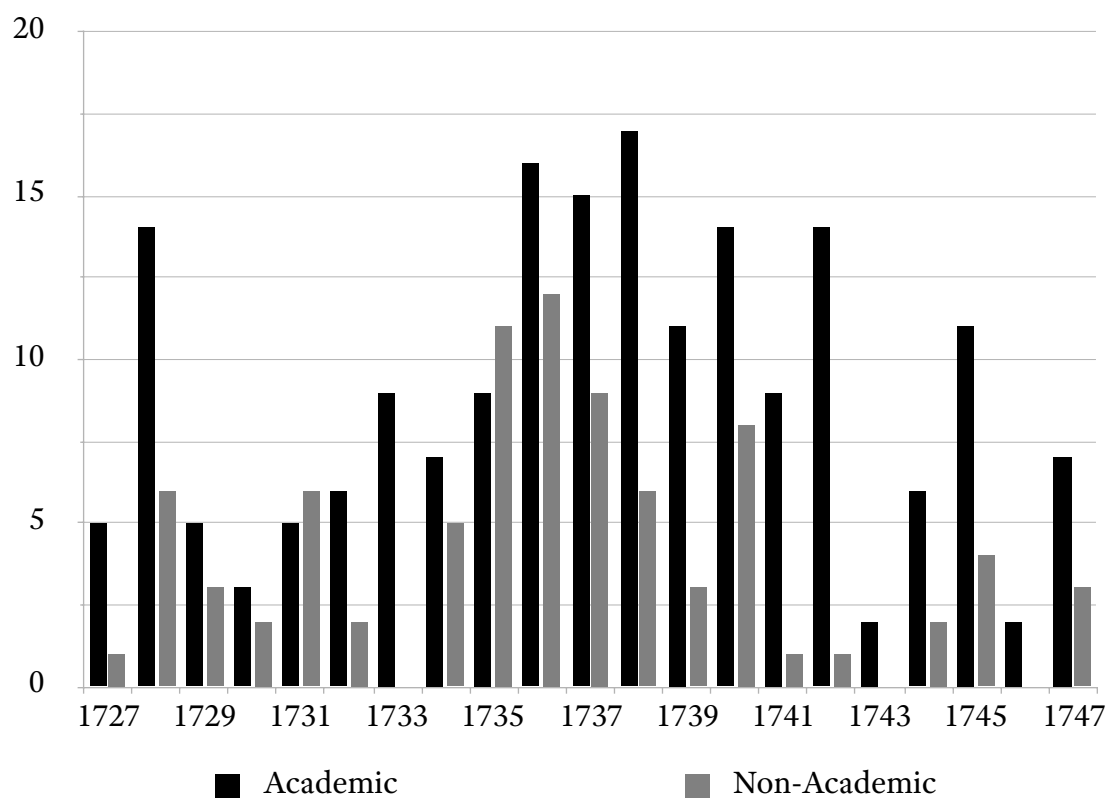


FIG. 2. Foreign-language volumes published in each year by the Academy press (1727–47), by author's affiliation.

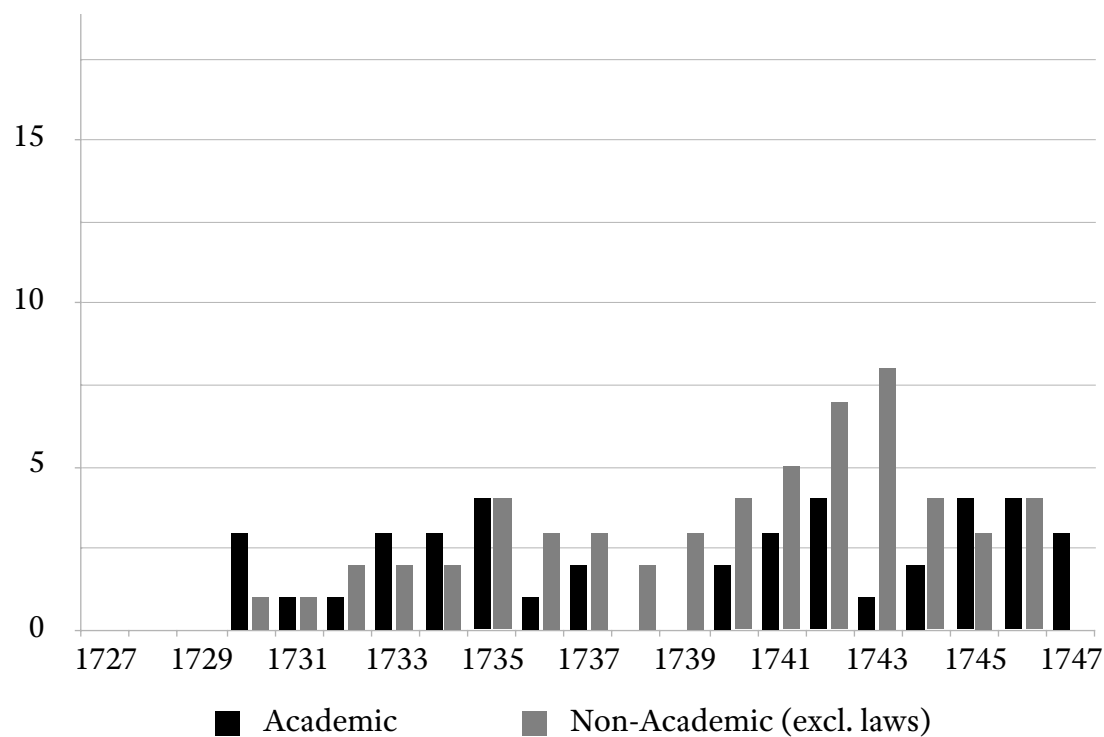


FIG. 3. Russian-language volumes published in each year by the Academy press (1727–47), by author's affiliation.

The Academy's openness to its public marked a significant change from earlier printing practices in Russia. As Marker notes,

Peter [I] failed completely to establish a basis for mutual communication between publishers and readers, and secular printing ... was dependent largely on the tsar's will and massive subsidies.¹⁸

The Petrine presses printed titles that were produced either on the Tsar's personal orders or by institutional entrepreneurs like Bruce and Magnitskii who tried to follow Peter's programme of cultural reform. Even in the latter cases, this was a top-down process, in that its overarching aims were set by the Tsar. By contrast, what the Academy printed depended as much on external commissions and what the small but growing reading public wanted to read as on the academicians' own plans. As a result, this early secular print culture was centred largely on the concerns of the court, to which science was marginal at best. In fact, these concerns differed in important ways from those of the immediate Petrine circle, not least in the models of sociability that the new court adopted.

The success of Trediakovskii's translation of Tallement is a good illustration of this shift. As Rogov suggests, not only was this publication an attempt to transplant French salon culture onto Russian soil, but '[the ground for its] tremendous success ... was to a significant extent prepared by that impetus towards the formation of a gallant culture that was felt by the mid-1720s at the court of Catherine'.¹⁹ Increasingly, the court looked to the image of Versailles and the refined *politesse* of absolutist France as its ideal. Trediakovskii was at pains to point out how the reception of his work depended on each reader's social standing: 'Opinions [of the book] are different according to the difference

¹⁸ G. Marker, *Publishing, Printing, and the Origins of Intellectual Life in Russia, 1700-1800* (Princeton, 1985), p. 40.

¹⁹ K. Rogov, 'Tri epokhi russkogo barokko', in M.O. Chudakova (ed.), *Tynianovskii sbornik. Desiatye – Odinnadtsatye – Dvenadtsatye Tynianovskie chteniia. Issledovaniia. Materialy*. (Moscow, 2006), p. 59.

between people, their professions, and their tastes. Those who are at court are absolutely pleased.²⁰ Anyone who disliked the book, he wrote, was a superstitious prude. Conversely, to enjoy the translation was to partake of the elite culture of the court.

The Academy's occupied prominent position in this post-Petrine intellectual landscape was, in some ways, a contradictory one. In order to find a receptive audience, the Academy's print output had to take into account the changing tastes of the court. At the same time, it was through its efforts that these tastes were formed: after all, Trediakovskii's volume was printed by the Academy. That is, the Academy's printing programme was influenced by and simultaneously shaped the attitudes of its audience. Moreover, the material produced by the press was often the only means of access its readership had to this nascent elite culture. Just as fireworks prospectuses served as virtual witnesses to the actual spectacular displays, the Academy's books and periodicals served as virtual guides to what it meant to be a European. This was an unprecedented opportunity to secure for science a high degree of prominence and cultural prestige, as long as the Academy was able to speak to its audience's newly-acquired tastes.

In an effort to address an audience increasingly concerned with courtly etiquette and contemporary notions of politeness, the Academy's members came to promote and articulate with uncommon clarity an alternative to curiosity – the ethos of *dulce et utile*, the idea that science and learning could be useful, pleasant, or indeed both at once. In doing so, they built on their institution's cameralist roots and the notion of utility implicit in its original Project but also moved away from Petrine notions of reasoned and articulate wonder as the highest form of scientific contemplation. Instead, they offered up the pursuit of natural knowledge as a pleasant diversion appropriate to the developing polite culture of the Russian elite.

²⁰ Trediakovskii to Schumacher, 18 January 1731 (reprinted in *Pis'ma russkikh pisatelei XVIII veka* (Leningrad, 1980), p. 45).

The connection between scientific entertainment and eighteenth-century polite culture is well established. In Britain and France, for example, lecturers and instrument makers vied for an urban consumer market that increasingly came to associate a certain kind of learning with social status:

Just as scientific lectures became a fashionable forum for polite science, so too commodities – including books, pamphlets, magazine articles, and especially instruments, in many cases produced by the same men who travelled the lecture circuit – were made to appeal to the polite.²¹

Books, pamphlets, and periodicals were an important but auxiliary element of this public culture. In Russia, however, there were few instrument makers and even fewer scientific lecturers. Thus, print came to occupy a central role as a form of virtual participation in contemporary European culture: articles replaced lectures; detailed descriptions of barometers and thermometers compensated for the readers' lack of access to the actual instruments. The Academy's ability to determine the presentation of material in print gave it some measure of control over that virtual experience.

In the case of material produced by Academy members, this was often a matter of choosing when and what to print, as was the case with De L'Isle's discussions of Copernicanism in his 1728 speech and *Abregé des mathematiques*. When it came to texts originating outside the Academy, the society's members and translators often took it upon themselves to instruct the readers on how to engage with the volume at hand appropriately. In seeking to frame and contextualize such material, the Academy made heavy use of a variety of paratexts.²²

²¹ A.N. Walters, 'Conversation Pieces: Science and Politeness in Eighteenth-Century England', *History of Science*, 35/108 (1997), p. 123.

²² The concept of paratext was developed in the 1980s by Gérard Genette (in English: G. Genette, *Paratexts: Thresholds of Interpretation*, trans. J.E. Lewin (Cambridge, 1997)). Strictly speaking, paratexts include the whole range of texts produced in association with a 'main' work in order to 'present' it: 'The paratext is what enables a text to become a book

In this, they followed an established tradition. Petrine translators had used prefaces to explain the choices they made or to defend the publication of specific texts. The prefaces to the Academy's early Russian-language volumes followed the same pattern. In addressing the reader at the beginning of *Kratkoe opisanie*, Schumacher described the structure of the book; defended the mix of subjects it contained; pointed to the technical difficulties of producing such a volume; and, as we have seen earlier, explained the collegial nature of the translation process.²³ The forewords to Peter II's textbooks were largely concerned with describing the contents of each volume. The utility of paratext in this case was in its ability to preemptively address readers' potential criticisms. Even at this early stage, however, De L'Isle began to articulate an approach to science that he felt would be appropriate for his noble audience: 'I have ... avoided as far as possible the use of technical terms (*termes de l'art*), which uselessly tire out the memory without enlightening the mind. I have replaced them with the concepts that these terms represent.'²⁴ As Walters notes, the use of 'terms of art' was anathema to polite culture.²⁵ Clearly, this was not a textbook for future professional astronomers. Here, we see an early effort to not only ward off criticism of a book but also point to how and by whom it should be read.

The Academy also began to use paratexts to bolster its intellectual authority and provide commentary on texts produced outside its walls. One early example is Stepan Malygin's navigation textbook *Sokrashchennaia navigatsiia po karte*

and to be offered as such to its readers' (p. 1). As such, Schumacher's correspondence with Kirilov, for example, was also a form of paratext to the Russian translation of the first volume of *Commentarii*. Nonetheless, in this case I am concerned primarily with printed paratexts.

²³ 'Dobrokhotnomu rossiiskomu chitateliu radovatisia', in *Kratkoe opisanie kommentariiev Akademii nauk. Chast' pervaiia na 1726 god* (1728). For a general overview of the content and general themes of prefaces to Russian scientific periodicals in the eighteenth century, see O. Valkova, 'Les avant-propos des journaux savants et littéraires russes au XVIIIe siècle: étude d'un genre', *Archives Internationales d'Histoire des Sciences*, 63/170-171 (2013), pp. 121-41.

²⁴ J.-N. De L'Isle, *Abregé des mathematiques pour l'usage de sa Majesté Imperiale de toutes les Russies. Tome II. Contenant l'Astronomie et la Geographie* (St Petersburg, 1728).

²⁵ Walters, 'Conversation Pieces', 127.

de rediukhsion (1733).²⁶ This was a work very much in the vein of Petrine technical publishing. In his preface, the author writes that he has ‘no doubt whatsoever of ... its utility to the fleet [and] the servicemen’s gratitude to me.’²⁷ Here we see the same blend of general utility and personal glory that the Academy’s original Project epitomised. While not a translation, Malygin’s text relies heavily on the use of synonyms instead of a fixed terminology, at one point suggesting that a particular issue ‘may be explained much better with the use of an instrumental Globe than through words’ – an admission of both the importance of practical training and the absence of adequate linguistic tools.²⁸ A description of the compass is accompanied by an engraving of the instrument adorned with emblematic figures; the compass itself, Malygin suggests, acts through a ‘wondrous force’ (*predivnuiu silu*).²⁹

The volume’s last page presents two contrasting ‘approbations’ or reviews. One, printed at the bottom, states that the reviewer has read Malygin’s textbook, that the method it is based on can be helpful to navigators with no knowledge of trigonometry or arithmetic, and is often used by French sailors (rather implying their ignorance of mathematics). It is signed simply ‘Henry Farquharson’, on the assumption that any Russian naval officer would know who that was (Farquharson had, after all, been teaching navigation in Russia since the 1700s).

The other review, from the Academy, is far more elaborate. Its layout is designed to resemble an official document. It begins by noting that Malygin himself had asked the Academy to review the book prior to publication. Following its examination and approval by ‘Leonhard Euler, a member of the Academy and the ordinary professor of Physics’, the textbook was put in print because it ‘is useful for teaching according to its

²⁶ S. Malygin, *Sokrashchennaia navigatsiia po karte de rediukhsion* (St Petersburg, 1733).

²⁷ ‘To the reader’, *ibid.*[n.p.].

²⁸ *Ibid.*, 3.

²⁹ *Ibid.*, 1.

content'. Finally, the review notes that the Academy presented Malygin with 'this diploma' at a meeting of the Academic Conference to confirm the approbation. It is 'signed' by Krafft, 'the ordinary professor of mathematics and secretary'.

The Academy's review aims to do two things simultaneously. On the one hand, it proclaims the institution's authority over all forms of natural knowledge, even as strictly utilitarian as a particular form of practical navigation. By granting its approbation in such a conspicuously officious manner, the Academy claims the right to endorse local knowledge. The use of full titles for the academicians in the text (in contrast to Farquharson) highlights their higher social status. At the same time, the review locates the textbook within a specific domain of utility, that of teaching – that is, the same domain that the Project assigned to the Academy. In granting its approval, the Academy points to its role as a centre of scientific expertise whose full remit extends much further.

By the late 1730s, Academy translators began to experiment with familiar paratextual forms in order to market their books to specific audiences and situate them within the context of the developing courtly culture. Sergei Volchkov's (1707–1773) translation of a German biography of Marcus Aurelius and his *Meditations*, published in 1740, had both a dedication to Anna Ioannovna and a preface 'To the reader'. In the dedication, Volchkov praised Anna's military success, glorious reign, and patronage of 'sciences, together with their chief fruit, that is, books'.³⁰ This blending of the martial, the political, and the learned rhetorically integrated the Academy's concerns with those of the state and was typical of Academic panegyric productions in the 1730s.³¹ The address to the reader, however, adopts a different tone of voice. Here, Volchkov imagines the reader on a visit to a museum (rather resembling the Kunstkamera), where their eye is drawn to a massive solid gold statue of Marcus Aurelius. What follows is a playful and decorous

³⁰ M. Aurelius and J.A. Hoffmann, *Zhitie i dela Marka Avreliia Antonina Tsesaria Rimskago*, trans. S. Volchkov (St Petersburg, 1740), p. 6.

³¹ Werrett, 'An Odd Sort of Exhibition', 122.

dialogue between the reader and Volchkov (or, perhaps, the book itself?) that blends the language of curiosity, familiar to readers of the Petrine generation, with polite courtly wit:

Do tell me, what is this wonder? A golden statue, sir! Oh mercy, is it indeed made out of gold? Indeed, kind sir, entirely out of gold. Oh, what an astonishing thing ... And whose likeness is this? That of MARCUS AURELIUS ANTONINUS THE CAESAR OF ROME. How come do I not remember him from history? His name in history is prominent, his victories great, his actions wondrous ... Were his achievements and deeds so much greater than those of other CAESARS, that their statues are of humble copper or marble and all on foot, and his is out of gold, and mounted to boot?³²

The reader's curiosity in this extraordinary statue is a natural reaction, but on its own it is not enough; it is only appropriate as an initial impetus towards further learning through conversation and reading.³³ Polite conversation is the means by which this instinctive curiosity is tamed and made useful. Volchkov's preface serves a twofold function: not only as a traditional summary of the book's contents and an explanation of why it should be read, but also as an object lesson in *how* it should be approached.

Historians of the book in Russia have long shared Beck's surprise at how few major publications the Academy produced and how little impact they appeared to have. As Marker notes, it was very difficult to sustain large-scale printing projects and make them profitable in a country where literacy rates did not provide the requisite economies of scale.³⁴ Certainly, the picture of Russian print culture that presents itself if we limit ourselves to a view of printing centred on 'big books' is not rosy. However, the full

³² Aurelius & Hoffmann, *Zhitie i dela Marka Avreliia*, 14–15.

³³ A similar interpretation of the role ascribed to curiosity in scientific discovery in France during the same period can be found in M. Bycroft, 'Wonders in the Academy', *Historical Studies in the Natural Sciences*, 43/3 (2013), pp. 334–70. See also N. Kenny, *The Uses of Curiosity in Early Modern France and Germany* (Oxford, 2004), pp. 305–6.

³⁴ G. Marker, 'Russia and the "Printing Revolution": Notes and Observations', *Slavic Review*, 41/2 (1982), pp. 279–83.

picture emerges only if we pay attention to the margins: the panegyric ephemera on the margins of mainstream literary practice and the paratextual reflections on the literal margins of ‘big books’. In these marginal spaces, European practices of authorship were demonstrated to the Academy press’ Russian readership and emulated by its Russian contributors. It was also through such marginal practices that elite European culture was put into its place and transformed to serve the needs, beliefs, and interests of the Academy.³⁵ In fact, it was in the pages of another paratextual publication – a supplement to the country’s only newspaper – that the Academy most consistently promoted its views of the cultural significance of the study of nature.

###

The Academy’s first foray into popularization in print was not a success. Although the original plan was to produce a Russian version of every volume of *Commentarii*, the 1728 *Kratkoe opisanie* was the one and only attempt. As Müller recalled,

Nobody would praise the work; people could not understand what they read. Their own lack of ability they blamed on the difficulty of the language and the translator’s incompetence. It was therefore not continued.³⁶

The decision to abandon this project was made by Blumentrost, then in Moscow. It is quite possible that his presence at the court allowed the president to gauge the book’s reception accurately. Indeed, it is difficult to imagine that there were many who could

³⁵ The political and social significance of marginal and ephemeral practices of printing in eighteenth-century Russia has recently been the subject of an excellent series of articles by Simon Franklin: S. Franklin, ‘Printing and Social Control in Russia 1: Passports’, *Russian History*, 37/3 (2010), pp. 208–37; S. Franklin, ‘Printing and Social Control in Russia 2: Decrees’, *Russian History*, 38/4 (2011), pp. 467–92; S. Franklin, ‘Printing and Social Control in Russia 3: Blank Forms’, *Russian History*, 42/1 (2015), pp. 114–35.

³⁶ *MIAN*, vi, 156.

get through articles like Goldbach's *De casibus quibusdam integrabilibus* in translation but not in the original Latin. Clearly, a different approach was needed. The solution was another kind of paratext.

As we have seen, the transfer of the secular printing presses to the Academy meant that it took over the publication of *SPV*, both in Russian and in German. On 6 January 1728, Blumentrost charged Gerhard Friedrich Müller with overseeing the publication of the newspaper.³⁷ Müller had been a student of *Acta eruditorum*'s editor Johann Mencke until 1725, when he was invited to move to St Petersburg by Johann Peter Kohl (1698–1727), the first Academy professor of rhetoric and church history and another one of Mencke's proteges. Müller's familiarity with the world of periodicals may have been what inspired the first of his many forays into the world of journal publishing: a monthly Russian-language supplement to *SPV* titled *Istoricheskije, genealogicheskije i geograficheskije primechaniia v Vedomostiakh* ('The historical, genealogical, and geographical notes to [St Petersburg] News'; hereafter *Notes*). As the title suggested, Müller's original intention was to provide Russian readers of *SPV* with contextual information about the articles printed in the newspaper. Each issue of Müller's *Notes* was tied to a specific article in *SPV*: the first issue, for example, included guides to the College of Cardinals, North African Barbary states, recent political French developments, English Reformation, and colonial trading companies, each referencing an item in the newspaper. In that sense, it was a true paratext – a rather lengthy set of endnotes to the newspaper.

Although, as its full title suggests, Müller's original plan was to limit himself to history and geography, he soon found himself commenting on natural philosophy, too. An *SPV* report of a comet sighted in Italy led Müller to 'make some mention of comets and celestial signs, so as to quell the doubts of a pious reader who may be tempted by such unusual apparitions'. Müller explained that 'comets are the natural creations of GOD'

³⁷ *MIAN*, i, 346.

and suggested that only ‘base people’ (*prostyi narod*) treat comets or aurorae as portents.³⁸ By inference, a proper understanding of comets as regular natural phenomena was something expected of a civilized, well-bred reader.

By issue 5, Müller found himself further relaxing his original editorial policy to comment on an *SPV* article about the discovery of asbestos in the Urals:

Although we should not offer up anything in these notes about this substance, which belongs to natural History, we cannot but add a little explanation ... in the hope that the willing reader will find some amusement in certain things, especially those that touch upon Russia.³⁹

In this article, Müller, true to his training as a historian, focused on the etymology of the word ‘asbestos’ and its mentions in Classical authors like Pliny. The next issue of *Notes* was entirely devoted to asbestos, with no reference to *SPV* whatsoever. Moreover, Müller moved on from philology to physics, describing an experiment he had carried out with his sample. The historian’s curiosity had gotten the better of him; yet the article demonstrated how a curious object (asbestos is surprisingly flame retardant) could not only be displayed at the *Kunstkamera*, but handled in the pursuit of empirical knowledge – in this case, by literally setting it on fire.⁴⁰ Readers could follow along with Müller as virtual participants and observers.

The 1728 run of *Notes* ended after eight monthly issues, but there seems to have been sufficient interest from readers to revive the publication. As Alla Keuten has convincingly demonstrated, from 1729 the *Notes* became a collective publication, the content of which was determined collegially in a manner so typical of the St Petersburg Academy. Schumacher, Müller, Euler, Gmelin, Krafft, and others met weekly to discuss what

³⁸ ‘V Markhii Ankone kometa na nebesi vidima byla’, *Notes*, 2 (February 1728), pp. 15–6. Italy in particular, Müller notes, was ‘a land where people are still superstitious’.

³⁹ ‘O kamne azbeste...’, *Notes*, 4 (May 1728), p. 39. The samples of asbestos were sent to the Academy by Kirilov, who was mentioned by name in the *Notes*.

⁴⁰ ‘Dovershenie o kamne azbeste...’, *Notes*, 6 (June 1728), pp. 41–8.

articles would be printed in each issue.⁴¹ The format changed as well: the *Notes* now came out twice a week, both in Russian and in the original German, as a free four-page supplement to *SPV* whose content was largely independent of the items therein.⁴² No longer a paratext to the newspaper, the *Notes* acquired a paratext of its own. In the first issue, the editors formulated the *Notes*' new programme: 'these new labours ... are undertaken to amuse you and to be useful to you'. Commenting on the news of the day was an unpredictable business – on some days, there would not be enough room to print everything; on some, not enough material to fill the pages. To avoid this,

...we intend to expand these [notes beyond] current affairs, genealogy, and geography, but to opine instead on *everything that could ever occur in the news*.⁴³

The connection with the contents of *SPV* became a hypothetical one: the journal positioned itself as a kind of paratext to the entire universe, with a strong empirical bend. (Things that could *never* occur did not make the cut). Such an ambitious undertaking also warranted the embrace of topics from 'ancient and medieval times [and] different parts of natural, sacred, and learned history'. The preface also pointed out that several authors joined forces to fulfil this plan, all of whom 'will endeavour to provide contributions for the sake of the readers' utility and pleasure'.⁴⁴ This last phrase – '*k pol'ze i udovol'stviiu*' or, in the original German, '*zum Nutzen und Vergnügen*' – became the guiding principle of the new publication, defining the Academy's presentation of natural knowledge to the elite Russian public over the next few decades.

⁴¹ A. Keuten, 'K istorii russkikh i nemetskikh *Primechanii k Vedomostiam* (1728-1742)', *Russian Literature*, 75/1-4 (2014), pp. 270-4.

⁴² See *SKPer* #212, pp. 170-2. A list of titles for the articles in every volume of *Notes* can be found in A.N. Neustroev, *Istoricheskoe rozyskanie o russkikh povremennykh izdaniiax i sbornikakh za 1703-1802 gg.* (St Petersburg, 1875), pp. 12-40.

⁴³ 'Blagosklonnyi chitateliu', *Notes*, 1 (4 January 1729), p. 1. Emphasis mine.

⁴⁴ *Ibid.*, 3. As Keuten points out, in the German version of the preface this passage refers to a 'society' (*Gessellschaft*) of editors, the weekly gathering at Schumacher's house.

The relationship between pleasure and utility was a complex one, a fact that was not passed over in the *Notes*. In that first prefatorial issue, the editors exhorted the reader to ‘use these [*Notes*] as you please, whether you will ... pass a few moments of leisure with them or will find some use for them in the future’. This suggested that pleasure and utility were if not mutually exclusive then at least somewhat contradictory. In either case, the editors hoped, the *Notes* were a visible sign of the utility of its publishers at the Academy.⁴⁵

Throughout the next decade and a half, Schumacher’s little ‘society’ (*Gesellschaft*) continued to reflect on the evolving practices and content of the *Notes* and in particular the relationship between *Nutzen* and *Vergnügen*. Although making science pleasant was a staple of polite culture, the Russian case is an example of remarkable anxiety about the possibility of combining utility with pleasure.⁴⁶ To some extent, this grew out of the approach to pedagogy typical of Leibniz, who emphasised playfulness as an aid to learning but only if it was directed towards practical purposes, writing: ‘This means in truth to mix the sweet with the useful, and from a poison to make a remedy.’⁴⁷ This view, consistent with cameralist principles, suggested that the training of ‘useful’ citizens should be made more ‘pleasant’, but merely as a concession to their human weakness. Polite

⁴⁵ ‘Blagosklonnyi chitateliu’, *Notes*, 1 (4 January 1729), p. 4.

⁴⁶ This is not to deny that utility was an important element of early modern reflections on the role of natural knowledge (see, for example, R. Briggs, ‘The Académie Royale des Sciences and the pursuit of utility’, *Past and Present*, 131 (1991), pp. 38–88). However, the close integration of utility with the discourses of polite science (where instinctively they may appear mutually exclusive, even to many contemporaries) was not a common approach. Colonial and early Republican America was perhaps another case where we observe this pattern (see, for example, E.E. Webster, ‘American Science and the Pursuit of “Useful Knowledge” in the Polite Eighteenth Century, 1750–1806’, PhD dissertation, University of Notre Dame, 2010).

⁴⁷ Quoted in H. Bredekamp, ‘*Kunstammer*, Play-Palace, Shadow Theatre: Three Thought Loci by Gottfried Wilhelm Leibniz’, in H. Schramm, L. Schwarte and . Lazardzig (eds.), *Collection, Laboratory, Theater Sciences of Knowledge in the 17th Century* (Berlin, 2005), pp. 269–71. For Leibniz’s views on pedagogy, see M.L. Jones, *The Good Life in the Scientific Revolution: Descartes, Pascal, Leibniz, and the Cultivation of Virtue* (Chicago and London, 2006), pp. 255–6.

culture, by contrast, wished to distance itself from the practical applications of natural knowledge: '[T]he utility of polite science was limited to its enrichment of social interactions and its ability to illustrate certain socially or culturally useful ideas.'⁴⁸

This tension played out in the pages of the *Notes*, as the Academy searched for a way to present natural knowledge in a manner consistent with the interests of courtiers, cameralist state institutions, and its own members. With the rising cultural stock of *politesse* at Anna's court, the balance between pleasure and utility in the *Notes* shifted towards the former. In 1731, the editorial team began the new volume with another programmatic preface reflecting on the *Notes*' aims and audience:

Until now our labours have been twofold: to give you notice of world news and notable occurrences, as if guiding you around the globe; and to demonstrate and sufficiently explain those things in the arts and sciences which are of the greatest use to the human race ... The former makes you more knowledgeable, the latter – more learned, and both tend towards your pleasure ... They are united in their intention, viz, to find you a pleasant and useful diversion.⁴⁹

The next ten issues, presented as a continuation of this address, revolved around the theme of time: a history of timekeeping, a discussion of calendars, and, as a final flourish, a translation from *The Spectator* titled 'Of the useful passage of time'. The latter suggested a number of ways to pass time appropriately: engaging in charitable and pious deeds, attending theatrical performances, polite conversation, practicing music, painting, or gardening, and – last and rhetorically strongest – the reading of books.⁵⁰

Viktor Zhivov notes that, while in early modern Europe leisure was a category of time shared by the nobility with the social classes that aspired to emulate its cultural

⁴⁸ Walters, 'Conversation pieces', 129.

⁴⁹ 'Blagosklonnyi chitateliu', *Notes*, 1 (4 January 1731), p. 2.

⁵⁰ 'O poleznom upotreblenii vremeni...', *Notes*, 11 (8 February 1731), pp. 41–4. The full title noted the article's source, *The Spectator*, underlining its connection to polite European culture. The *Notes* version, based on a German translation, retained from the latter a remark that card playing (popular at Anna's court) was only useless if practiced to excess.

values, leisure in Russia was a luxury that even the nobility had to stake their claim to. The lifelong service of the nobility left little conceptual room for free time; nobles at leisure were expected to use it appropriately.⁵¹ The *Spectator* article chosen for this issue of the *Notes* reinforced such expectations. For example, it pointed to gardening and agriculture as examples of appropriate activities that, ‘if carried out by a man of fortune at his leisure, are of great help in villages, and very useful to those who are skilled in them’.⁵²

This translation, which closed the programmatic series on time, underscored the *Notes*’ intended audience – the nobility who could aspire to useful leisure. By contrast, the Academy presented its own work as a form of state service, that is, something useful by definition. In praising Anna’s reign, the prefatory address pointed to the regularity of her empire, where ‘the plowman at his plough, the craftsman in his workshop, the merchant in his shop, the learned man at his books, and the judge in the courtroom can all carry out their work calmly and gladly.’⁵³ Issue 5, devoted to clockmaking, praised artisan knowledge with an implicit defence of Schumacher’s vision of the Academy as a centre of practical as well as theoretical expertise.⁵⁴

Thus, the Academy presented itself as doubly useful. On the one hand, it laid a claim to a place within the cameralist structure of the empire on the basis of its members’ learning and its craftsmen’s practical skills. At the same time, the *Notes*’ editors

⁵¹ V. Zhivov, ‘Vremia i ego sobstvennik v Rossii rannego Novogo vremeni (XVII—XVIII veka)’, in V. Zhivov (ed.), *Ocherki istoricheskoi semantiki russkogo iazyka rannego Novogo vremeni* (Moscow, 2009), p. 59.

⁵² ‘O poleznom upotreblenii vremeni...’, *Notes*, 11 (8 February 1731), p. 44. Translation mine, from the Russian text; the original English article is No. 93 in Volume I (16 June 1711). See Keuten, ‘K istorii russkikh i nemetskikh *Primechanii*’ for an excellent discussion of this and other translations from English moral weeklies in the *Notes*.

⁵³ ‘Blagosklonnyi chitateliu’, *Notes*, 1 (4 January 1731), pp. 3–4.

⁵⁴ ‘Prodolzhenie o razdelenii vremeni’, *Notes*, 5 (18 January 1731), p. 21.

presented themselves as the arbiters of what was and was not useful and appropriate knowledge for its noble readers. If leisure was the preserve of a select elite, the *Notes* was a guide to its proper uses.

Unsurprisingly, the image of European elite culture presented in the *Notes* closely reflected the Academy's own structure and concerns. According to Kopelevich, about three fifths (around 730 of 1,240) of all articles in the *Notes* were devoted to natural philosophy; another third (a little over 460) to current affairs, history, and geography; and the rest to moral philosophy (about 50, mostly translations from *The Spectator* and similar publications).⁵⁵ This was in line with the disciplinary make-up of the Academy itself and mirrored the composition of its *Commentarii*. In fact, the *Notes* should be seen as the successor to Schumacher's original plans for Russian translations of *Commentarii*, one better suited to the changing tastes of its audience. As another prefatory issue in 1734 noted, the format of regular four-page issues had its advantages over large volumes: 'on one half-sheet we sometimes deliver more useful truths than are sought fruitlessly in fat volumes'.⁵⁶

The Academy's mix of *Wissenschaften* and the collective nature of the *Notes*' authorship was also reflected in the structure of its articles. These frequently overran the four-page length of a single issue. Later issues would then cover different aspects of the same topic. Each item aspired to be self-contained so that it could be read on its own and different issues in the same thematic run were often written by different academicians. Using materials from the Academy archives, Kopelevich discusses a series of articles on aurorae borealis published in 1731 as a typical example of such collegial authorship. The main text was prepared by Euler on Müller's suggestion. Müller also took

⁵⁵ Iu.Kh. Kopelevich, 'Zabytye stranitsy "Primechanii na Vedomosti"', in E.P. Karpeev (ed.), *Nauka i kultura Rossii XVIII v.* (Leningrad, 1984), p. 39.

⁵⁶ 'Predislovie', *Notes*, 1 (3 January 1734), p. 3. The prevalence of natural philosophical topics in the pages of the *Notes* is also an important corrective to Marker's assertion that 'the repertoire of published books [was] completely unrepresentative of the prominence of science within the Academy' (Marker, *Publishing, Printing, and the Origins of Intellectual Life*, 58–9).

it upon himself to, as he put it, ‘prepare something in the nature of a preface’: a philological study of Northern Lights in texts by Classical and early modern authors, including numerous tales of aurorae taken for celestial signs. After these four issues by Müller, the *Notes* moved on to Euler’s text, which offered a critical analysis of physical theories of aurorae and data from observations carried out in St Petersburg. The series was closed by Krafft, who offered a simplified version of an earlier article on the same topic in *Commentarii*, leaving out its author’s complex mathematical calculations. This served to illustrate both the Academy’s ongoing research and its contribution to the Russian Empire’s glory abroad.⁵⁷ Taken as a whole, the series of articles covered the history, theory, and practices associated with the observation of aurorae, taking in the full spectrum of activities at the Academy.

The image of academic science presented in *Notes* did not dwell on disciplinary divisions or technical complexity, forestalling accusations of pedantry – that cardinal sin of polite science. The articles were not signed by authors, so that the work was presented as that of the Academy as a whole. The mix of subjects covered in every volume and across thematic issues also brought the *Notes* in line with the ideals of polite culture – diversion through diversity. The 1731 preface underscored the link between the *Notes*’ format and refinement by likening the variety of its articles to the work of ‘skilful gardeners, who divide their pleasing gardens into small rows, so that they do not ... overwhelm the eye’.⁵⁸

By presenting itself as a non-transgressive exemplar of polite culture, the *Notes* also claimed the right to model polite conversation to its readers. This meant, among other things, teaching them not only what topics to talk about, but also how to think about them. As with the book prefaces discussed earlier in this chapter, this involved publicizing the Academy’s rejection of curiosity as a valid discourse of natural philosophy. For

⁵⁷ Kopelevich, ‘Zabytye stranitsy’, 40–3.

⁵⁸ ‘Blagosklonnyi chitateliu’, *Notes*, 1 (4 January 1731), p. 3. For the importance of the image of ‘the happy garden state’ in eighteenth-century Russia, see S.L. Baehr, *The Paradise Myth in Eighteenth-century Russia: Utopian Patterns in Early Secular Russian Literature and Culture* (Stanford, 1991).

example, a 1731 series of articles on alchemy presented the *Notes*' editors with an opportunity to discuss what constituted appropriate forms of natural knowledge and place themselves on the 'right' side of the divide.

Occasioned by news of a new 'gold-like' metal approved by the Académie Royale des Sciences, this long series explored the history and ethics of alchemy, presenting it as a dangerous and false science. The first issue sought to distance the new Parisian method from alchemical transmutation, describing it in terms of chemical procedures. The article listed various other gold-like metals, playing down the rarity of the new material. The technical rather than magical nature of the method was highlighted by the use of technical terminology (a departure from the norm), carefully explained in footnotes (still a novelty in Russian printing at that time).⁵⁹

Other issues in the series focused on alchemy itself. The first of these began by pouring scorn on its subject:

That matter which changes base metals into noble ones and is sought after by Alchemy has more names than there are days in a year. It is usually called the philosopher's stone, the blessed stone, Elixir, Tincture, general Tincture, golden seed, blessed earth, Solomon's seal, nature's fire, maiden's milk, and so on.⁶⁰

Alchemists' apparent inability to settle on a single term, let alone find a less outlandish one than 'maiden's milk', not only gave rise to endless mockery but also served as a contrast to the precise terms used and explained in the previous issue. Nonetheless, the editors followed the general pattern of such thematic series by starting with a detailed exploration of alchemy's place in Classical and early modern authors. The *Notes* mocked

⁵⁹ 'O novoizobretennom ot gospodina Renta metalle...', *Notes*, 21 (15 March 1731), pp. 81-4. For an overview of mixed attitudes towards alchemy at the Académie, see L.M. Principe, 'The End of Alchemy? The Repudiation and Persistence of Chrysopoeia at the Académie Royale des Sciences in the Eighteenth Century', *Osiris*, 29/1 (2015), pp. 96-116.

⁶⁰ 'Alchemy', *Notes*, 22 (18 March 1731), p. 85.

alchemy for unfounded claims to a long lineage going back to Adam while meticulously noting its own sources for each story, contrasting the vanity of alchemists with its own 'correct' philological treatment even of dubia.⁶¹

The historical background was followed by extensive criticism of alchemy, which relied chiefly on contrasting its practices and consequences with the work of 'proper' natural philosophers. The main arguments against alchemy were its lack of scientific method and its difficult and esoteric language, which 'by every means labours to make the clear unclear, and the unclear even less clear' and which 'no reasonable man could understand.'⁶² In a characteristic blend of the discourses of cameralist utility and refined wit, the editors also pointed to alchemy's waste of natural resources.⁶³ The greatest waste of all was that of the alchemist's life and livelihood, as many went broke in the pursuit of transmutation.

Alchemy was thus a serious financial threat to the welfare of the state and its citizens. The inclusion in the same series of a translation from *The Spectator* titled 'Of the laughable superstition of insane people' suggested that it was also a moral hazard.⁶⁴ The translation was placed at the point in the series where the history of alchemy gave way to its critique, suggesting the proper place of alchemical 'superstition' in the value system of *politesse*.

The only positive that the *Notes*' editors could find in alchemy was its contribution to the progress of chemistry. Of the three types of alchemists identified in the series, the 'artisans' – those who pursued transmutation 'on good foundations and with Chemical

⁶¹ The articles even used different markers: daggers (†) for footnotes that explained chemical terms and asterisks for those that referred readers to other sources.

⁶² 'Prodolzhenie dela o alkhimii', *Notes*, 34 (29 April 1731), pp. 135–7.

⁶³ For example, 'it may be that for the sake of Alchemy more wine went up the chute than down into bellies, and they have used up more soot than at a printing shop.' ('Prodolzhenie dela o alkhimii', *Notes*, 34 (19 April 1731), p. 135).

⁶⁴ 'O smeshnom sueverii bezumnykh liudei...', *Notes*, 31 (19 April 1731), pp. 123–6. The original English article, which ridiculed those who believed in bad omens as unsociable and immature, was No. 7 in Volume I (8 March 1711).

reason' – could at least claim to be somewhat useful. Although they, too, wasted time and money on the pursuit of the philosopher's stone, that expenditure was sometimes justified by its real fruit: the discoveries of aqua regia and gunpowder, of Murano glass and of the Prussian blue pigment.⁶⁵ The utility of chemistry itself was indisputable and supported by the authority of figures like Leibniz, whose dabblings in alchemy, the article suggested, surely must have been in jest. In fact, knowledge of chemistry was even useful as a way to see through the alchemists' fraud.⁶⁶ As for alchemy itself, the series concluded, 'it is so useless ... that even our greatest adversary [i.e., Satan – A.I.] warns us against it.' Instead, the editors recommended,

Be content with the happiness and wealth God has given you ... sustain yourself by your labours, perform your duties and other useful actions diligently ... That will be your path to acquiring gold and property, and such a tincture you can have with ease.⁶⁷

From a rhetorical point of view, there was nothing novel about setting up an opposition between chemistry, cameralism's favourite useful science, and alchemy, the preserve of superstitious frauds. Similar processes were underway at the Académie Royale des Sciences, for example, which had provided the occasion for the alchemical series in the *Notes*.⁶⁸ In the Russian context, however, there was a further point to such a stringent rejection of alchemy. Within the Petrine discourse of curiosity, alchemy was a privileged form of knowledge, one that fascinated many of Peter's followers.⁶⁹ By

⁶⁵ 'Prodolzhenie prezniago dela', *Notes*, 36 (6 May 1731), p. 145.

⁶⁶ *Ibid.*, 148.

⁶⁷ 'Okonchanie sego dela', *Notes*, 40 (20 May 1731), p. 166.

⁶⁸ An article written by Fontenelle for *Mémoires de l'Académie Royale des Sciences* in 1734 '[set] up an unbridgeable division between *les vrais chimistes* and *les alchimistes* ... and place[d] them in active opposition to one another' (Principe, 'The End of Alchemy', 107).

⁶⁹ The connections between politics, religion, and the somewhat anachronistically named 'esoteric sciences' at the court of Peter I are discussed in detail in R. Collis, *The Petrine Instauration: Religion, Esotericism and Science at the Court of Peter the Great, 1689-1725* (Leiden, 2011).

devoting a significant part of the volume for 1731 to this topic, the Academy made very clear where it – and the elite European culture it claimed to represent – stood on the issue.⁷⁰ That it had no chemist of its own at the time was beside the point.

In fact, efforts to recast elements of the Petrine attitude towards curious objects and phenomena in the new language of polite and useful science were an important part of the *Notes*' editorial policy. A 1729 series on 'impossible problems' (perpetual motion, squaring the circle, doubling the cube, and trisecting the angle) justified their apparently fruitless pursuit by the useful discoveries made in the process as well as the pleasure experienced in the course of their contemplation.⁷¹ In 1732, two issues were devoted to the mythology of the basilisk, with withering criticism reserved for displays of basilisk skins in curiosity cabinets as 'mere deception'.⁷²

These are just a few of the many examples of how the *Notes* sought to tame curiosity and subject it to the dictates of polite culture. The Academy's control of the printing press allowed it to challenge directly the deeply held convictions of many members of Petrine elites. Thanks to its association with *SPV*, the *Notes* was largely free of church censorship. As we have seen, the church itself was not particularly interested in censoring the work of the Academy; however, the editors evidently considered the *Notes* to be a less problematic medium than standalone books. The kinds of ambiguity over Copernicanism that we have noted in previous chapters are absent from the pages of the journal, whose authors regularly made strong statements in support of heliocentrism and even promoted the genuinely problematic doctrine of the plurality of inhabited

⁷⁰ The series discussed above was followed in the same year by an anonymous letter on alchemy, apparently sent in by a reader and criticising alchemy in the strongest terms ('Pis'mo o Alkhimii', *Notes*, 53–56 (5–15 July 1731), pp. 217–32).

⁷¹ N.I. Nevskaiia, "Primechaniia na Vedomosti" kak nauchnyi zhurnal', in Karpeev (ed.), *Nauka i kultura Rossii XVIII v.*, pp. 20–1.

⁷² 'O vasiliskakh', *Notes*, 18 (2 March 1732), p. 68.

worlds. Indeed, as Nina Nevskaya has pointed out, it was in the pages of the *Notes* that parts of the unpublished Russian translation of the De L'Isle-Bernoulli dispute were eventually printed in 1732.⁷³

Nonetheless, the size of the *Notes*' readership was most likely very small. There is no data available on its print runs, but during the same period the print run for issues of *SPV* varied from around 800 to as little as 300 copies and it is reasonable to assume that the *Notes* was published in broadly similar numbers. The journal was therefore aimed at an elite audience, mostly composed of courtiers and senior administrators who were open to European ideas and the 'polite cameralism' promoted by the *Notes*. This was another example of the Academy using its control of the press in an attempt to manipulate the flow of information to different groups within the Russian society. Whether it was entirely successful is a different matter – a handwritten ex libris in a copy of the volume for 1734 now held by the Russian State Library, for example, identifies its owner as a student at the seminary of the Trinity Sergius Lavra, a major monastery near Moscow.⁷⁴

Out of the editors' and printers' hands, the multifaceted image of European culture presented in the journal was also subject to manipulation by its readers. Printed title pages have survived from volumes for 1729 and 1741, which suggests that each year's articles were intended to be collected and bound together after the year was out.⁷⁵ However, the format of numerous short brochures offered readers the chance to assemble, as it were, their own publications. For example, a book listed in the Russian State Library catalogue as the *Notes* volume for 1733 is in fact a bound collection of issues from different

⁷³ Nevskaya, "Primechaniia na Vedomosti" kak nauchnyi zhurnal', 28ff. Nevskaya also demonstrates how the Academy edited texts submitted by its correspondents, replacing passages that addressed controversial issues, such as Protestant natural theology, with its own texts.

⁷⁴ *Primechaniia na Vedomosti* (St Petersburg, 1734) (shelfmark Л-3А, inventory number 20083). The seminary accepted its first students in 1742, so this dating suggests that the life cycle of a *Notes* volume extended beyond the year of its publication.

⁷⁵ *SKPer*, p. 170.

years.⁷⁶ The volume is in its original binding, which dates from the 1740s–50s. It includes 61 issues from 15 thematic series, spanning the period between 1731 and 1742. The logic behind their order is difficult to determine, except to say that the owner of the volume brought together issues on the same topic published in different years. More than half (32) of the articles are devoted to meteorology, with the rest split evenly between technological inventions (15) and physics (14). Thus, readers could subvert the Academy's efforts at presenting a universal guide to elite European culture and focus on topics of particular interest to them – in this case, the science of weather and 'useful' inventions.

This is just one such case. Nonetheless, it shows that the *Notes*' focus on refined variety and breadth of cultural knowledge did not suit every reader. Nor was it intended for every reader. In fact, when dealing with the authorities and inhabitants of the Russian Empire in other contexts, the academicians, too, adopted a very different approach. To illustrate this point, we will now turn to one of the largest scientific expeditions into the Russian interior carried out in the eighteenth century – that of the 'academic contingent' within the Second Kamchatka Expedition.

⁷⁶ Shelfmark Л-3А, inventory number 20109. I am grateful to the staff of the Museum of the Book–the Rare Books room of the Russian State Library for their advice on the dating of the binding.

CHAPTER FIVE

Instructions and instruments: the exchange of natural knowledge beyond St Petersburg

The Academy's location, its cultivation of patronage at court, and its publications' small and largely metropolitan readership meant that its public representations were intended for the most part for the urban elites of St Petersburg. In this chapter, I will focus instead on the Academy's engagement with the world beyond the bounds of the court and capital, and in particular its expeditionary activity. Scientific expeditions demand our attention because they help to clarify certain issues surrounding natural knowledge: gaps between expectations about networks of knowledge exchange and their reality; questions about the kinds of knowledge that is exchanged and the material forms it takes; the role of different actors and environments in shaping these exchanges.

For eighteenth-century Russia, scientific expeditions were a novel way to collect information about the empire. Before Peter I, the Muscovite administration valued its Siberian domains for the tribute paid by its various indigenous peoples, mostly in furs, but settlement was slow and the centralised exploitation of other natural resources – minerals or plants – was not high on the imperial agenda.¹ As for expeditions, the seventeenth-century Apothecary Chancellery regularly dispatched specially appointed people, known as *travniki*, into the country's interior, but their role was to collect specific plants for medical use, not to study the environment in which they grew or describe new, unknown species.²

¹ Y. Slezkine, 'Naturalists Versus Nations: Eighteenth-Century Russian Scholars Confront Ethnic Diversity', *Representations*, 47 (1994), p. 170. See also V.A. Kivelson, "'Between All Parts of the Universe": Russian Cosmographies and Imperial Strategies in Early Modern Siberia and Ukraine', *Imago Mundi*, 60/2 (2008), pp. 166–81. The definitive guide to Muscovite perceptions of the empire and its lands is V.A. Kivelson, *Cartographies of Tsardom: The Land and its Meanings in Seventeenth-century Russia* (Ithaca, 2006).

² R. Koroloff, 'Seeds of Exchange: Collecting for Russia's Apothecary and Botanical Gardens in the Seventeenth and Eighteenth Centuries', PhD dissertation, University of Illinois

It was during the reign of Peter I, as cameralist ideas of government took hold and the demands of the Northern War receded, that the notion of cataloguing the Russian interior became more prominent. The first Petrine expeditions were, in continuation of Muscovite practices, botanical and ostensibly aimed at the collection of medicinal plants. However, as Koroloff has demonstrated, the Western European personnel employed in these expeditions went beyond their immediate instructions, taking the opportunity to botanize in lands previously beyond the reach of European natural historians. Their work was also infused with a characteristically Petrine sense of symbolism lacking in the work of *travniki*: the geography of such expeditions, which centred on the River Volga and the areas around the Caspian and Black Seas, evoked associations with Mount Ararat as the resting place of Noah's Ark and, conversely, with the Garden of Eden.³ In this sense, what Koroloff calls the 'botanical imaginary' of these explorers was in tune with the Petrine culture of curiosity, situating the world of plants and gardens in the context of an overarching imperial and religious narrative.⁴

The largest expedition of the Petrine era – which, unusually, took place in Siberia rather than the south of Russia – was that of Daniel Gottlieb Messerschmidt (1684–1735). He was hired by Peter on the recommendation of Johann Phillip Breyne, whose Danzig curiosity cabinet made a lasting impression on the Tsar during a visit in 1716.⁵ According to a personal edict issued to Messerschmidt in November 1718, he was 'to collect various rarities and apothecary things: plants, flowers, roots, and seeds belonging to curative

at Urbana-Champaign, 2014, pp. 24–42. As Koroloff notes, the utilitarian focus of these collecting practices did not preclude the accumulation of tacit institutional knowledge about the interior – for example, where the best places to find specific plants were (pp. 32–3).

³ For an incisive discussion of these expeditions, see *ibid.*, 73–111.

⁴ For Peter I, St Petersburg famously represented paradise on earth. See R. Collis, *The Petrine Instauration: Religion, Esotericism and Science at the Court of Peter the Great, 1689–1725* (Leiden, 2011), pp. 385–403 for the image of St Petersburg as the new Garden of Eden and New Jerusalem. Collis also points out the strong association between the first ship of the Russian fleet with Noah's Ark (pp. 379–83).

⁵ A. te Heesen, 'Boxes in Nature', *Studies in History and Philosophy of Science Part A*, 31/3 (2000), p. 387.

mixtures'.⁶ The instruction blended the existing tradition of medicinal botany with the collecting imperative of the *Kunstkamera* edict that had been published earlier that year. Upon arrival to Tobolsk, then the largest city in Siberia, Messerschmidt received a letter from Laurentius Blumentrost, who was responsible for overseeing the voyage. Blumentrost instructed him to 'carefully describe ... everything that you find worthy of attention from the animal, plant, or mineral kingdoms', thus expanding the expedition's remit ('without', Messerschmidt drily noted in a diary, 'an increase in salary'). As for medicinal plants, these needed to be collected 'in order to demonstrate to His Imperial Majesty that your voyage and its expenses were not for nought'.⁷ In the same year, in a letter read to the Académie Royale des Sciences by Schumacher, Blumentrost boasted that Peter I 'had sent one of his Doctors, well versed in natural History, to Siberia to carry out the necessary observations' and promised to communicate the results of this research into 'animals, plants, minerals, figure stones, &c'.⁸

Messerschmidt himself went far above and beyond his instructions, carrying out daily meteorological observations and making notes on the geography, ethnography, and history of Siberia. Through the practices of collection and classification he developed, as Anke te Heesen's incisive analysis shows, the German scholar sought to impose some kind of order on the wealth of knowledge collected in the course of the expedition and 'to move beyond merely noting curiosities to making evaluations and drawing initial conclusions'.⁹ In that sense, his voyage represented the same kind of shift away from the collection and display of curiosities to universal classification that the Academy embraced.

⁶ Quoted in M.G. Novlianskaia, *Daniil Gotlib Messershmidt i ego raboty po issledovaniuu Sibiri* (Leningrad, 1970), pp. 9–10.

⁷ *Ibid.*, 13.

⁸ 'Addition a l'Histoire de MDCCXX', *Histoire de L'Académie Royale des Sciences* (1722), p. 130.

⁹ Heesen, 'Boxes in Nature', 391.

Back in St Petersburg, however, he was seen as something of a relic of the Petrine era and his collection was repeatedly described as consisting of ‘curiosities’ and ‘curious things’.¹⁰ On that basis, it would be an exaggeration to link the expedition too closely to what Heesen calls ‘an increasingly established academic culture in the Petersburg court’ or see it as ‘an effort to establish a comprehensive research basis for the [Academy]’.¹¹ Rather, as Koroloff suggests, the Messerschmidt expedition

...helped to create a framework for scientific expeditions ... that galvanized the Academy’s commitment to Siberia and to amassing broadly natural historical collections ... Siberia had to be constructed as a space of scientific discovery in correlation to the creation of St. Petersburg as a centre of scientific practice.¹²

The latter point is key to understanding the Academy’s relationship with the Russian Empire. The close links that the academicians maintained with the rest of Europe made possible the swift integration of Russia into existing European networks of knowledge exchange that no single individual of the Petrine era could have hoped to achieve. In the eyes of the Academy, its headquarters in St Petersburg was a kind of hub. On the one hand, the Academy and its printing press mediated the transfer of European cultural models to Russian elites; on the other, scientific data collected by the academicians venturing beyond St Petersburg and their agents could be sent to the capital and analyzed there. The results of these analyses, properly vetted, could then be presented to learned audiences in Europe and those Russians who would show an interest. This relationship between the Academy and its various Russian and European audiences essentially

¹⁰ Novlianskaia, *Daniil Gotlib Messerschmidt*, 151–5; see also *MIAN*, vi, 150–2. Upon Messerschmidt’s return, an unpleasant conflict erupted over the Academy’s insistence on taking over the entire collection, and the expedition’s results were never published in full.

¹¹ Heesen, ‘Boxes in Nature’, 387–8.

¹² Koroloff, ‘Seeds of Exchange’, 127.

mirrored Francis Bacon's distinction between *natural history* (data collection) and *natural philosophy* (data analysis) that shaped, for example, the relationship between the Royal Society and its correspondents in the American colonies.¹³

Scientific expeditions provided the Academy with a way to carry out observations in a wide variety of places and establish a network of observation posts throughout the empire. But in the face of reality, the neat chain of 'collection–analysis–dissemination' was disrupted. The Academy's participation in the Second Kamchatka expedition, a state-organized exploration effort that lasted from 1733 to 1746, presents an important case in the study of how hierarchies around the production of knowledge are constructed and challenged.

###

The Second Kamchatka expedition was originally conceived as an effort to find out once and for all whether the Asian and American landmasses were connected to each other or separated by a strait. It was proposed by Vitus Bering in April 1730 and, in a classic case of mission creep, soon expanded to include several distinct 'contingents', each with its own mission. In June 1732, the Imperial Academy was ordered by the Senate, which oversaw efforts to organize the entire project, to provide Bering with a professor and two students 'with appropriate instruments' who would 'observe longitudes' and compile a description of Kamchatka's 'geography ... minerals, metals, and plants, if these are to be found.'¹⁴ The Academy, keen to make use of this opportunity, responded that the work was beyond the powers of a single person and proposed increasing the number of professors to two. In the end, they sent three professors, six students, and dozens of support staff.

¹³ For an insightful discussion of this relationship, see J. Delbourgo, *A Most Amazing Scene of Wonders: Electricity And Enlightenment in Early America* (Cambridge, MA, 2006).

¹⁴ V.F. Gnucheva (ed.), *Materialy dlia istorii ekspeditsii Akademii nauk v XVIII i XIX vekakh: Khronologicheskie obzory i opisaniie arkhivnykh materialov* (Moscow and Leningrad, 1940).

The Academy's participation represented a happy fusion of scientific and government concerns. For the state, it was in keeping with the cameralist belief that detailed scientific description was a pre-requisite for the efficient exploitation of natural resources.¹⁵ For the Academy, the expedition provided the chance to collect, process, and publish an enormous amount of information about virtually unknown lands, fulfilling the hopes of the European republic of letters and raising the institution's scientific standing internationally. In the event, both sides had cause for disappointment.

After a year of preparations, the Academic group departed St Petersburg on 8 August 1733. The academicians travelled through Novgorod, Tver, and Kazan', before heading further east via Ekaterinburg and Tobolsk. Over the next ten years, they traversed various parts of Siberia, travelling together and separately. To guide their work, the Academy produced a set of instructions that detailed the professors' duties and the kinds of information they were to collect in three specified areas of disciplinary focus: astronomy (including meteorology), geography, and physics; natural history (botany and mineralogy); and history and ethnography. Further instructions were produced by members of the expedition in its course, for other participants and for local agents. It is this type of document that provides our first glimpse at the complexities of scientific knowledge exchange in Imperial Russia.

On its departure, the academic contingent was well stocked with instruments, books, paper, ink, art supplies, and other materials necessary for the orderly pursuit of its aims. The expedition carried over two hundred and fifty books at a total cost of 516 roubles and 47 kopecks, as well as well over a thousand roubles' worth of instruments, including five astrolabes, twenty thermometers, twenty-seven barometers, and seven hydrometers.¹⁶

¹⁵ It can be argued that Russia was unique in its application of cameralist (rather than mercantilist) principles on the scale of a large colonial empire. The German states, Sweden, and Austria, where the ideas of cameralism were developed and dominated the discourse of civil administration, did not, at that point in time, have any overseas possessions.

¹⁶ W. Hintzsche, N. Lind Ochotina and P.U. Møller (eds.), *Dokumente zur 2. Kamčatkaexpedition 1730-1733. Akademiegruppe* (Halle, 2004), pp. 440–54.

The list of books included atlases, travel and ethnographic accounts, treatises on physics, botany, and astronomy, as well as volumes of *The Adventures of Telemachus*, *Robinson Crusoe*, and *Gulliver's Travels*. For its participants, the expedition was thus also a travelling library, an Academy away from the Academy, a beacon of European culture and 'civilization' in the sparsely populated expanses of Siberia and Kamchatka. All in all, the books and the instruments alone took up four wagons.¹⁷

The professors' instructions were prepared, as was typical of the Academy, collegially, with drafts produced by individual subject experts and then combined into a single whole. They listed the kinds of observations and experiments that needed to be carried out. The instruction for astronomy, for example, contained a total of forty-five items, beginning with the exhortation to observe 'with care and diligence' anything that 'could serve the progress of Astronomy and Geography'. Item 37 noted, *inter alia*, the need to 'ask local persons of intelligence to continue the observations that had begun' and have them send the data to the professors.¹⁸ It is this last point that explains the large number of thermometers and barometers carried by the expedition. Many of these were intended for local agents enlisted to carry on meteorological observations once the academicians had moved on to their next destination.

The first town where the Academy established an 'observatory' of sorts was Kazan'. The expedition arrived there in November 1733 and spent a month in the city, carrying out daily observations of the weather, including atmospheric pressure, temperature, and various *meteora* such as clouds, precipitation, and so on. Early in their stay, academicians found a willing adept keen to take over the observations – a seminary teacher at the nearby Zilantov Monastery named Vasilii Grigor'ev – and secured the local government's permission to recruit him. As that request shows, the academicians' view of the production of meteorological knowledge centred on its material element. Their instructions, the academicians said, were 'not only to carry out meteorological observations

¹⁷ Ibid., 484.

¹⁸ Ibid., 491–3.

themselves, but to leave behind a barometer and thermometer so that the observations can continue.¹⁹ Essentially, the instruments were the key to knowledge production. Without them, there could be no observation; who actually tended to them was less important, as long as they took timely readings. Provided with suitable instructions – and here the spectre of the well-ordered cameralist state appears – any intelligent person could do this, regardless of their knowledge of the underlying philosophical principles.

In the event, the professors had a chance to test this approach in practice. The head of the monastery forbade Grigor'ev to take part in the enterprise, not having received any orders from his bishop on this matter.²⁰ On 20 November, the expedition urgently requested instead the services of a teacher 'under the authority of the Government chancellery' called Semen Kunitsyn.²¹ It was Kunitsyn who, on 28 November, received the instruments and the accompanying handwritten instruction, in Latin and Russian.²²

The instruction's text demonstrates clearly the Academy's view of the role of local observers. The professors began with a reference to the authority of the Senate. The instruction went on to name the three kinds of observations that were to be made: of air, winds, and meteorological phenomena (*aerem, ventos et meteora*). The first section, on air, highlighted the centrality of instruments to the enterprise. It began by noting the two kinds of instruments that had been invented to study sensible changes in the air: barometers and thermometers. The bulk of the instruction was then devoted to their description as material objects. For each instrument, the instruction provided an example of how a particular reading would need to be recorded, using actual observations made by the academicians in Kazan. For weather phenomena, the instruction listed the names of phenomena that were to be observed (with no explanation of what they might look

¹⁹ Ibid., 711.

²⁰ This appears to have been a conflict over authority rather than religious opposition to scientific knowledge: Grigor'ev was a seminary teacher and the Church authorities seemed keen to preserve their intellectual authority from secular intrusion.

²¹ Ibid., 757.

²² The Latin text and a German translation of the Russian original are reproduced in *ibid.*, 760–5, 776.

like) and what needed to be recorded about each. Finally, it set down the times at which readings had to be taken and the form of the table into which they were to be entered, again providing an example with actual observations made locally.²³

Remarkably, the instruction at no point referred to the underlying principles of how these instruments worked or provided any explanations for the phenomena that were to be observed. It also did not provide any reasons for why observations needed to be made, except that the Senate had ordered it to be done. This was in some contrast to the numerous description of meteorological instruments printed in the Academy's *Notes*. The early 1730s furnished plenty of material on the subject: of the thirty-two meteorological articles in the bound volume at the Russian State Library discussed in the previous chapter (see p. 145), nineteen had been printed between 1733 and 1735, when meteorology figured prominently in the pages of the *Notes*. In 1734, the first full year of Kunitsyn's observations, the *Notes* devoted over thirty pages to the examination of the history, theory, and practice of 'instruments belonging to the study of weather'. Indeed, Nina Nevskaya has suggested that the network of observers developed as a result of the Kamchatka expedition was the primary audience for these articles.²⁴ This assertion is incorrect: as we have seen, the *Notes* were aimed squarely at a small St Petersburg public with aspirations to emulating the polite culture of European urban elites. This imagined

²³ As Hintzsche observes, the form of the observation diary largely followed that proposed by James Jurin, who had called in the Royal Society's *Transactions* for 1723 for a standard in the recording of meteorological observations (W. Hintzsche et al. (eds.), *Dokumente zur 2. Kamčatkaexpedition Januar – Juni 1734. Akademiegruppe* (Halle, 2006), pp. 165–173; J. Jurin, 'Invitatio ad Observationes Meteorologicas Communi Consilio Instituendas', *Philosophical Transactions*, 32 (1723), pp. 422–7). Müller had met Jurin on a trip to Britain in 1730, prior to joining the Kamchatka expedition (Iu.Kh. Kopelevich, 'Pervaia zagranichnaia komandirovka peterburgskogo akademika (iz zapisok G.F. Millera o ego puteshestvii 1730–1731 gg.)', *Voprosy istorii estestvoznaniia i tekhniki*, 2 (43) (1973), p. 49). For other efforts to standardize the recording of weather, see L.J. Daston, 'Super-Vision: Weather Watching and Table Reading in the Early Modern Royal Society and Académie Royale des Sciences', *Huntington Library Quarterly*, 78/2 (2015), pp. 187–215.

²⁴ N.I. Nevskaiia, "Primechaniia na Vedomosti" kak nauchnyi zhurnal', in E.P. Karpeev (ed.), *Nauka i kultura Rossii XVIII v.* (Leningrad, 1984), p. 27.

readership of the *Notes* was treated to a simplified but comprehensive account of how and why these instruments worked the way they do. In the case of Kunitsyn, however, the instructions simply stated what actions he needed to take.

This was, unmistakably, a form of knowledge exchange. The professors provided the local teacher with practical knowledge in exchange for meteorological data. At the start of the expedition, they were confident in their ability to impose constraints on this exchange. Local observers were not invited to send their thoughts on weather phenomena to the Academy, just the data, recorded in a specific and strictly prescribed manner. In accordance with the natural history/natural philosophy opposition, the collation and analysis were to be carried out in St Petersburg, where academicians would then decide on the extent to which it should be disseminated. By the time of publication, any discernible trace of who recorded the data would be long gone. The local observers' agency was to be hidden from sight.

Even at this early stage, however, the model was challenged by external circumstances. The academicians, as we have seen, were constricted in their choice of suitable candidates by political concerns and the people available to them in particular towns. More importantly, the professors had had to give up control over the transfer of scientific data. The expedition was a state-sponsored project that pursued strategic goals and involved significant considerations of what we would now term national security. As a consequence, the Academy had agreed, in exchange for full administrative support, not to publish anything resulting from the expedition without the Senate's express permission. To make matters worse, the observers looking after the Academy's instruments were told (and Kunitsyn's instruction bears this out) to submit their diaries to the local governorate, which passed them on to the Senate, which, in turn, sent copies to the Academy. So not only did the Academy have less control over who made the observations than they could have wished, it had no direct link to them, either.

The further the expedition got from St Petersburg, the less clear-cut things became. In Ekaterinburg, the professors found a sympathetic local official, Georg Wilhelm von

Hennin, who personally assigned an observer, marckscheider Tatishchev, and installed instruments at his own residence. Von Hennin, however, took the chance to insert himself into the network, personally collecting the observations from Tatishchev and sending them directly to the president of the Academy.²⁵ In Tobolsk, the expedition requested assistance from the local government office and waited in vain for a reply.²⁶ In the meantime, the contingent's daily observations were taken over by the historian Müller, suggesting a collapse of the disciplinary boundaries prescribed by the original Academy instructions.²⁷ Through his work in local archives, Müller met, as he reported, 'a local nobleman named Jakov Mirovich, who appears to be capable of performing the mentioned observations' and enlisted his help with continuing the observations.²⁸ What Müller did not mention to the local government was that Mirovich had been a pupil of the Academy's gymnasium before being exiled to Siberia, and so had a pre-existing relationship with Müller. One can only imagine his relief at finding an observer for whose education the Academy could vouchsafe.²⁹

Another complication in the 'collection–analysis–dissemination' chain was the presence of students in the academic group. This was a stipulation of the original Senate request and a chance for the Academy to provide some practical training to a group of young Russians. These were drawn not from the gymnasium in St Petersburg, but rather from the Slavo-Greco-Latin Academy. In 1733, twelve students were drafted from Moscow, six of whom were chosen for the expedition. They were attached to the professors – two to one, – who received, naturally, instructions on their duties in regard to

²⁵ Georg Wilhelm von Hennin to Hermann Karl von Kayserlingk, 7 March 1734 (reprinted in Hintzsche et al (eds.), *Dokumente ... Januar – Juni 1734. Akademiegruppe*, 102–3).

²⁶ *Ibid.*, 88.

²⁷ Johann Georg Gmelin to Karl von Kayserlingk, 7 March 1734 (reprinted in *ibid.*, 98–101).

²⁸ *Ibid.*, 107.

²⁹ *MIAN*, vi, 364. Iakov's father Fedor Mirovich had been repressed by Peter I for taking the side of Sweden in the Northern War. Iakov and his brother Peter were exiled to Tobolsk in 1732 to prevent correspondence with their father; they were pardoned in 1741. In 1764, Iakov's son Vasili entered the history books with a spectacularly unsuccessful attempt to stage a coup against Catherine II.

the students. These detailed the types of training that students were to receive, advised on the correct forms of praise and punishment, and warned professors against ‘sowing doubt regarding the Orthodox faith’ in their charges’ minds. They also provided for a certain amount of leisure time for the students – a mark of the elevation of their social status as a consequence of their participation in the expedition.³⁰

Of course, the primary purpose of taking on students was so that they could help the professors with their duties and observations. Their status within the expedition was therefore mixed. They were entirely subservient to the professors and resembled the local observers in that each often served simply as a pair of hands to correctly handle an instrument. But the students also went beyond this role, making on-the-spot decisions about the correct sets of observations to employ and going on autonomous missions to places that the professors did not particularly wish to visit. As Rachel Koroloff has noted, the students’ reports to the professors were composed in such a manner as to demonstrate that they were learning their trade and mastering the correct techniques of observation.³¹ Moreover, they came to serve as mediators between locals – both settlers and indigenous peoples – and the professors. This introduced another layer to the Academy’s model of knowledge exchange.

The case of Stepan Krasheninnikov (1711–1755) provides the most striking example of this process. His life has attracted some welcome scholarly attention over the past two decades, in part because of certain idiosyncratic views of nature that can be seen as indicative of a ‘Russian’ scientific gaze.³² However, he is also of interest as the one stu-

³⁰ Hintzsche, Lind Ochotina & Møller (eds.), *Dokumente ... 1730-1733. Akademiegruppe*, 328–32.

³¹ R. Koroloff, ‘The Beginnings of a Russian Natural History: The Life and Work of Stepan Petrovich Krasheninnikov (1711–1755)’, MA thesis, Oregon State University, 2007, pp. 94–5.

³² Examples include Slezkine, ‘Naturalists Versus Nations’, Koroloff, ‘The Beginnings of a Russian Natural History’, and D.J.B. Shaw, ‘Utility in Natural History: Some Eighteenth-century Russian Perceptions of the Living Environment’, *Istoriko-biologicheskie issledovaniia*, 2/4 (2010), pp. 35–50. See ch. 8, pp. 232–237 for my discussions of Krasheninnikov’s views..

dent whose experience of the expedition is best documented and whose work received the widest dissemination, shedding some light on the issue of the Academy's interaction with Russia and Russians beyond the metropole.

###

A soldier's son who had studied at the Slavo-Greco-Latin Academy between 1724 and 1732, Krasheninnikov came to St Petersburg with a good knowledge of Latin and logic. The natural philosophical curriculum in Moscow was based on Jesuit interpretations of Aristotle, leading Bayer (who had examined the intake) to complain that their understanding of physics was 'outdated, disordered, and confused *in terminis*'. Of the twelve students, Bayer concluded, only three – Krasheninnikov among them – 'could be admitted to be useful'.³³ To compensate for these gaps in his education, Krasheninnikov spent a year at the St Petersburg Academy's university before the Academic contingent left the capital.

Over the next several years, he and his fellow students followed the professors around Siberia. The turning point for Krasheninnikov came in 1737, when Müller and Gmelin decided to send him to Kamchatka ahead of their own planned journey, in order to prepare the ground. He was to ensure that adequate housing and research facilities would be provided for the academicians and to embark on a programme of preliminary description. The latter included geographical, astronomical, meteorological, botanical, mineralogical, historical, and ethnographic research. Effectively, he was given the task that the Academy had, in its response to the original Senate enquiry, deemed impossible for one man to fulfil. He was provided with his own set of instructions, over eighty items in total; given funds, books, instruments, and other materials; and packed off to Okhotsk on the eastern shore of Siberia, from where he sailed to Kamchatka. From 1737 to 1741, Krasheninnikov was the only member of the academic contingent on the peninsula, travelling its length and breadth, carrying out his own observations, and enlisting

³³ *MIAN*, ii, 96.

local settlers to the same purpose. Throughout that time, he dutifully reported back to Müller and Gmelin on the mainland. Because there seems to have been no communication with the peninsula in the winter months, his reports and letters often took the form of diaries spanning the length of several months. These documents are a rich source of information about Krasheninnikov's time in Kamchatka, vividly describing his findings, travails, and misfortunes.³⁴

The Kamchatka leg of the expedition began with one such misfortune. To get to his destination, Krasheninnikov needed to take a ship from Okhotsk, a small port on the eastern Siberian coast and the base of Commodore Vitus Bering's naval contingent of the expedition (ILL. 8, p. 288). As he set out to cross the Okhotsk Sea on board of the optimistically named sloop *Fortuna*, the ship began to sink. In an effort to save it, cargo was thrown overboard, including all of Krasheninnikov's personal possessions and provisions, as well as some expedition materials such as seeds for a botanical garden.³⁵ Prostrated by seasickness, Krasheninnikov and his secretary Osip Argunov were helpless to prevent this; in the commotion, one of the three thermometers he had with him also broke. By the summer of 1738, the student only had one thermometer left, while one of his remaining barometers had cracked and was providing dubious readings. This did not stop his efforts to pursue the Academy's agenda, but it obviously had an effect on them. Perhaps most significantly, it shifted the focus of Krasheninnikov's activities away from instrumental observations that, as we have seen, had been central to the professors' approach.³⁶

³⁴ The bulk of these reports was published, in Russian, in S.P. Krasheninnikov, *Opisanie zemli Kamchatki, s prilozeniem raportov, donesenii i drugikh neopublikovannykh materialov*, eds. L.S. Berg, A.A. Grigor'ev and N.N. Stepanov (Moscow, 1949), hereafter *OZK*. Their language is unmistakably that of a contemporary eighteenth-century writer, but it is unclear whether Krasheninnikov wrote them in Russian or if translations were made for institutions back in St Petersburg, such as the Senate.

³⁵ For Krasheninnikov's garden in Bolsheretsk and its role as a 'botanical crossroads', see Koroloff, 'Seeds of Exchange', 131–3.

³⁶ *OZK*, p. 555, 579.

Throughout his time on the peninsula, Krasheninnikov showed himself to be a remarkably active researcher and capable administrator. Even before his departure from Okhotsk, he had trained a member of Bering's contingent, a soldier called Mikhailo Popov, to record weather and tides and secured permission for him to remain in Okhotsk rather than go on with the expedition.³⁷ Within days of his arrival to Bolsheretsk, the largest of Russian settlements in Kamchatka, on the evening of 22 October 1737, he began making a complete catalogue (*reestr*) of the local animal and plant life, with no regard for their rarity. It is clear that the student had internalized the Academy's all-encompassing approach to natural philosophy. It was not until 1741 that Krasheninnikov pointed to a specimen's exotic nature in his reports, suggesting that he had by then largely catalogued the world around him to his own satisfaction.³⁸ His zeal for classification went so far as to inspire a native Itelmen song, recorded by another expedition member: 'If I were the student', each verse began, 'I would describe all the young girls', or '...all the seagulls', or '...all the mountains', or '...all the fish in the sea'. 'I would', the Itelmen sang, 'take down all eagles' nests' and 'take the trout's red skin and stuff it with grass'.³⁹

Over the years, Krasheninnikov gradually developed a wide-ranging network of agents and observers in different parts of the peninsula. In doing so, he arrogated greater and greater power to himself. Initially, he cited written orders from the chancellery of the Okhotsk Port and from the Senate to force local authorities to act. Increasingly, however, he supported his requests by direct references to unspecified edicts issued by the Empress, a much stronger source of personal authority in the political context of

³⁷ Ibid., 554. Upon his return in 1741, he found that Popov was no longer to be found and no-one else had taken over the observations.

³⁸ Ibid., 557, 622. Indeed, a 1740 trip by Argunov to collect plants yielded no specimens that Krasheninnikov did not already have apart from one (p. 618).

³⁹ G.W. Steller, *Steller's History of Kamchatka: Collected Information Concerning the History of Kamchatka, Its Peoples, Their Manners, Names, Lifestyle, and Various Customary Practices*, ed. M.W. Falk (Fairbanks, AL, 2003), p. 251.

the Empire.⁴⁰ Most remarkably, Krasheninnikov went against the Senate's explicit instructions, ordering all observation journals to be sent directly to him rather than to the governorate on the mainland.⁴¹ This allowed him to oversee observations, but also circumvented the Senate's attempts to control the flow of information – and hid his agents from its sight.

Local conditions imposed significant limitations. Tossed about on bad roads during an early expedition to hot springs, Krasheninnikov's second thermometer broke in January 1738. As a result, whenever he left a hamlet where he had recruited a local agent, he had to decide whether to leave his only thermometer there (and maintain the continuity of observation) or take it with him (and collect data at a new location). His reports are filled with complaints about the quality of animal specimens he had been able to acquire: birds damaged by water or smeared with blood; seals with peeling skins; beavers whose skulls had been caved in, so that they could not be assembled into skeletons. Observations of tides were difficult to carry out because the foggy weather made it impossible to fix the time of noon and make an accurate sundial to record the high tides and slack water – in 1738, Krasheninnikov spent a month on the sea shore without ever making a noon observation.⁴² The solution to many of these issues lay in the use of local agents: in 1739, for example, the student returned to the shore with an observer named Ivan Proidoshin. After another foggy week, Krasheninnikov left, instructing Proidoshin to mark the gnomon's shadow at noon whenever possible. Returning in a month's time, he was finally able to fix the noonline on the basis of these marks. As for instruments, the student decided that a year of observations in Bolsheretsk was enough to get a general

⁴⁰ For example, in 1739 (*OZK*, p. 593). I would like to thank Kirill Ospovat for pointing out the distinction between orders issued by the Senate and by the Empress herself.

⁴¹ *Ibid.*, 580, 591.

⁴² *Ibid.*, 579, 554, 575–6, 573.

idea of the range of temperatures there and left his only thermometer and the second barometer with observers at Nizhnii Kamchatskii, some 500 kilometres away, to collect an equally long series of data there.⁴³

Establishing such a network, however, came with its own major challenges – qualified helpers were thin on the ground. Krasheninnikov set a low bar to begin with, asking Bolsheretsk authorities to assign to observations a man ‘suitable for such tasks, who knows how to write’.⁴⁴ Their first choice was a poor fit (‘for he can write but very poorly’).⁴⁵ His replacement, Stepan Plishkin, fared better and was entrusted not only with recording weather but with the collection of specimens; however, on his return to Bolsheretsk after a six-months-long absence Krasheninnikov found that observations had been neglected and Plishkin had spent the winter ‘mostly drunk and playing cards’.⁴⁶ At another time, he complained that of the soldiers assigned to him as sharpshooters to hunt birds, one had left the peninsula, one had gone blind, and the third ‘had not killed above a dozen birds in his life’.⁴⁷ Aware of the difficulties he faced in finding and retaining agents, Krasheninnikov devoted significant amounts of time to his observers: in 1739, he spent two months training settlers in Nizhnii Kamchatskii, Vasilii Mokhnatkin and Egor Ikonnikov, to carry out observations, and another three weeks overseeing them before leaving the hamlet. In what appears to have been the most extreme case, Krasheninnikov’s report for 7 June 1740 noted that a certain Ivan Pashkov ‘has now learnt to read, and is currently training to record winds and weather’: a semi-literate cossack son (hired, presumably, for his apparent intelligence) was being trained up for the job.⁴⁸

⁴³ Ibid., 594, 591.

⁴⁴ Ibid., 556.

⁴⁵ Ibid., 560.

⁴⁶ Ibid., 593. In the *Notes*, playing cards was presented as an acceptable form of leisure – a further highlight of the difference between behaviours expected from a nobleman in St Petersburg and a low-ranking observer in Kamchatka.

⁴⁷ Ibid., 593–4.

⁴⁸ Ibid., 598, 608.

In addition to personally supervising his agents, Krasheninnikov responded to their observations with additional questions and chided them for incorrect or simply uneconomical use of the language of scientific description. In 1739, in response to a set of observations conveyed to him by his helpers, he asked them to describe an aurora borealis in more precise detail, and criticised them for confusing ‘zenith’ with ‘horizon’. More pickily, he suggested that, in describing snowfall, the verb ‘fell’ in a sentence like ‘thick and powdery snow fell’ may be omitted. (There were also some notes on correct grammar).⁴⁹ The reports show Krasheninnikov’s growing awareness of the social and economic cost of his activities: he requested two observers in Nizhnii Kamchatskii because someone had to stay by the instruments at all times and ‘the local circumstances are such ... that [settlers] have a necessary need to travel to the sea for ... fishing, and if a single person were assigned to observations they would end up in abject poverty.’⁵⁰ He also interceded on his observers’ behalf to secure a dispensation from the levy of fish and salt each settler had to pay to the state.⁵¹ Clearly, in the absence of instruments, the importance of human capital increased.

Thus, the collection and exchange of knowledge in Kamchatka were shaped by both environmental factors and the incredibly constrained resources, human and material, at Krasheninnikov’s disposal. The student’s advice on the economical use of language, for example, had a lot to do with the fact that paper was scarce and, indeed, at some point observations had to be recorded on bark.⁵² The lack of suitable instruments meant that only certain kinds of data could be recorded: atmospheric pressure (in some places and at certain times), weather phenomena, the height and timing of tides. Some of these observations could not be carried out with the requisite degree of precision because of frequent fogs or neglectful agents. Members of Krasheninnikov’s wide-ranging network helped to address these difficulties by recording data in his absence, reporting on the

⁴⁹ Ibid., 595–6.

⁵⁰ Ibid., 584.

⁵¹ Ibid., 616.

⁵² Ibid.

movement of fish and animals, and collecting plants. The use of formally untrained helpers in such cases further blurred the disciplinary boundaries imposed on the original expedition design by the appointment of three different professors.

The reports also give us a view of Krasheninnikov's mental world and the development of his self-identity as an agent of European civilization in a far-flung land. In 1741, in preparation for the arrival of the adjunct professor Georg Wilhelm Steller (1709–1746), Krasheninnikov compiled a list of the materials remaining at his disposal (some art and writing supplies, the few remaining instruments, etc.) and settlers under his command. He included on that list five books that he had had with him throughout the previous four years, all in Latin: Johann Franz Buddeus' *Elementa philosophiae*, Suetonius, Herodotus, Terence, and Quintus Curtius Rufus' *History of Alexander the Great*.⁵³ This collection suggested a certain mindset on the part of their reader: in embarking for Kamchatka, Krasheninnikov selected these over natural histories, atlases, and ethnographic treatises.⁵⁴ The choice of classical authors paints Krasheninnikov as an adherent of the European civilization in which they played such a key role – an image that is borne out by his future writings.⁵⁵ As he prepared to finally leave Kamchatka and hand over his duties to another student, Krasheninnikov compiled a second list of expedition materials, which included these five titles, to be passed on to his colleague – Krasheninnikov's successor as a Russian *and* a European in Kamchatka.⁵⁶

⁵³ Ibid.. 617.

⁵⁴ The reason Krasheninnikov lists them in the report is that these are not personal belongings, but expedition materials (all five titles can be found in the list of books initially taken from St Petersburg). Although he had lost most of his own possessions on the way to Kamchatka when his ship sunk, it is highly likely he would have reported the loss of any other books belonging to the expedition, if he had carried those, alongside the perished seeds and the broken thermometer. Thus, the choice of titles appears to have been deliberate.

⁵⁵ For a discussion of Krasheninnikov's career upon his return and his views on the cultural role of science, see Ch. 8, pp. 234–238.

⁵⁶ OZK, pp. 625–6.

We have seen that when the Imperial Academy of Sciences joined the Second Kamchatka Expedition it had a fairly simple model of knowledge exchange in mind. Professors would travel throughout the empire's interior collecting data and specimens, which would then be sent back to the capital. In order to gain access to more data, they would enlist locals to continue observations once the expedition moved on. This was to be done with the least possible effort: observers were to be given written instructions and appropriate instruments and then left largely to their own devices. By placing instruments at the heart of the observation process, academicians hoped to control the kind of knowledge they would receive – supposedly 'objective' data stripped of the observers' idiosyncrasies, including any attempts at interpretation. Even for non-instrumental observations, data were to be recorded in a specified manner and using prescribed 'appropriate' terminology. Ideally, any interaction with the observers themselves would be limited to the handover of instruments and instructions. The collected data would then be collated and analyzed in St Petersburg; knowledge deemed useful to the state's prosperity would be shared with the Senate and whatever was 'useful to the progress of sciences' would be published for the consumption of the European-wide Republic of Letters or Russian audiences in a language and form appropriate to each task. Natural philosophy and natural history would remain blissfully separated.

In reality, this model was complicated by external factors from the beginning of the expedition. The choice of local observers, even if presented as largely unimportant, was constricted by local politics – in the case of Kazan', the Academy's relationship with Russian clergy. More importantly, the Senate claimed control of the distribution of knowledge by collecting and sorting data on the Academy's behalf and exercising an unprecedented, in the context of the Academy's other publishing activities, degree of censorship over its publication. Internal academic politics also played a role. As far as we can tell, neither the data collected over ten years of observations at Kazan' nor any analysis of it was ever published, although the Academy received the first records in 1735. At

least in part this was due to the growing conflict between the Academic Chancellery and Joseph Nicolas De L'Isle, who guarded any data he could get his hands on jealously.⁵⁷ In the end, the French astronomer left St Petersburg with much of the collected material, trailing in his wake accusations – perhaps not entirely unsubstantiated – of espionage on behalf of France.

Krasheninnikov's sojourn in Kamchatka brings many of the complexities of natural knowledge exchange into even sharper relief. As a student, he was in theory entirely subservient to his professors, and there is no reason to believe he ever challenged this status. In practice, however, he was entirely autonomous, reporting back once or twice a year and carrying out his own programme of research. Because of the harsh climate, poor infrastructure, and lack of resources in Kamchatka, his experience had little to do with the neat image of knowledge production as envisioned in St Petersburg. To address these difficulties, the student recruited and trained local settlers to carry out observations and collect specimens, giving much greater agency to the Russian settler and Kamchatka's indigenous population. At the same time, Krasheninnikov circumvented the Senate's efforts to control the flow of natural knowledge, setting himself up as a representative of the Empress, his scientific agents as servants of the empire, and Bolsheretsk as the hub of a network of knowledge exchange. The publications that resulted from this arrangement, however, did not make it explicit. On the contrary, the Academy's control of print was used to smooth over the gaps in perception and reality and present an image of the expedition that matched the original Academy model.

Opisanie zemli Kamchatki, Krasheninnikov's Russian account of the expedition, was published by the Academy in 1755, within months of its author's death.⁵⁸ The posthumous introduction to the second volume, written by Müller, one of the expedition's

⁵⁷ For remarks on De L'Isle's hoarding tendencies, see A. Wulf, *Chasing Venus: The Race to Measure the Heavens* (London, 2013), p. 7.

⁵⁸ S.P. Krasheninnikov, *Opisanie zemli Kamchatki* (2 vols., St Petersburg, 1755). The final page, if Müller's preface is to be believed, was printed on the day of Krasheninnikov's death, but the accompanying maps took several more months to engrave.

three professors, praised the young student's diligence during the expedition but also went to great lengths to highlight his status as a learner and the contribution of observations made by the adjunct professor Steller (who had arrived in 1741 and died on the way back from Kamchatka and Alaska five years later) to the final volume. The book itself was a wide-ranging work that included, among other things, tables of tidal observations.⁵⁹ In a kind of preface to this section, Krasheninnikov explained the method by which these were made and noted the addition to his own tables of observations made by Captain Ivan Elagin (1708–1766) of the expedition's naval contingent. Absent from the preface was any mention of the fact that Krasheninnikov himself had not recorded most of 'his' data – that was done by his helpers at the Bol'shaia River estuary.

In choosing where to give credit, the former student reinforced the image of a hierarchy of knowledge production centred on St Petersburg, at the top of which stood the foreign-born academicians and educated, 'Europeanized' Russians like Krasheninnikov and Elagin. The very real difficulties of pursuing 'objective' knowledge in the absence of instruments or clocks were obscured by the work of synthesis undertaken by the former student, back in the capital, in the years since the expedition. The soldiers and cossacks who had spent months tending to instruments or camping out on the foggy shores of Kamchatka had no place in that narrative. Just as absent, except as objects of description, were the native peoples of Kamchatka, who had produced specimens and shared their historical knowledge with Krasheninnikov. What, in Krasheninnikov's eyes, separated them from himself and his book's elite Russian audience was mastery of science: of the art of controlling and harnessing the flow of natural and historical knowledge to aid the progress of the Russian Empire and the wider European civilization to which, thanks to science, the former now belonged.

⁵⁹ Ibid., i, 350–99.

'Strictly Astronomical, and truthful': the appropriation of inappropriate knowledge

In addressing the Academy's irregular position in Russian society and administrative structures of its government, the scientific society developed a variety of approaches shaped by the culture of the court, the needs of the state, and its own expectations about appropriate hierarchies of knowledge production. Spanning the range between the leisured aristocracy and the dutiful servitors was the readership of the Academy's biggest publication: its annual almanac. Their reaction to these volumes, difficult as it can be to trace, clearly challenged academic claims about appropriate forms of natural knowledge. The calendars' editors responded by appropriating and adapting the familiar structures of the Petrine almanacs to emphasise the cultural association of academic science with European civilization. Yet the significance of this source remains sadly neglected. This chapter will explore how the calendars sought to define the limits of Russia's imperial metropole and its position within Europe; promoted the dual discourses of pleasure and utility in popular scientific articles included in each volume; and highlighted the link between 'appropriate' forms of natural knowledge and Western European culture in an effort to gradually rid the almanacs of their astrological content.

The introduction of printed almanacs in 1709 opened yet another Muscovite court practice to the nascent wider literate public. Beyond providing practical information about the structure of the Julian calendar year (itself a Petrine innovation), these books also played a symbolic role. To have a calendar composed for their particular locale gave Russians a sense of belonging in the wider European international community. Like the manuscript volumes prepared for the royal family in the late seventeenth century, the calendars printed in Moscow from 1708 and St Petersburg from 1712 were translated from German astrological almanacs, mostly originating from Hamburg. What we might call the calendar itself – the pages with the days of the month – was adapted to Russian realities, and in particular the Russian Orthodox liturgical year. Times of astronomical

events from the German originals were adjusted for the coordinates of Moscow and St Petersburg. The remaining parts of each small book, which typically contained astrological prognostications for each month or season and predictions about politics, health, and agriculture, were translated directly from the original, with few changes save for some judicious censorship where they touched on Russian politics.¹

We know very little about how Russians read these prognostications. Some certainly found comfort in them – in 1712, for example, Peter’s sister Princess Natalia wrote to the head of the Moscow printing press, of her relief at the predictions of peace in that year’s calendar.² Peter I himself evidently considered them a crucial element of the genre – a 1714 attempt to exclude prognostications ended with the Tsar personally ordering their inclusion for the coming year.³ However, it is safe to say that the editors themselves were not particularly concerned with the accuracy of such astrological predictions: the astrological section was typically translated from the previous year’s Hamburg calendar, making it inaccurate by definition.⁴

This suggests that their real function was not to help readers predict the future but rather to give them a sense of their place in the divinely ordered universe. This was exactly the role that astrological beliefs played in the inner lives of prominent Petrine servitors like Prince Boris Kurakin and Count Grigorii Chernyshev, who found in astrology a useful tool to assert control over their lives at a time of significant political and cultural instability.⁵ The printed calendars, however, addressed the entire reading public, rather than any specific high-ranking individual who had the means to engage an astrologer, and were concerned to a greater extent with Russia as a whole.

¹ R. Collis, *The Petrine Instauration: Religion, Esotericism and Science at the Court of Peter the Great, 1689-1725* (Leiden, 2011), pp. 472-85.

² P.P. Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom* (St Petersburg, 1862), ii, 282.

³ Collis, *The Petrine Instauration*, 476.

⁴ Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom*, ii, 490.

⁵ This is the overarching theme of E.A. Zitser, ‘The Vita of Prince Boris Ivanovich “Korybut”-Kurakin: Personal Life-Writing and Aristocratic Self-Fashioning at the Court of Peter the Great’, *Jahrbücher für Geschichte Osteuropas*, 59/2 (2011), pp. 163–94 and E.A. Zitser and

That these early calendars were for the most part simply translated from contemporary German almanacs was, therefore, less significant than the fact that they existed and were available at all. Because astronomical calculations are specific to particular locales, having calendars made ‘for the St Petersburg (or Moscow) meridian and latitude’, as their title pages proclaimed, was a means to, in a way, put Russian cities on the map.⁶ By 1725, this tradition of translated astrological calendars had become fairly well established in Russia. This was the emerging cosmological and geographical consciousness encountered by the newly arrived academicians.

###

The formal transfer of responsibility for the calendars to the Academy occurred in 1727, as secular printing activities were consolidated at the Academy. The Academy’s astronomers, however, had been involved with the St Petersburg calendars even before the publication of the society’s first official almanac for 1728. The calendar for 1726, for example, which was edited by the future academician Christian Nicholas von Winsheim (1694–1751), included a table showing the time difference between St Petersburg and other European cities. This, too, was, in fact, a translation from the Hamburg calendar, with the time differences recalculated for St Petersburg rather than the German trading port. The result was a strange image of Russia’s place in Europe, conditioned by Baltic trade interests, as both the original list and the Russian version included Riga and Arkhangelsk but no Moscow, for example.⁷

R. Collis, ‘On the Cusp: Astrology, Politics, and Life-Writing in Early Imperial Russia’, *The American Historical Review*, 120/5 (2015), pp. 1619–52, two studies that brilliantly explore the uses to which members of Petrine nobility put bespoke astrological prognostications.

⁶ In fact, after 1715 several calendars refer explicitly to their German originals on the title page, perhaps to highlight their belonging to a wider European tradition.

⁷ C.N.V. Winsheim, *Kalendar’ ili mesiatsoslov na leto ot Rozhdestva Gospoda nashego Iisusa Khrista 1726*. (St Petersburg, 1725). The original was H. Wahn, *Hamburgischer Staats-Calender, auf das 1726. Jahr Christi* (Hamburg, 1725). The time for Arkhangelsk was recalculated incorrectly by some 38 minutes, placing the port around 450 kilometres east and inland of its actual coordinates.

In December 1727, the Academy issued the first calendar to be composed and printed specifically for a Russian audience – a fact emphasised in a section titled ‘Instructions for the use of this calendar’:

Because under different longitudes and latitudes there are different celestial phenomena, it is not difficult to tell that this calendar differs from other, and especially foreign ones ... Foreign calendars can be of no use.⁸

This passage had a dual purpose: in addition to highlighting the superiority and utility of the Academy’s calendar, it warned readers away from potential competitors. In taking over the composition of calendars, the Academy was following in the steps of the Berlin Academy of Sciences, another creature of the Leibnizian tradition.⁹ The St Petersburg Academy guarded its market for almanacs jealously, petitioning the Senate to forbid the importation of foreign calendars in 1732.¹⁰ At the same time, its editors felt the need to justify the distinction between local and foreign calendars by providing readers with geographically specific information. In doing so, they undertook what may be termed the mental discovery of Russian imperial space.

St Petersburg was the sole geographical focus of the inaugural Academy calendar. The times for the beginning and end of the only lunar eclipse of the year were given for the capital but no other Russian town, although the best view of it would have been east of Moscow.¹¹ From 1729, however, the calendars began to show some awareness of the extent of the Russian Empire. That year, the young mathematician Frederick Christopher Meyer (1697–1729), who compiled the first calendars, included times of eclipses and other astronomical calculations for ‘famous towns of the country’: Moscow,

⁸ F.C. Meyer, *Kalendar’ ili mesiatsoslov na leto ot Rozhdestva Gospoda nashego Iisusa Khrista 1728* (St Petersburg, 1727), p. [51]. This was the standard title for the annual Academy calendars, which I will hereafter refer to as *Kalendar’ ... na leto ... [year]*.

⁹ J.E. McClellan, *Science Reorganized: Scientific Societies in the Eighteenth Century* (New York, 1985), p. 70. The monopoly on calendars was the Prussian society’s most prized privilege and its sole source of income.

¹⁰ *MIAN*, ii, 161.

¹¹ *Kalendar’ ... na leto ... 1728*, p. [50].

Astrakhan, Kiev, Arkhangelsk, and Tobolsk.¹² In subsequent years, as academicians worked out the best structure for the calendar, the list of cities expanded and contracted to reflect changing imperial priorities.

From 1730, with the accession of the Courland Duchy regent Anna Ioannovna to the Russian throne, Riga was added to the list. In 1733, times for Moscow were placed in the main body of the calendar, rather than the paratextual 'Instructions'. The list of main cities in the section on eclipses grew further, adding Novgorod, Kazan, Derbent, and Baltic cities. Eclipses visible in Russia were described in detail, with predicted times and complex schematic engravings of their appearance 'should anyone not be able to see that eclipse in the sky'. Scientific description and illustration were thus enlisted in the service of virtual witnessing – of an event *in the future*, no less. Mentions of eclipses occurring in America, Indochina, and other far-flung locales served to define the empire's boundaries in a global world.¹³ By 1740, 'Europe' could stand in for 'Russia': 'although the sun will not be eclipsed in Europe this year, we will nonetheless see two lunar eclipses.'¹⁴

In perhaps the clearest indication that listing the Empire's cities had a purpose that went beyond providing locals with useful information, the calendar for 1736 added a town named 'Kamchatka' to its table of times for that year's two eclipses – despite the fact that, as the table itself showed, neither of the two would actually be visible that far east.¹⁵ By the mid-1740s, Russia, as represented in the calendars, extended from Riga in the west to Tobolsk in the east and from Arkhangelsk in the north to Azov (replacing-Kamchatka in 1739) and Astrakhan in the south. The rest of the territory under Russian government, by extension, was not 'Russia' but its frontier, the Russian colonial space. Drawing the boundary at the River Ob', just east of the Urals, the calendar makers also drew a distinction between geographical and cultural Europes: by most contemporary

¹² *Kalendar' ... na leto ... 1729*, pp. [52–3]. Meyer left out three solar eclipses as 'none of them would be visible in the Russian state'.

¹³ *Kalendar' ... na leto ... 1731*, pp. [58–62].

¹⁴ *Kalendar' ... na leto ... 1740*, p. [65].

¹⁵ *Kalendar' ... na leto ... 1736*, pp. [58–9]. Kamchatka is the name of the peninsula, rather than any one settlement.

definitions, including those proposed by most members of the Academy, Tobolsk was in Asia.¹⁶ As an imperial city, however, it belonged to metropolitan Russia and therefore in Europe.

As Elena Pogosjan has noted in her studies of the Academy calendars, these slim and ephemeral volumes played a major role in broadcasting the Russian state's vision of history and social hierarchy.¹⁷ They did the same for the Empire's imagined geography. Throughout the 1730s and 1740s, the calendars underwent a period of evolution where ideas of the extent of the empire were tested and refined. By 1747, the result crystallized into a 'Postal Map of the Russian Empire', a visual guide to the imperial core from the Daugava to the Ob' and Arkhangelsk to Astrakhan and Azov: where the post did not go, the metropole ended.¹⁸

###

Reflecting on the practice of including astronomical calculations for cities other than St Petersburg, Krafft, who took over the job of compiling calendars after Meyer's death in 1729, reaffirmed St Petersburg's position as a hub of Europeanized natural knowledge:

Because the Russian State extends to great distances, and in addition we may hope that there are no other calendar makers between St Petersburg and China, we have always tried to arrange our work in such a manner as to make it sought after in other main places, located far from here.¹⁹

By setting the outer limits of the Russian state at the border of China, Krafft claimed everything in between for the Russian Empire. Invoking China helped to emphasise the

¹⁶ For the history of the Europe/Asia boundary in the period, see M. Bassin, 'Russia between Europe and Asia: The Ideological Construction of Geographical Space', *Slavic Review*, 50/1 (1991), pp. 1–17.

¹⁷ J. Pogosjan, *Petr I – arkhitektor rossiiskoi istorii* (St Petersburg, 2001) and J. Pogosjan, "Desekuliarizatsiia" ofitsial'nogo kalendaria v pravlenie Elizavety Petrovny', in M.O. Chudakova (ed.), *Tynianovskii sbornik. Vypusk 13. Dvenadtsatye–Trinadtsatye–Chetyrnadtsatye Tynianovskie Chteniia. Issledovaniia. Materialy* (Moscow, 2009), pp. 11–28.

¹⁸ *Kalendar' ... na leto ... 1748*.

¹⁹ *Kalendar' ... na leto ... 1733*, pp. [65–6].

contrast between European and non-European modes of knowledge production. More importantly, Krafft's remark positioned St Petersburg as not only the capital city of the empire, but also its centre of knowledge production. Far from suggesting that the importance of local knowledge warranted the creation of calendars in other Russian towns, he asserted responsibility for supplying this knowledge to locals – no matter how far they were from St Petersburg. Indeed, the calendars provided the Academy with a medium to broadcast its views of nature far beyond the bounds of St Petersburg and its court.

The Academy calendars were by far the best selling secular publication of the time, reaching print runs of seven to ten thousand copies a year in the 1740s (compared to between 700 to 1200 copies for most other titles).²⁰ Indeed, they are a good proxy to judge the size of Russian readership in the period: given the calendars' commercial importance, the Academy's chancellery often adjusted print runs up or down in response to market demand and sought to develop sales channels beyond the imperial core through local merchants and government officials (FIG. 4, overleaf).²¹ Thus, the routine inclusion of popular scientific articles in the Academy calendars suggests they must be viewed alongside the *Notes* as a key channel of communication with the wider Russian public. Unlike the *Notes*, however, the Academic almanac came to be dominated by one specific issue: the status of astrology and its relationship with other forms of natural philosophical enquiry like astronomy and meteorology.

Here, the Academy diverged from Petrine views of what constituted legitimate natural knowledge. Ascendant in the Renaissance and up to the mid-seventeenth century,

²⁰ While impressive by Russian standards, these print runs paled in comparison with the sales figures for similar almanacs in Britain, which could reach into hundreds of thousands, and even colonial America (see B. Capp, *English Almanacs, 1500–1800: Astrology and the Popular Press* (Ithaca, 1979), p. 263 and J.R. Ruffin, "'Urania's Dusky Vails': Heliocentrism in Colonial Almanacs, 1700–1735', *The New England Quarterly*, 70/2 (1997), p. 307). *The Ladies' Diary*, which addressed a British polite audience broadly similar to the imagined readership of the Academy, had a print run of 50,000 in 1750 (Capp, *English Almanacs, 1500–1800: Astrology and the Popular Press*, 245).

²¹ S.V. Morozova, 'Kalendar i mesiatseslovy Peterburgskoi akademii nauk kak prosvetitel'skii proekt', *Istoriia Peterburga*, 1 (47) (2009), p. 50.

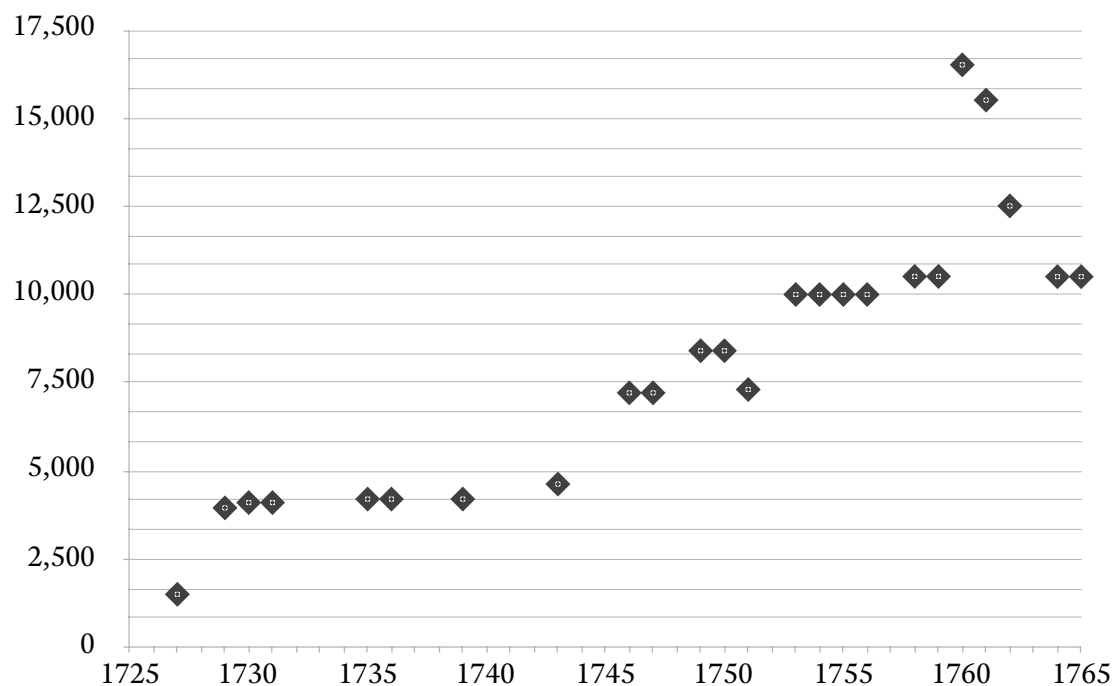


FIG. 4. Known print runs of Academy calendars (1725–65). Data from *SKPer*.

astrology's trajectory in the first quarter of the eighteenth century largely followed that of curiosity, increasingly marginalized in the eyes of Western European intellectuals.²² The St Petersburg calendar for 1727, which De L'Isle is credited with editing, carried on the Petrine tradition and included extensive prognostications for each month of the year as well as a table of propitious days for a variety of actions: taking medicine, blood-letting, sowing, logging, cutting hair, and weaning. It also included a woodcut of the Zodiac Man, a pictorial representation of the connection between various Zodiac signs and body parts.²³ De L'Isle, in fact, had had experience with astrology, having supported

²² Capp, *English Almanacs*, 258.

²³ *Kalendar' ... na leto ... 1727*. The Zodiac Man first appeared in Russian calendars in 1713 and lists of propitious days became a regular feature from 1717. There may be a link between printed astrological recommendations for the best days to cut wood or wean children and the cameralist Petrine state that sought to regulate all aspects of daily life.

himself financially in Paris by casting horoscopes for Count Henri de Boulainvilliers.²⁴ It seems that at this early juncture, the astronomer preferred not to go against the established structure of the Petrine calendar.

The next year, this changed. The new editor Meyer began with a wholesale rejection of the astrological element still prevalent in the 1727 calendar. The new editorial position was boldly proclaimed in an 'Instruction for the use of this calendar':

In this calendar, foresights of the times are left out as unimportant, and observations of times for the sake of future years are appended instead. As for lovers of astrology, something about the celestial powers is appended at the end.²⁵

The Petrine almanac had blended the strictly utilitarian nature of a calendar with the symbolic function of astrological prognostications. In Meyer's hands, the first Academy calendar was presented as a paper instrument, to be used according to specific instructions (an important element of Academic knowledge production, as we have seen) in conjunction with other instruments:

Those who want to know whether [planetary] aspects have any effect ... can see here the aspects for every day, and I advise them to have nearby a barometer and thermometer, and even better (if these are to be had) an anemometer and an anemoscope.²⁶

Any efforts to foretell weather in calendars, Meyer wrote, were doomed 'to never say anything truthful, except by chance' because any celestial influence on weather had yet to be studied in sufficient detail. In the place of Petrine astrology, Meyer offered a strictly empirical perspective. His one concession to established conventions was a section titled 'An Astrological prognostication for the year 1728', which began:

²⁴ P.P. Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge* (St Petersburg, 1870), i, 126.

²⁵ *Kalendar' ... na leto ... 1728*, p. [52].

²⁶ *Ibid.*, [54].

The front part of this calendar is strictly Astronomical, and truthful, whereas the following is astrological and its truth will be revealed by the coming year: we would have abandoned such prognostications, were it not for some readers who love them.²⁷

Even then, what followed was a table of the ‘general character’ of each month’s weather (‘April: the air is clear; May: the air is unsettled’) and an attack on judicial astrology as godless magic. As a final flourish, Meyer satirized the opaque and emblematic language of horoscopes that anthropomorphized each planet, concluding ‘as for what it means; find out for yourself if you can understand it’.²⁸

As Müller later recalled, the decision to abandon astrology was made because the new calendar, carrying the Academy’s imprimatur, would represent the institution to a wide audience. However, the audience did not respond favourably. In Müller’s words, ‘there was such a strong reaction against this, that a decision was made to swim with the tide the next year’.²⁹ From 1729, the Academy calendars reverted to the Petrine type, with detailed weather forecasts and prognostications. The editors, however, did not abandon their anti-astrological views – they simply adopted a different approach to proclaim them.

###

Accepting the need to address and satisfy their readers’ interest in astrology meant that the calendar could no longer be the strictly utilitarian paper instrument Meyer had envisioned. Instead, the Academy used the calendar to promote its developing discourse of the pleasure and utility of natural philosophy. As the calendars evolved, they developed a common structure that appropriated elements of the Petrine almanac and adapted them to better represent Academic attitudes. Broadly speaking, each annual volume

²⁷ Ibid., [61].

²⁸ Ibid., [65].

²⁹ *MIAN*, vi, 147.

had three types of content: the main calendar body, supplementary information, and what we may call the calendar's paratext – long-form texts intended to situate the rest within an 'appropriate' cultural, historical, and scientific context.

The structure and content of the main calendar body remained largely unchanged from 1729 to 1765, closely mimicking its Petrine predecessors. The most significant change was the introduction of special typographical sorts to signify propitious days alongside weather predictions and astronomical information (moon phases, aspects). These replaced the large tables printed on separate sheets, which had to be pasted by hand into each copy of Petrine calendars. Moving astrological sorts into the body of the calendar created the visual impression of an astrological almanac while making practical recommendations more difficult to actually extract from a tightly packed page. With the old table, the readers simply had to look for the current month's row in the column of the relevant action (like a haircut); now, they had to attentively scan each line in the hopes of spotting the appropriate symbol for that action (ILL. 9, p. 289).³⁰

The body of the calendar was followed by a section with explanations of the symbols used in the calendar (of moon phases, planets, and zodiac signs as well as astrological sorts (ILL. 10, p. 289)), a chronology that situated current Russian affairs within a grand historical narrative, and (from 1736) a list of major religious feast days. The content of these sections was fairly stable – major amendments followed regime changes, but were otherwise avoided. This was also the section over which the Academy had the least degree of control and where it had to follow the recommendations of the Senate and the Holy Synod.³¹

The third section – the paratext – was the most significant. It was central to the promotion of *dulce et utile* and the Academy's efforts to impose disciplinary boundaries that marginalized astrology. It was also the part of the calendar most susceptible to

³⁰ The use of astrological sorts in the main calendar body mirrored the typographical practices of the calendar produced by the Berlin Academy rather than the Hamburg sources of earlier almanacs. In Russia, the practice ended in 1765; in Berlin, it continued for longer.

³¹ Pogosjan, "Desekuliarizatsiia" ofitsial'nogo kalendaria'.

influence from the readership and the Imperial court. As Müller noted, Meyer initially relented and the calendar for 1729 included astrological sections. However, a closer look at their content in this and the following years reveals a complex interplay of attitudes and responses. In his second calendar, Meyer included an expanded version of the section titled 'Seasons of the year', which included information about each season's aspects, prevalent weather, and a proverb or saying for each month ('June ... Excess is harmful. All is good in moderation'). Although these had no apparent connection to astrology, they could – with some goodwill – be read as predictions for each specific month rather than as empty platitudes. In Petrine almanacs, each season was represented by an emblematic woodcut. Meyer's version did not see their return, opting instead for full-page copperplate engravings depicting activities appropriate for each season: playing chess by a fireplace in winter, strolling and conversing in a park in spring, overseeing agricultural work in summer and autumn. Thus, the 1729 calendar provided a vivid illustration of the kinds of polite leisure and useful service that readers were expected to engage in.

One major concession was the return of the Zodiac Man, for whom a new woodcut seem to have been engraved (ILL. 11, p. 290). Meyer did not deign to provide any instructions, noting that 'the little man's ... use is known to all and therefore there is no need to mention it here'. As for medical astrology, the editor told the story of a man whose wife had been given a prescription by a doctor, 'who said: let your husband swallow it all'. The woman fed the piece of paper to her poor husband, who soon got better. 'Know the same,' Meyer concluded, 'about Astrological rules, for they sometimes help the most those people, who are much the same as this villager'.³² The return of astrological sections did not mean a change of heart regarding astrology – at best, Meyer suggested, it was a kind of placebo.

The following year, the appropriation of the almanac's traditional structure continued. The seasons section was retained, but cryptic proverbs were replaced with a programmatic text that criticised astrological weather predictions as false while

³² *Kalendar' ... na leto ... 1729*, p [57–8].

pointing to the great utility that accurate forecasts would have for sailors, peasants, merchants, and the military. For each season, Meyer developed the theme: spring promised scientific fame for those who sponsored meteorological observations, a noble endeavour that did not ‘belong to the mean people, but could be organized by great men in their estates.’³³ Summer foresaw future meteorological predictions that would be as accurate as astronomical calculations of eclipse times. Autumn played up the importance of cartography to establish correlations between weather patterns and mountain ranges. Thus, a section previously associated with astrology was used to situate meteorology in the context of mathematical and empirical sciences. Meyer also included a section on agriculture, also a staple of Petrine almanacs; instead of predictions about crops, however, this was a brief overview of German agricultural practice that criticised folk omens and praised the use of barometers. As for the Zodiac Man, the engraving came with a statement that was ambiguous at best: ‘This bloodletter will be as useful this year as he was before’.³⁴

Clearly, Meyer could not bring himself to ascribe any kind of validity to astrology, even if he was willing to adopt the almanac’s structure to mask his disdain. However, with Meyer’s death in November 1729 the compilation of calendars fell to Georg Wolfgang Krafft, who proved much more open to the influence of stars – and of the court.

Krafft’s first calendar, for the year 1731, was the most explicitly astrological of all produced by the Academy. In addition to the sections re-introduced by Meyer, Krafft included a prognostic in verse, which provided advice and predicted the future appearance and personal qualities of those born in each month of 1731. Following in Meyer’s steps, he also began the ‘Seasons’ section with a discussion of the role of calendars and astrology:

³³ *Kalendar’ ... na leto ... 1730*, p. [56].

³⁴ *Ibid.*, [60–1]. In German, the original language of Meyer’s texts, the figure was known as *Aderlass-Männchen*, translated into Russian by Adodurov as *rudomet*.

What has of old been said of Poets, that they willingly wish to serve and entertain the people; the same should be understood of Calendar Makers, for people can hardly do without them, and a well-regulated household without a Calendar is ... like without a mirror or some other necessary thing. But they also serve to entertain, for it is known that many curious persons throughout the year keep one eye on the Calendar and its prophecies and the other on the weather and affairs of the world ... Any diversion [that is enjoyed] with reason and care we do not criticize, but willingly wish for everyone.³⁵

Krafft, as we have seen, was a member of the *Notes*' editorial group, and there are important parallels here with the latter's programmatic preface of the same year, which postulated the reader's 'pleasure and utility' as the journal's *raison d'être*.³⁶ Rather than dismiss astrology out of hand, Krafft presented it as a kind of salon game, never actually true but harmless if enjoyed 'with reason and care'. Moreover, he noted, 'we hear with every passing hour that [our readers] are not at all eager to be deprived of that amusement, but claim it as their right'. He promised to satisfy 'even the greatest lovers of novelties', but warned that 'for a price as small as what you pay for the Calendar, you cannot buy a lot of truth.'³⁷ Astrology, in that context, was no longer the literal truth to which it, as a discipline, had aspired but belonged instead to the realm of the literary – hence, the verse prognostic that preceded Krafft's text.

The Academy calendar, therefore, developed as the *Notes*' more utilitarian cousin, an ephemeral publication with specific practical uses that nonetheless aimed to amuse. As Krafft and Müller both suggest, the return of astrology was motivated by strong demand on the part of the readership. It is worth noting here that the 1731 calendar was the first one published after the coronation of Anna Ioannovna, and Krafft's willingness to treat astrology as an appropriate form of polite entertainment diversion gave the Academy a new way to secure patronage at court. According to Stählin's memoirs, published

³⁵ *Kalendar' ... na leto ... 1731*, p. [62].

³⁶ See ch. 4, p. 137.

³⁷ *Ibid.*, [63].

several decades later, the Empress was fond of astrology because a Dr Buchner, ‘a mathematician and calendar maker in Courland’, had predicted her accession to the Russian throne. Krafft, Stählin recalled, became something of a court astrologer, who was occasionally summoned to produce weather forecasts or cast trifling horoscopes, closely following the spirit of astrology as a salon game. Anna followed the Petrine tradition of keeping jesters at court, and Krafft’s courtly astrology is perhaps best seen as carried out in the same carnivalesque spirit – one that nonetheless helped maintain the Academy in the Empress’ good graces.³⁸

Of all academicians, Krafft was the most inclined to experiment with an empirical form of astrology and test whether planetary positions really did have an effect on weather. He did so in the most public of venues: in print. The calendar for 1732 contained a prediction that, by Stählin’s recollection, had astonished readers with its boldness:

By some Astrological opinion, the ice on the Neva river here in St Petersburg will break on 9 April, but experience will show [whether this is true].³⁹

Later that year, Krafft published an article in the *Notes*, titled ‘On the St Petersburg calendar of this year, 1732’. He was compelled, Krafft wrote, by a ‘noble person ... to answer before the public (*vsenarodno otvechat*)’ for the prediction laid down in this year’s calendar.⁴⁰ Krafft reiterated that his prediction was motivated as much by his wish to amuse calendar readers as his research, but defended the idea that astrology can be reformed on empirical grounds. He insisted that few people knew astronomy well enough

³⁸ J.V. Stählin, *Originalanedkten von Peter dem Grossen* (Leipzig, 1785), p. 367. In a similar vein, Krafft produced the text for a printed description of the celebrations held in the winter of 1739–40 that culminated in the construction of the famed Ice Palace (G.W. Krafft, *Description et représentation exacte de la maison de glace construite a St. Petersbourg au mois de janvier 1740* (St Petersburg, 1741)). For this episode and its place in the context of Academy’s patronage strategies, see S. Werrett, ‘An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia’, PhD dissertation, University of Cambridge, 2000, pp. 127–35.

³⁹ *Kalendar’ ... na leto ... 1732*, p. [55].

⁴⁰ ‘Okonchanie o sanktpeterburgskom kalendare sego 1732 goda’, *Notes*, 58, p. 257.

to properly study celestial influences, casting this reformed astrology as a domain of expert knowledge. Krafft then explained in detail the method by which he determined his date, taking from previous year's observations the possible range of dates for the breaking of ice and then looking at the aspects occurring in that period. Having chosen one that 'seemed strongest', he 'settled on 9 April; and because the ice broke on 5 April you can see that I was not off by many days'.⁴¹ Having explained his method, Krafft now swore off providing any further forecasts, leaving this to interested readers.

In this way, early Russian readers' demands for astrological almanacs fed back into the Academy's research programme. Apart from Krafft, who seems to have abandoned such experiments after this episode, few academicians seem to have worked seriously on reforming astrology. Nonetheless, it is entirely plausible that the Academy's strong interest in meteorology was motivated at least in part by the fact that this was the only discipline where academicians could bring themselves to accept the possibility of celestial influence.⁴² In criticising excessive reliance on almanac forecasts, editors articulated a programme of citizen science that would rely on meteorological observations collected throughout the Russian Empire.⁴³ On a personal level, astrological predictions became something of an inside joke for members of the Academy. Krafft gained a reputation as an astrologer and was gently mocked as 'our intrepid Krafft, the most renowned friend of the stars' in a celebratory poem presented to Euler by his colleagues for his wedding in 1733.⁴⁴ In 1740, when De L'Isle's expedition to observe the transit of Mercury in Berezov in northern Siberia failed because of cloudy weather on the day of the transit, he bitterly

⁴¹ Ibid., 262.

⁴² This was not unprecedented in contemporary natural philosophy, though mostly confined to scholars in colonial communities – see, for example, M. Harrison, 'From Medical Astrology to Medical Astronomy: Sol-Lunar and Planetary Theories of Disease in British Medicine, c. 1700–1850', *British Journal for the History of Science*, 33/1 (2000), pp. 25–48.

⁴³ This bore some fruit: in addition to journals recorded by the agents recruited for the Second Kamchatka expedition, the Academy received observations from, among others, the head of the Moscow post-office in 1735 (*LAN*, p. 149).

⁴⁴ Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, ii, 461. I would like to thank Beatrice Gutmann for helping with the translation of the poem.

wrote to fellow academician Christian Friedrich Gross (1680–1742) that ‘in the future, we should not content ourselves with astronomical observations, but consult astrology, too, when embarking on such a distant voyage in the hopes for a clear sky.’⁴⁵

At court, astrological interests survived until at least mid-1730s. In December 1734, when the new Academy president Baron von Korff assumed his duties, he suggested that ‘forecasts of diseases’ should be added to the calendar for 1736.⁴⁶ The new editor, Winsheim, complied, although he began by pointing out that ‘even the most skilled doctors are hardly able to recall [all human] diseases by name’, let alone predict them.⁴⁷ Korff also consulted academicians on the positions of planets in astrological ‘houses’.⁴⁸ There is, however, circumstantial evidence that astrology began to fall out of favour at court around the same time. As Alekseeva points out, two Academic panegyrics to Anna (by Goldbach and Stählin, both translated by Trediakovskii) from January 1737 contained explicit criticism of astrologers.⁴⁹ The fireworks celebration at the start of that year relied on astrological imagery, but the accompanying commentary went to great pains to juxtapose godless, superstitious astrological predictions and astronomical calculations that ‘proceed from immutable laws of nature ... are very useful ... and worthy of no small praise’.⁵⁰ Here, again, astrology was tolerated as a literary device but denied any utility or validity in the production of natural knowledge.

The language of discussion and description was central to enforcing this disciplinary distinction. To the extent that astrological predictions were permitted in the Academy calendars – mostly in descriptions of seasonal weather – they were couched in the languages of probability and doubt (‘aspects suggest’, ‘we may hope’, ‘it is possible’). On the contrary, predictions of eclipses and other astronomical events were presented as

⁴⁵ Quoted in V.Ia. Struve, ‘O rukopisi astronoma Delilia, prinesennoi v dar Russkomu Geograficheskemu Obshchestvu, chlenom onago kniazem I. A. Dolgorukovym’, *Zapiski Russkago Geograficheskago Obshchestva*, 3 (1849), pp. 65–6.

⁴⁶ *LAN*, p. 147.

⁴⁷ *Kalendar’ ... na leto ... 1736*, p. [60].

⁴⁸ *LAN*, p. 152.

⁴⁹ N.Iu. Alekseeva, ‘Dva avtografa Trediakovskogo 1736 goda’, *XVIII vek*, 23 (2004), pp. 77–9.

⁵⁰ *MIAN*, iii, 290–1.

something that *will* happen, a future fact. The nebulous language of astrology, in arguments reminiscent of the criticism of alchemy in the *Notes*, was contrasted with the precise terminology of astronomical description. At the same time, formerly astrological sections were appropriated to promote an empirical agenda. The same lunar and solar eclipses that Peter had valued as rare and curious phenomena were explicitly presented as common and regular events.⁵¹ Attempts to predict the breaking of the ice on the Neva were replaced with records of when it had broken in the past, updated annually and addressed to ‘those who wish to know in advance when the ice ... will break’.⁵² In 1737, tables of barometric pressure were printed ‘instead of the unfounded prognostication of health and illness’.⁵³ Petrine sections on ‘Sublunar affairs’ returned as ‘Other occurrences’, which focused on astronomical events other than eclipses: comets, planetary transits, and so on. Each emphasised the regularity of such phenomena and the importance of careful observation. Where the almanacs of the 1710s–early 20s had listed qualities associated with each planet and promoted the ‘as above, so below’ principles typical of emblematic curiosity, the Academy published popularizing articles on the sun, the moon, and the planets that focused on their sizes, climates, and the possibility of extraterrestrial life.

During Winsheim’s tenure as the calendar editor, from 1735, efforts to discredit astrology intensified. With the audience at court clearly in mind, Winsheim strained to adopt an urbane, light-hearted tone of voice. His texts presented astrology as a form of superstition incompatible with European culture and the subject of ungainly pedantic obsession. In one example, he described how astrologers’ great expectations for a rare conjunction of Saturn and Jupiter ‘had not come to much of anything, other than that the Pope introduced some small change in the calendar and received an envoy from the Tsar of Japan’.⁵⁴ Descriptions of non-European peoples and their reactions to celestial

⁵¹ *Kalendar’ ... na leto ... 1736*, p. [64].

⁵² *Kalendar’ ... na leto ... 1735*, p. [61].

⁵³ *Kalendar’ ... na leto ... 1737*, p. [67].

⁵⁴ *Kalendar’ ... na leto ... 1742*, p. [80].

phenomena underlined the association of European natural knowledge with ‘civilized’ behaviour. Nowhere was this tendency more pronounced than in Winsheim’s treatment of the Zodiac Man.

Throughout the 1730s, the Academy used the same woodcut, which first appeared in 1729, for the Zodiac Man. During that time, the Zodiac Man was the object of some mild mockery: in 1731, Krafft noted that ‘he has preserved many from medical advice’; in 1733, the Zodiac Man was granted leave to remain ‘for anyone is yet to lodge a complaint against him’. In 1737, perhaps to compensate for the removal of medical prognostications, Winsheim provided a detailed explanation of the illustration, by then well worn; but the next year’s calendar cautioned readers that ‘necessity changes all laws, that is, in general it is safer to follow the advice of a skilled doctor.’⁵⁵ Thereon it became a figure treated with polite disdain rather than reverence due to a source of natural knowledge, placed in the calendar ‘more out of habit than necessity,’ as Winsheim noted.⁵⁶ By the mid-1740s, the role of ‘our naked bloodletter’ was largely to draw a distinction between European modes of thinking and belief in astrology. In 1744, his followers were compared to ‘the arrogant Japanese’. In 1746, when a new plate was finally cut for the illustration, the calendar noted:

1,800 years ago they used to think of Astrologers and magicians in Rome [that they] must always be considered unworthy of the republic, and yet should not be exiled; the same can be said of the bloodletter, who as far as we know has not been excessively praised and yet has always found his followers. For that reason he remains in this year’s calendar, as will, it seems, be the case hereafter.⁵⁷

A few pages on, an article ‘On the astronomy of Greenlanders’ promised to

...relay the silly and strange notions of Greenlanders about stars and celestial phenomena in order to demonstrate the blindness and extreme ignorance of that poor pagan people, and by contrast discover the

⁵⁵ *Kalendar’ ... na leto ... 1737*, p. [85].

⁵⁶ *Kalendar’ ... na leto ... 1742*, pp. [65–6].

⁵⁷ *Kalendar’ ... na leto ... 1746*, p. [63].

happiness of those peoples that, embracing Christian law, join it to a well-founded knowledge of natural sciences.

The only one who had exceeded the Greenlanders in ignorance, apparently, was King Ptolemy with his belief in astrology.⁵⁸ Here was a stark contrast of ‘proper’ astronomical knowledge and the savagery and superstition of past ages and non-European nations.

The Academy calendars illustrate the scientific society’s attempts to control and shape official attitudes towards the study of nature. Its failure to immediately produce an astrology-free calendar – indicative of a particular attitude among its readership in the 1720s that is corroborated by other sources – reveals a complex picture of response and counter-response between the readers and the Academy. As with most volumes produced in this period, we have very little concrete evidence about the way these calendars were actually used and read. Despite Meyer’s original intention, they were certainly seen as more than a paper instrument. In August 1737, for example, as Krasheninnikov was waiting in Okhotsk to be carried across to Kamchatka, Captain Chirikov of the expedition’s naval contingent paid him a visit. Chirikov borrowed Krasheninnikov’s calendar for 1737 ‘for reading’ (*dlia pročitaniia*) and even asked him to write to Müller to see if the professor had a spare copy of the calendar for 1736 – that is, for the previous year.⁵⁹ Clearly, at that point Chirikov could only need it for the articles. Others used the information contained in the calendars to plan astronomical observations: in 1728, Prince Antiochus Cantemir recorded the times of an eclipse he had observed together with a sketch of its appearance in the pages of his calendar.⁶⁰ In 1736, Andrei Khrushchov began his record of an eclipse observation by noting: ‘When the time of the lunar eclipse, as laid down in the calendar printed at St Petersburg, came near...’ The record was then sent to the Academy. Its text reveals the extent to which the Western European approach to eclipse observations, undertaken with the use of telescopes, pocket

⁵⁸ Ibid., [68], [73].

⁵⁹ *OZK*, p. 551.

⁶⁰ N.I. Nevskaia, *Peterburgskaia astronomicheskaia shkola XVIII v.* (Leningrad, 1984), pp. 35–6. The same calendar shows that Cantemir kept up a series of meteorological observations in Moscow.

watches, and compasses, had become internalized by that stage – having been the subject of a cultural conflict just two decades prior.⁶¹ Other readers used the calendar pages to record current weather – a copy of the calendar for 1736 kept at the National Library in St Petersburg contains marginal notes for, among other things, rain and floods – recorded against a forecast for ‘increasing frost and clear skies.’⁶²

Despite promises to the contrary, the Zodiac Man – that visual nexus of astrological practices – appeared in an Academy calendar for the last time in 1746. In the following year, the Academy finally received an officially ratified charter, marking the beginning of a new chapter in its history. In the years between its foundation and the Charter, in the absence of official status within the relatively well-regulated and highly autocratic Russian state, the Academy constantly found itself in a precarious position. Its members and administrators were nonetheless able to exploit the inherent uncertainty of this situation, experimenting with a variety of ways to engage with the Russian state and the public. Some – like efforts to provide education or stage public demonstrations – were less successful than others – like fireworks or scientific expeditions.

In the end, the Academy’s most successful project was its printing press, which allowed the society to articulate a vision of natural knowledge that provided it with a key cultural role and a claim to utility within the structure of the empire. Despite earlier struggles, by 1747 the calendars seem to have successfully established astrology as a marginal discipline at best and distinctly barbaric at worst suggests, suggesting that the Academy’s elite audience had largely internalized the ideas and practices represented in its publications – those of a natural philosophy built on a mathematical foundation, emphasising the importance of categorization, data collection, and the study of regular phenomena. Thus, belying their ephemeral nature, the calendars provide our best evidence that the Academy’s efforts to present Russian audiences with a new model of natural knowledge based on the pleasure and utility of European science were successful.

⁶¹ A.I. Iukht and A.B. Kamenskii, ‘Nabliudeniiia zatmeniiia Luny 16 (27) marta 1736 g. v Rossii’, *Istoriko-astronomicheskie issledovaniia*, 17 (1984), pp. 421–4.

⁶² *Kalendar’ ... na leto ... 1736*, p. [47]. Shelfmark 38.34.3.13.

Part III: The Enlightened Elite

The Academy's successful pursuit of relevance in the cultural context of Anna Ioannovna's Russia was not without its downsides. By allying himself and the institution so closely with her court, Schumacher left both open to criticism when, in the early 1740s, a succession of coups d'état eventually elevated Elizabeth I, the only surviving daughter of Peter I, to the Russian throne. Elizabeth presented her accession as a victory of native Russians over German opportunists apparently favoured by Anna. This was a potential threat to the Academy, which had yet to appoint a full professor of Russian birth. In a sermon celebrating the new Empress' birthday, the Novgorod archbishop Arsenii contrasted Peter's glorious introduction of European learning and polite manners to the 'inglorious and risible ... ignorant of sciences and unenlightened' Russian people with the vagaries of Anna's rule:

...As an internal disease is more severe and dangerous, so the hidden enemy within is more horrid ... There was no subject [these enemies] dwelt on more than learned people, [saying]: Oh God! How unfortunate is Russia that it has no learned men and cannot have learning! ... Any new visitor [from abroad] ... even if he knew nothing, even if he could not count to three, simply for his foreign birth ... had to be made, over the head of worthy and meritorious Russians, a president or a councillor ... with thousands of rubles in salary. Such was the conscience of our internal enemies!¹

Schumacher – himself a collegiate councillor – nearly fell victim of anti-German feeling when he was accused of corruption and embezzlement by De L'Isle and Andrei Nartov, the head of the Academy's instrument-making workshop and former turner to

¹ Iushkevich, Amvrosii, 'Slovo v vysochaishii den' rozhdeniia blagochestiveishiia samoderzhavneishiia velikiia gosudaryni nasheia imperatrity Elisavety Petrovny vseia Rossii...', in S.I. Nikolaev (ed.), *Petr I v russkoi literature XVIII veka. (Teksty i kommentarii)* (St Petersburg., 2006), pp. 132–3.

Peter I.² Academicians scrambled to demonstrate their devotion to the Russian state and Orthodox faith, mobilizing every available resource. ‘Following the prudent statutes of Peter I the Great ... in these happy times of change’, a public assembly was hastily organized to celebrate Elizabeth’s coronation.³ Krafft and Weitbrecht’s contributions were soon published both in the original Latin and in Russian – the first time assembly speeches were printed in translation. Another neglected practice that resumed in 1742 was the examination of students from the Cadet Corps by the Academy’s professors.⁴ A Russian Orthodox icon was placed in the Conference room.⁵ Finally, to fend off accusations of German bias, the Chancellery also appointed two Russian adjunct professors: Lomonosov and Grigorii Teplov (1717?–1779).⁶

Ultimately, Schumacher was exonerated on most charges and returned to the Academy. Its president, Karl von Brevern (1704–1744), who had replaced Korff in 1740, became the head of the Foreign Affairs College. It was not until 1746 that a new president, Count Kirill Razumovskii (1728–1803), was appointed. He was the younger brother of the Empress’ favourite Alexei Razumovskii, a Ukrainian cossack who had joined Princess Elizabeth’s court as a singer in 1732. After Elizabeth’s coronation, Alexei brought his family to St Petersburg and Kirill spent two years on a Grand Tour of Europe, accompanied by Teplov. With Razumovskii’s appointment to the presidency, the Academy gained a strong protector at court, while his mentor Teplov joined

² S. Werrett, ‘The Schumacher Affair: Reconfiguring Academic Expertise across Dynasties in Eighteenth-Century Russia’, *Osiris*, 25/1 (2010), pp. 104–26.

³ *MIAN*, v, 114. The decision to hold an assembly ‘as soon as the ice breaks’ was made on 23 April, speeches were written on 27–28 April, and the assembly held on 29 April (*LAN*, p. 277).

⁴ *LAN*, pp. 275–6.

⁵ *LAN*, p. 283.

⁶ *LAN*, p. 278. Teplov was a protege and, possibly, the illegitimate son of Prokopovich, who studied at the Academy university (with a sojourn in Prussia in 1733–6) until 1740, when he joined the Russian Conference as a translator.

Schumacher in the Chancellery in the rank of assessor. Together, the two administrators penned the Academy's new Charter, which was finally ratified by the Empress on 24 July 1747.⁷

The Charter sought to address the main criticisms of the Academy. Rather than suggest some ideal model, it largely codified the outcomes of the preceding two decades. Indeed, many of its provisions were motivated by the desire to regularize the status of specific people and institutions within the society.⁸ At the same time, as a comparison of the Charter with the Petrine Project makes clear, the former's representation of the Academy's purpose and public role was shaped by the processes described in the preceding chapters of this thesis. Most striking of all was the Charter's relentless focus on utility. The Academy was formally divided into 'the Academy proper' and the university, with separate staff. The three classes of academicians were all presented in terms of their contributions to the utility of the state: astronomers and geographers would improve navigation and could, in an echo of the Kamchatka expedition, discover new lands; natural historians, anatomists, and chemists would classify and describe 'the unknown benefits, uses, and oftentimes names' of the 'plants, trees, stones, salts, minerals' found in the Russian Empire; experimental physics and mechanics would contribute to the country's 'police' – that is, the needs of its cameralist institutions. In an effort to preserve disciplinary boundaries, the Charter warned strictly against 'botanists entering into mathematical affairs, and anatomists into astronomical'.⁹ A major departure from the Project was the exclusion of humanities from the 'the Academy proper', bringing the definition of sciences/*nauki* closer to our modern understanding. A final summary,

⁷ K. Ostrovitianov, *Istoriia Akademii nauk SSSR* (Leningrad, 1958), pp. 436–53.

⁸ M. Lomonosov, *Polnoe sobranie sochinenii*, eds. S.I. Vavilov and T.P. Kravets (Moscow and Leningrad, 1957), pp. 11–24.

⁹ Ostrovitianov, *Istoriia Akademii nauk SSSR*, 437–8, 440.

under the heading ‘The utility of these academicians is as follows’, noted that scholars were a source of expertise for the state and could, in fact, move from the Academy into state service.¹⁰

Having dealt with the duties and uses of academicians, the Charter noted:

In the first instance, the academic institution had had to be assembled out of foreigners, for the most part; in the future, it must be composed of native Russians. For that purpose, the Academy is joined with its other part: the University.¹¹

The purpose of the university was thus to prepare future academicians of Russian birth. To that end, thirty students were to be taught at the Academy’s expense, strictly in Russian or Latin, studying mathematics, physics, and a number of subjects from the humanities. This was to ensure that ‘not only would the University produce those who could add to the academic body, but in all positions, in military or civil service, within and outside the state there would be learned Russian men’.¹²

Both the Academy and the University were represented as useful institutions with specific roles within the machinery of the state. However, the idea that the study of nature could be taken up by the nobility alongside their main service duties was also reflected in the Charter. Unlike the Cadet Corps, the Academy’s educational institutions were to accept people of all social status – with one important caveat. Members of the nobility could not be taught at the Academy’s expense. Students paying their own way, on the other hand, could not be ‘detained to serve at the Academy’ – unlike their funded peers – receiving instead ‘the same advantages as at the Cadet Corps’.¹³

The Charter of 1747 finally provided the Academy with a sense of security. It now had a clearly defined role, so that the constant pursuit of patronage and relevance was no

¹⁰ Ibid., 443. See Ch. 8, pp. page 230–1.

¹¹ Ibid., 443.

¹² Ibid., 444.

¹³ Ibid. The Charter also codified the practice of appointing unpaid honorary members ‘from among ... noble persons in the Russian and other states’.

longer a pressing necessity. This was a welcome contrast to its situation over the preceding two decades. Yet we have seen that Academy members and administrators had been able to creatively exploit the functional ambiguities of that earlier period to place the institution at the heart of Russian intellectual and literary life and elevate the cultural status of European learning, and natural philosophy in particular. In the absence of alternative mediators, the imagery of pleasant and useful sciences promoted by the Academy played an outsized role in determining Russian views of science. As the century wore on, however, members of the Russian elite began to develop their own attitudes towards the utility and pleasures of science – attitudes that were often informed by the ‘official’ Academy discourses but could also conflict with them. This was a process that began with the Academy’s foundation and continued throughout the reign of Elizabeth.

'Of little use? So be it!': Prince Antiochus Cantemir and the parallel development of polite science

No one came closer to the early Academy's ideal image of a noble patron of sciences than Prince Antiochus Cantemir (1708–1744) – a graduate of the Academy university, poet, Anna Ioannovna's envoy to the courts of St James' and Versailles, translator of Horace and Fontenelle, friend of the *philosophes*, the Academy's agent abroad, and even – at one point – an apparent candidate for its presidency. In more ways than one, Prince Cantemir epitomized the kind of Europeanized Russian that the Academy's texts imagined and addressed. And yet, he forged his own path and the differences between his views and the attitudes to the study of nature promoted by the Academy are as instructive as the myriad ways in which he internalized them.¹

Antiochus Cantemir was the youngest son of Demetrius Cantemir (1673–1723), a Moldavian ruler who defected to Peter I during the Russo-Ottoman war of 1710–11. Settling in Russia, Cantemir Senior seems to have fitted in well with the intellectual atmosphere of the Petrine court. He was a scholar of European renown, a member of the Berlin Academy, and the author of numerous works on the history of the Ottoman Empire and its subjects.² An avid student of the alchemist Jan van Helmont, he skilfully deployed the language of emblematic natural philosophy in panegyrical contexts.³

¹ As a prominent post-Petrine literary figure, Cantemir has been the subject of much scholarly attention. A good guide to literature on Cantemir is S.I. Nikolaev, 'Materialy dlia bibliografii sochinenii A.D. Kantemira i literatury o nem (1966–2010)', *XVIII vek*, 26 (2011), pp. 540–64. Following Russian transliteration, his surname frequently occurs as 'Kantemir'; I have chosen to follow Cantemir's own preferred spelling.

² For the significance of these historical works, which directly influenced Edward Gibbon, see H. Trevor-Roper, 'Dimitrie Cantemir's *Ottoman History* and its Reception in England', in *History and the Enlightenment* (New Haven, 2010), pp. 54–70.

³ N. Pissis, 'Dimitrie Cantemir, the Monarchia Borealis and the Petrine Instauration', *Working Papers des SFB 980 Episteme in Bewegung*, 4 (2015). Among Demetrius' unpublished works was a large alchemical treatise.

Despite his foreign origins, he was also able to find his place among Russian grantees. His first wife, Antiochus' mother, died in 1713. In 1720, after Demetrius moved to St Petersburg with his family, he married Princess Anastasiia Trubetskaia, establishing kinship links with a prominent Russian noble family.

Thus, although Antiochus had not been born in Russia, he grew up as a member of Russian nobility, fully enmeshed in its familial and social networks. The Cantemir mansion in St Petersburg was in a central location, on the banks of the Neva by the Summer Gardens, surrounded by other grantees' homes (ILL. 12, p. 290). Numerous sources attest to the family's active social life, with frequent visits from Prince Menshikov, Admiral Apraksin, Laurentius Blumentrost, and Peter I himself.⁴ From the age of twelve, Antiochus was on the books of the Preobrazhenskii Life Guards regiment as a private, receiving his officer's commission in 1728.⁵ His social circle included the Trubetskoi, Cherkasskii, and Golitsyn families, all among the most elevated in the country.

As a child, Antiochus had a number of excellent tutors at home; attended the Slavo-Greco-Latin Academy in Moscow; and studied at a Catholic school in Astrakhan alongside Trediakovskii, a native of that town, when his father accompanied Peter I during the war with Persia in 1722–3.⁶ Good education was clearly of capital importance to Demetrius: one of the conditions of his defection to Peter was that his sons be allowed to study in Europe.⁷ In his living will, the senior Cantemir made useful learning the criterion according to which his heir should be determined from among his sons: the choice

⁴ L.N. Maikov, 'Kniazhna Mariia Kantemirova', *Russkaia starina*, 89/1 (1897), pp. 58–65.

⁵ E. Boltunova, 'Dmitrii i Antiokh Kantemiry v Peterburge pervoi chetverti XVIII v.', *Rusin*, 3/5 (2006), pp. 51–2.

⁶ Cantemir's teachers at the school travelled with the family to Moscow and, in all likelihood, took Trediakovskii with them. On Trediakovskii's Jansenist connections and Cantemir's links with the Catholic plans for the reunification of the churches, see B.A. Uspenskii and A. Shishkin, 'Trediakovskii i iansenisty', *Simvol*, 23 (1990), pp. 105–261.

⁷ P.P. Pekarskii, *Nauka i literatura v Rossii pri Petre Velikom* (St Petersburg, 1862), i, p. 570.

was to be postponed ‘until they are examined in the sciences necessary to [the sovereign] and the State’.⁸ Of the three, he wrote, ‘my youngest son [Antiochus] is the best in intelligence and sciences, unless he changes for the worse’.⁹

Prince Demetrius died in August 1723. In May 1724, Antiochus petitioned Peter I to be released for further study in Europe: ‘I have an avid desire to study ... ancient and modern history, geography, jurisprudence, and what belongs to the politics of the state. I also take pleasure in mathematical sciences and, at my leisure, miniature painting’.¹⁰ In October 1725, plans were made for him to go to Berlin.¹¹ Instead, he entered the ranks of students at the newly established St Petersburg Academy of Sciences.

In 1726–7, he studied history with Bayer, mathematics with Meyer, and philosophy with Christian Gross. At thirty-two and twenty-nine respectively, Bayer and Meyer were among the youngest professors of the Academy and took an active role in its efforts to shape attitudes towards *nauki* in Russia. Cantemir’s relationship with Bayer was of mutual benefit: the academician helped the young prince to edit his father’s historical treatises for publication, receiving in turn many of Cantemir Senior’s materials. Bayer’s article on the wall of Derbent in the first volume of *Commentarii*, for example, incorporated information collected by Demetrius’ during the war with Persia.¹² From Meyer, the author of the Academy’s first, anti-astrological calendar, Cantemir acquired a taste for astronomy.¹³ Bilfinger’s eulogy for Meyer in 1729 emphasised the mathematician’s connection with Cantemir:

⁸ PSZ #6052, viii, 814.

⁹ Quoted in M.I. Radovskii, *Antiokh Kantemir i peterbugskaia Akademiia nauk* (Moscow and Leningrad, 1959), p. 91.

¹⁰ A. Cantemir, *Sochineniia, pis'ma i izbrannye perevody*, ed. P.A. Efremov (2 vols., St Petersburg, 1867–8), ii, 343.

¹¹ H. Grasshoff, ‘Iz istorii sviazei Berlinskogo obshchestva nauk s Rossiei v 20-kh godakh XVIII v.’, *XVIII vek*, 7 (1966), p. 60.

¹² N.I. Nevskaia, *Peterburgskaia astronomicheskaiia shkola XVIII v.* (Leningrad, 1984), p. 167.

¹³ Radovskii, *Antiokh Kantemir i peterbugskaia Akademiia nauk*, 19.

His undying glory will be furthered by the fact that he had the happiness and talent to teach mathematics so well to ... Prince Cantemir that [the latter] had mastered geometry and algebra ... The letters from Moscow, with which this prince favoured the deceased for two years, are proof of both his love [for Meyer] and his learning, and will in the future serve as much to honour him as they did to console and gratify our departed.¹⁴

Although these letters do not appear to have survived, Bilfinger's oration suggests that – much like the students taking part in the Kamchatka expedition – Cantemir corresponded with academicians in a manner calculated to demonstrate his command of what they had taught him. At the same time, the eulogy pointed to Cantemir's association with the Academy and his social standing as a member of a prominent noble family to demonstrate the institution's educational utility.

Of all his teachers, Cantemir seems to have been the closest to Christian Gross, who came to St Petersburg with Bilfinger as a student and was appointed to the chair of moral philosophy in 1726. In addition to his public lectures, which followed Samuel von Pufendorf's conception of natural law, Gross gave Cantemir private lessons.¹⁵ Following Leibniz, Wolff, and Locke, Gross emphasised the importance of experience and pointed specifically to the utility of scientific instruments in establishing 'distinct' and 'clear' ideas. Thus, Cantemir's education, which began at ecclesiastical schools, was ultimately based on the Academy's characteristic blend of humanities and natural sciences.

Before long, Cantemir began to make a name for himself. Early on in Peter II's reign, he seems to have been favoured by the young Emperor.¹⁶ During this period, he was also drawn into the intellectual circle of Feofan Prokopovich and his proteges.¹⁷ His cor-

¹⁴ Quoted in Radovskii, *Antiokh Kantemir i peterbugskaia Akademiia nauk*, 19.

¹⁵ H. Grasshoff, *A.D. Kantemir und Westeuropa: Ein russischer Schriftsteller des 18. Jahrhunderts und seine Beziehungen zur westeuropäischen Literatur und Kunst* (Berlin, 1966), pp. 35–46.

¹⁶ A. Cantemir, *Satyres de Monsieur le prince Cantemir, avec l'histoire de sa vie, traduites en Francois*, ed. O. de Guasco (London, 1749), pp. 38–9.

¹⁷ I.V. Shkliar, 'Formirovanie mirovozzreniia Antiokha Kantemira', *XVIII vek*, 5 (1962), pp. 138–46.

respondence with Schumacher, who keenly flattered the Academy's graduate, shows that Cantemir kept abreast of the Academy's developing publishing activities, receiving volumes of *Commentarii* and other books.¹⁸ (A subscriber to the *Notes*, Cantemir corresponded with its editors).¹⁹ In late 1729, the twenty-one-year-old prince produced the first of eight satires that paved his way to literary fame.²⁰ Soon thereafter, he played an important role in the events that brought Anna Ioannovna to the throne. Cantemir, as a junior member of a group led by Prince Aleksei Cherkasskii and Prokopovich, was responsible for securing the support of other Guards officers in opposing proposals for placing limits on Anna's power. On 25 February 1730, he gathered signatures for a petition asking Anna to reject such proposals and presented it to the Empress.²¹ In a dramatic gesture, the Empress accepted the petition and tore up the 'Conditions' imposed on her by opponents of absolutism. This was the political context in which Cantemir composed his first two satires.

###

As some of the earliest examples of post-Petrine secular literature, Cantemir's satires have been the subject of extensive literary analysis. It would be redundant to repeat much of it here. What is of significance to the present study is what we may term the 'politics of learning' in Cantemir's oeuvre. The function of European sciences (and education more generally) in a society based on meritocratic ideals but dominated by a narrow elite circle of courtiers and noblemen is a recurrent theme in his satires. As

¹⁸ Radovskii, *Antiokh Kantemir i peterbugskaia Akademiia nauk*, 25–6.

¹⁹ N.I. Nevskaiia, "Primechaniia na Vedomosti" kak nauchnyi zhurnal', in E.P. Karpeev (ed.), *Nauka i kultura Rossii XVIII v.* (Leningrad, 1984), p. 10.

²⁰ Cantemir's satires have a complicated editorial history. He continuously reworked the first five satires (written before 1732), different versions of which circulated in manuscript. By 1744, he arrived at what are now known as 'final versions', intended for publication in Russia; however, they were not printed there until 1762. The differences between 'early' and 'final' versions are often significant, and the analysis below concentrates on the 'early' versions as expressions of Cantemir's outlook at the time of their composition.

²¹ Maikov, 'Kniazhna Mariia Kantemirova', 406–8.

a graduate of the Academy who maintained close links with its members throughout his life, Cantemir was deeply influenced by the *dulce et utile* ethos promoted by the St Petersburg learned society. At the same time, as a courtier and nobleman, Cantemir came to develop his own views of the role of science.

The outlook of Cantemir's early satires was conditioned by the political circumstances in which they were composed. Peter II's failure to return to St Petersburg after his coronation was seen by many as a sign that the ruling elite was turning away from the project of Europeanization, symbolized by the city on the Baltic Sea. Prokopovich, one of Peter I's chief propagandists, was facing principled opposition in the Synod and had reasons to fear for his position. The publication in 1728 of *Kamen' very* ('The rock of faith'), an anti-Protestant treatise by Prokopovich's old rival Stefan Iavorskii, also suggested a turn away from Petrine cultural priorities. In this context, the defence of learning in Cantemir's first satire, composed in the second half of 1729, was constructed as a defence of the Petrine legacy as a whole. It is remarkable, then, that Cantemir aims his first satirical barb at those who believe the value of learning lies in its utility:²²

Everyone cries: we cannot see any fruit that science bears,
The learned may have their heads full, but their hands are empty.

A succession of portraits drawn from contemporary Russia – a hypocritical and vain bishop, a fop, a spiteful grandee, and a drunkard – is used to present arguments against sciences. To give his satire rhetorical force, these are linked with opposition to Petrine reforms, efforts to roll them back, or their erroneous interpretation. The priest rejects theology and sermons (a Petrine staple) and flaunts his 'striped vestment', outlawed in 1721 but reinstated in 1727 'by the intrigues of one bishop'.²³ The grandee argues that

²² A. Cantemir, *Sobranie stikhotvorenii*, ed. Z.I. Gershkovich (Leningrad, 1956), p. 362. In the so-called 'early' version, likely finished by 1732, these are lines 15 and 16. However, as Gershkovich shows, the earliest known version, written before October 1729, began with these two lines (Z.I. Gershkovich, 'K istorii sozdaniia pervykh satir Kantemira', *XVIII vek*, 5 (1962), pp. 349–57).

²³ Cantemir, *Sochineniia, pis'ma i izbrannye perevody*, i, 198.

the introduction of Western learning has actually harmed agricultural production and praises *Kamen'* very. The only overtly Europeanized figure, the fop, laments that 'so much paper is wasted on the printing of books that he has nothing to wrap his curled locks in'.²⁴ The implication is that despite embracing the external attributes of European culture imposed by Peter, the fop has failed to internalize its real significance:

He will not give a pound of good hair powder for Seneca;
Virgil is nothing before [a skilled tailor].²⁵

Significantly, Cantemir does not draw disciplinary boundaries: theology and rhetoric, mathematics and astronomy, languages and grammar, moral philosophy and metaphysics, medicine and metallurgy are all under threat. This fusion is not, perhaps, unexpected, given his mixed educational background. Unlike the Academy's *Notes*, however, he does not build his defence of science on the demonstration of its utility. The problem, for Cantemir, is not that useful learning is falsely seen as useless but rather that its social status is too low. Cantemir shares the Project's view that glory can be obtained through the advancement of science, but laments its expulsion from 'all the noblest houses':

Our labours are driven, if they have no utility, by praise,
But if they receive none, our heart despairs;
Even more so if one has to suffer abuse instead of praises!²⁶

The notion of scientific glory is in conflict with developing norms of courtly behaviour, expressed by the grandee in his criticism of rhetoric: 'Exuberant speech gives rise to lies; it is proper for a nobleman to remain silent'.²⁷ This is the same difficulty that drove

²⁴ Cantemir, *Sobranie stikhotvorenii*, 362.

²⁵ Ibid.

²⁶ Ibid., 364.

²⁷ Ibid., 363.

the Academy to adopt the discourse of *dulce et utile*, but where the *Notes*' exemplar was contemporary European polite society, Cantemir's first satire points to Petrine Russia as a threatened cultural ideal.

To strengthen such associations, Cantemir added fourteen lines to the beginning of the satire to suggest that Peter II, then in the final months of his rule, was giving 'considerable hope to the Muses; shaming every ignoramus'.²⁸ This statement, although rhetorical, shows that the satire's real audience was at court. In a preface composed at a later date, Cantemir claimed that he wrote the poem 'not out of spite or a desire to abuse others, but out of a surfeit of time ... for my own amusement' (that is, during his leisure time).²⁹ At some point before the end of 1729, a manuscript was shown by a friend of Cantemir's to Prokopovich, who saw to its wider dissemination, doubtless recognizing its propagandist value. Encouraged by this success, Cantemir began to work on a second satire, 'On the malice and pride of ill-bred noblemen'.

Where the first satire focused on a single issue, the prestige of European learning, the second satire addressed a broader issue of immediate concern to Cantemir's peers: the nature of nobility and the function of meritocracy. Following Peter I's military reforms and the subsequent introduction of the Table of Ranks, different social strata within the Muscovite servitor class were consolidated into a single estate, the nobility, variously called *dvorianstvo* or *shliakhetstvo* in Russian.³⁰ During the succession crisis of January–February 1730, opponents of absolutism sought to introduce, on a legal and political level, a bipartite distinction between the 'first' (or 'oldest', or 'noblest') families and the rest of the nobility. As Mikhail Kiselev notes, the petition delivered by Cantemir sought to 'not only reinstate absolutism, but also defend the nobility (*shliakhetstvo*)'

²⁸ Ibid., 361.

²⁹ Cantemir, *Sochineniia, pis'ma i izbrannye perevody*, i, 195.

³⁰ N.N. Petrukhintsev, 'Konsolidatsiia dvorianskogo sosloviia i problemy formirovaniia oformliaiushchei ego terminologii', in N.N. Petrukhintsev and L. Erren (eds.), *Praviashchie elity i dvorianstvo Rossii vo vremia i posle petrovskikh reform* (Moscow, 2013), pp. 256–83.

from these attempts.³¹ Cantemir's second satire, composed just as these events unfolded, was not simply topical – it dealt with an issue central to the evolving self-identity of the post-Petrine nobleman.³²

Cantemir's satirical alter ego, Aretophilos, is in conversation with 'the Nobleman', who is jealous that newly-ennobled members of lower estates are rewarded and recognized before him, despite his ancient and famous lineage. Cantemir, unsurprisingly, favours meritocracy and opposes any juxtaposition of 'old' and 'new' nobility. In a preface, he argues that although

...the privilege of nobility is honourable, and useful, and famed, ... pride is unseemly of the nobility and it is base for a nobleman to envy the happiness of those below him, if they rise to honour and fame through good deeds; [nobles] must not while their time away gambling and dressing to the nines, but by their sweat and toil for the utility of the motherland should achieve fame for themselves.³³

In listing his ancestors' achievements, the Nobleman points to pursuits that are worthy of a true member of nobility: military leadership, naval acumen, civil service. Their list culminates in the Nobleman's father, 'a man worthy of the ages', among whose many achievements is his learning:

³¹ M. Kiselev, 'Razvitie samosoznaniia "dvorianskogo sosloviia" v pervoi treti XVIII v. i mezhdutsarstvie 1730 g.: "shliakhetstvo" ili "famil'nye i shliakhetstvo"?' in N.N. Petrukhintsev and L. Erren (eds.), *Praviashchie elity i dvorianstvo Rossii vo vremia i posle petrovskikh reform* (Moscow, 2013), pp. 312–9. Curiously, and unlike most contemporaries, Cantemir almost always used *dvorianstvo* in his writings. Perhaps in his eyes, thanks to his foreign origin, it did not have the same negative associations with the lowest rank of Muscovite nobility as it did for peers of Russian birth (V. Litvinov and I. Pilshchikov (eds.), 'Ukazatel' slovoform v "Sobranii stikhotvorenii" A.D. Kantemira', in *Russkaia virtual'naia biblioteka*. <http://rvb.ru/18vek/kantemir/word_index/toc_index.html>, last accessed 9 March 2017).

³² Gershkovich suggests that the first complete draft of the satire was finished in January–February 1730 (Gershkovich, 'K istorii sozdaniia pervykh satir Kantemira', 353–7).

³³ Cantemir, *Sobranie stikhotvorenii*, 368.

Renowned for deep knowledge of sciences, he spent nights
Bent over books, which gave him poor posture and eyesight.
His library was wondrous,
Not over large but reputed to be perfect.³⁴

As in the first satire, there is no suggestion that this mastery of sciences has any utilitarian purpose – it is a claim to fame that stands on its own, alongside the father's illustrious career as a general and lawmaker. Aretophilos then contrasts the Nobleman's idle lifestyle with his ancestors' glorious deeds. The only kind of warfare the Nobleman engages in is at the card table; his maritime experience is limited to 'fleets of vessels' (that is, wine bottles), each of which he 'examines for flaws, lest spirits escape, with a microscope'; the latest fashions are his only area of expertise. In listing the many shortcomings of the Nobleman's education, Aretophilos/Cantemir states that he knows how 'sciences of a higher order ... are out of fashion with us; it is ungainly to be learned and of noble nature':

Are they of little use? – So be it! But you are entirely devoid
Even of such things that you know to be useful.³⁵

As in the first satire, then, Cantemir does not proclaim the utility of sciences. Instead, he suggests that their pursuit, regardless of utility, is one of the avenues to lasting fame appropriate to a nobleman. Such a pursuit, characteristically, is a matter for one's spare hours – for example, at night. In echoing the Academy's effort to present science as a form of polite leisure, Cantemir's satires depart from it in one significant detail: the prince presents learning as a solitary pursuit, not a social one. Note that the Nobleman's father is alone in his study and is left physically deformed; in the first satire, the drunkard's critique of learning revolves around the same issue:

³⁴ Ibid., 371.

³⁵ Ibid., 373–4.

Why bend over a book and ruin your eyes?
Is it not better to spend nights with a chalice?
For we were created for company and society.³⁶

This kind of neglect of fellow human beings for the sake of books was a cardinal sin of polite science, and Cantemir's attitude is suggestive of the differences between his views and those promoted by the Academy in its publications. The poet did not, it is crucial to note, reject the importance of useful service or social relationships – fame, after all, is earned in the eyes of society; indeed, he invokes the principle of *dulce et utile* in some of his earliest translations.³⁷ However, in considering the cultural role of sciences, Cantemir emphasised their importance for the development of a personal identity independent of state service or polite sociability, a sphere of autonomous action. That he did so in the midst of a political crisis that marked, in Fedyukin's words, 'the first steps ... toward recognition and legitimization of individualized human nature in post-Petrine Russia' is all the more significant, and not something that has hitherto been recognized.³⁸

###

Cantemir's interest in the politics of noble learning was not unprecedented. As Fedyukin has previously noted, the composition of Cantemir's satires took place in an atmosphere of heightened interest in the role and structure of education among Russian nobility.³⁹ Among those who took part in these debates was Vasilii Tatishchev (1686–1750), another member of the Prokopovich circle who had acted as a spokesman for the pro-absolutism

³⁶ Ibid., 364.

³⁷ E.E. Babaeva, 'Kantemir-entsiklopedist: k postanovke voprosa', in V.M. Kruglov (ed.), *Russkii iazyk kontsa XVIII – nachala XIX veka. Voprosy izucheniia i opisaniia. Sbornik 3* (St Petersburg, 2009), p. 19.

³⁸ Quote from I. Fedyukin, "An Infinite Variety of Inclinations and Appetites": Génie and Governance in Post-Petrine Russia', *Kritika: Explorations in Russian and Eurasian History*, 11/4 (2010), p. 756.

³⁹ I. Fedyukin, 'Learning to Be Nobles: The Elite and Education in Post-Petrine Russia', PhD dissertation, University of North Carolina at Chapel Hill, 2009, pp. 99–106.

party in 1730.⁴⁰ At some point during the succession crisis, Tatishchev began work on what eventually became a treatise on education titled *Razgovor o pol'ze nauk i uchilishch* ('Conversation on the utility of sciences and schools').⁴¹ Although Tatishchev's proposals for the establishment of schools for the nobility lost out to Münnich's Cadet Corps, he was first rewarded for his role in Anna's accession with an appointment as head of the Russian mint and later charged with overseeing state mining works in the Urals, Siberia, and Kazan'. He spent the rest of his career as an imperial administrator in the Urals, Orenburg, and Astrakhan.

Cantemir and Tatishchev certainly knew each other and clearly shared many intellectual concerns; Tatishchev himself maintained close links and an active correspondence with the Academy of Sciences, particularly as he engaged in a large-scale project to write the first history of Russia.⁴² He is also one of the few known contributors to the *Notes* not to have been a member of the Academy.⁴³ In Tatishchev, then, we have another example of a Russian nobleman who closely engaged with the Academy and its publications. With that in mind, it is instructive to compare his view of the role of sciences, expressed most cogently in *Razgovor o pol'ze nauk*, with Cantemir's and the Academy's.

⁴⁰ Tatishchev came from an ancient but poor noble family and rose through the ranks of Petrine service, fighting at Poltava and in the Prut Campaign. He studied engineering in Germany and was a protege of Jacob Bruce, first in the artillery corps and later at the Mining College. In the mid-1720s, he was sent to Sweden to observe mining practices. While there, he also published a study of mammoth bones in Latin, parts of which were later reproduced in the *Notes*.

⁴¹ V. Tatishchev, *Razgovor o pol'ze nauk i uchilishch*, ed. N. Popov (Moscow, 1887). As Fedyukin points out, the initial impetus for its composition came 'between late 1729 and early 1730' and before April 1730 (Fedyukin, 'Learning to be nobles', 112–3) – that is, in parallel with Cantemir's first and second satires. The text was largely complete by 1734 and began to circulate in manuscript, although Tatishchev continued to work on it throughout the decade.

⁴² E.C. Thaden, 'V. N. Tatishchev, German Historians, and the St. Petersburg Academy of Sciences', *Russian History*, 13/1 (1986), pp. 367–98.

⁴³ Nevskaiia, "'Primechaniia na Vedomosti" kak nauchnyi zhurnal', 29–32.

Tatishchev divides sciences into five categories: the necessary; the useful; the foppish, or entertaining; the curious, or futile; and the harmful.⁴⁴ Thus, unlike Cantemir, Tatishchev imposes a hierarchy of knowledge that ranks various disciplines according to their uses. ‘Necessary’ sciences are those without which man ‘cannot have happiness and serenity’ and are at the top of the hierarchy; ‘useful’ sciences are those that have personal and public utility and are therefore a privileged form of knowledge.⁴⁵ The rest, as their categories suggest, have a lower status and are either optional or to be actively avoided.

This focus on utility demonstrates Tatishchev’s cameralist proclivities, hardly surprising in a man who studied in Germany and Sweden and whose career largely revolved around the management of mining and metallurgical industries. For example, he included ‘oeconomy’ – the cameralist science of household management – among the necessary sciences, alongside logic and theology. His demotion of ‘curious, or futile’ sciences is couched in the same language: astrology, alchemy, and suchlike, he writes, fall into this category because they ‘have no utility in either the present or the future and are largely lacking in truth’.⁴⁶ In this, he differs from the Academy: although the latter was not above making fun of the futility of alchemical research, its rejection of the culture of curiosity stemmed from a fundamental incompatibility of methodologies, terminologies, and objects of study. Simply put, academicians disagreed with what astrology and alchemy, in their existing forms, sought to achieve. Utility was not a concern: as we have seen, academicians like Krafft believed that the study of celestial influences could be incredibly useful in forecasting weather, if only it could be reorganized on ‘proper’ philosophical principles and shod of emblematical overtones. By contrast, Tatishchev’s main concern is that such domains of knowledge ‘are against moral and divine principles’. Within the context of Tatishchev’s hierarchy of useful sciences, the argument that

⁴⁴ Tatishchev, *Razgovor o pol’ze nauk*, 75–6.

⁴⁵ *Ibid.*, 82.

⁴⁶ *Ibid.*

alchemy is the proximate cause of some useful discoveries but otherwise largely a waste of resources is not, as it had been in the *Notes*, a witty aside. It is the scales on which the pros and cons of alchemy are weighed, and by which it is found wanting.

Unlike Cantemir's more universalist approach, Tatishchev's epistemic hierarchy is prescriptive. This is underlined by Tatishchev's belief that specific disciplines may be useful to a greater or lesser degree for members of different estates – an echo of the well-ordered police state. In describing mathematics, for example, he juxtaposes arithmetic, geometry, mechanics, and architecture, which are 'useful to people of all ranks', with optics, acoustics, and astronomy ('useful to learn for some people').⁴⁷ Tatishchev develops this further in a separate query, providing examples of how specific disciplines may be inappropriate for some:

For example, the science of pneumatology, which studies the properties, qualities, and strength of spirits, is rather necessary for theologians, useful for philosophers, but in general mostly unnecessary for historians, politicians, and many others. On the contrary, historians and politicians by necessity need geography, philosophers [need] mathematics; but as for the clerics, the above are none of their business.⁴⁸

In this view, even useful knowledge can be superfluous, depending on one's role in society. Such an instrumentalist attitude towards learning leads Tatishchev to all but reject the idea that science can have a social function within the culture of the court. Occupying the uneasy middle ground between the necessary/useful and the futile/harmful is a group of pursuits he calls 'foppish': literature, music, horse riding, and so on. Although he gives no definition, it is clear that these are the kinds of refined skills a nobleman may be expected to demonstrate in polite society. Tatishchev's short description makes clear his view that such skills are more valuable when they have a practical purpose: 'as for draughtsmanship', he notes, 'it is useful in all crafts' – that is, outside the 'foppish' world

⁴⁷ Ibid., 81.

⁴⁸ Ibid., 86.

of noble leisure.⁴⁹ The sense of unease this remark betrays was in line with Tatishchev's general dislike of the developing court culture: as Pol'skoi notes, he was among those who criticized the 'hypocrisy, insidiousness, flattery, jealousy, and hatred that prevail over every kind of virtue' at court, warning his son not to seek a career there.⁵⁰

In Tatishchev and Cantemir we see two Russian noblemen who combined active political lives with a deep respect for and an abiding interest in European sciences. In the midst of a succession crisis, both found themselves thinking about the role of learning in contemporary elite life, defending its values from remarkably divergent positions. Much of this difference may perhaps be ascribed to their backgrounds. Tatishchev, the Petrine servitor and imperial administrator whose education owed much to cameralist tradition, ranked domains of knowledge according to their utility to the state and the individual. The value of the European scientific tradition was affirmed by its position in the top rungs of this hierarchy.

By contrast, Cantemir, the son of a European scholar of Oriental birth, a Russian prince, an officer of the elite Preobrazhenskii Life Guards regiment, essentially rejected utility as an appropriate criterion of the value of learning. What made sciences important was the cultural prestige that should be attached to the pursuit of learning, their role as an attribute of a noble and honourable life. This was a view conditioned as much by the Academy of Science's early efforts to present sciences within the context of European polite culture as by the prince's own observation of the changing culture of the court.⁵¹ Between them, Tatishchev and Cantemir represented both sides of the Academy's

⁴⁹ Ibid., 82.

⁵⁰ Quoted in S.V. Pol'skoi, 'Dvor i "pridvornoe obshchestvo" v poslepetrovskoi Rossii', in N.N. Petrukhintsev and L. Erren (eds.), *Praviashchie elity i dvorianstvo Rossii vo vremia i posle petrovskikh reform* (Moscow, 2013), p. 364.

⁵¹ On the subject of the fusion of Academic and court cultures, it is worth noting that among the books recommended by Christian Gross to his pupils for the study of 'la Conscience ... la Vertu ... l'Honnêteté' was a volume of Gracian, who was, as previously discussed, a popular authority on courtly etiquette in 1730s Russia (see ch. 3, p. 88). In his personal library, Cantemir had the edition of Gracian included in Gross' list (Grasshoff, *A.D. Kantemir und Westeuropa*, 41–6).

dulce et utile attitude to European sciences, with each rejecting the other's underlying premise. In this way, less than a decade after the death of Peter I, a new discourse of the nature and role of science was taking shape.

###

Until the end of 1731, Cantemir continued his service in the Life Guards, composed three more satires (which circulated widely in manuscript), and completed several translations into Russian, among them Bernard le Bovier de Fontenelle's *Entretiens sur la pluralité des mondes*. His attempt to publish the latter in September 1731 was delayed by Schumacher's concerns over its possible reception. The administrator wrote:

I will take care of its printing at once, only I would like to know first whether this has been approved by His Illustrious Highness Count [Ostermann] and His Grace Bishop [Prokopovich], because this is a book of such contents that it cannot be published without prior ministerial permission.⁵²

Before the matter could be decided, Cantemir was appointed Russia's envoy to Great Britain, leaving the country in the first days of January 1732. As Gershkovich convincingly argues, this appointment was designed by political and familial rivals to remove Cantemir from Anna's court, where his stock was rising. So young was the prince at the time – just twenty-two years old – that Ostermann found himself telling the British envoy Rondeau that his new counterpart was, in fact, twenty-eight.⁵³ Nonetheless, Cantemir proved a skilled diplomat. In 1738, he became Russia's envoy and later official ambassador to France, where he remained until his death in 1744, at the age of thirty-four.

⁵² Schumacher to Christian Gross, 30 September 1731 (quoted in P.P. Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge* (St Petersburg, 1870), i, 215). Given Prokopovich's patronage of Cantemir and his mentor Gross' close relationship with Ostermann, it seems unlikely that the publication would have been forbidden.

⁵³ Z.I. Gershkovich, 'K biografii A.D. Kantemira', *XVIII vek*, 3 (1958), pp. 456–9.

Throughout this time, he maintained close links with the Academy of Sciences, fulfilling occasional requests to examine and purchase new scientific instruments and books and serving as a scientific go-between.⁵⁴ When Hans Sloane was elected to the Academy's honorary membership in 1734, it was Cantemir who presented him with the official diploma. From France, the prince lobbied the Russian government on behalf of another honorary member, Pierre Louis de Maupertuis, in an effort to secure a permanent pension for him, and proposed the election of Alexis Claude Clairaut. In return, Cantemir received books published by the Academy in Russian and foreign languages, keeping him abreast of the intellectual atmosphere in St Petersburg.⁵⁵ Nonetheless, from the time of his departure Cantemir's view of European sciences developed independently rather than through the prism of the Academy, as he entered into direct contact with the Royal Society, members of Académie Royale des Sciences, and other European literati.

In London, Cantemir's social life revolved around a circle of Italian emigres: diplomats, musicians, actors, and writers. The influence of this group, which Cantemir called his 'club', on his literary work has been studied in some detail.⁵⁶ At its centre was Paolo Rolli, a poet, librettist, fellow of the Royal Society, and tutor to the children of Princess Caroline, including the Prince of Wales.⁵⁷ Another of its members was the painter Jacopo Amigoni (1682–1752), whose work as a portraitist and decorator was

⁵⁴ For Cantemir's activities on behalf of the Academy, see Radovskii, *Antiokh Kantemir i peterbugskaia Akademiia nauk*, 39–62.

⁵⁵ Cantemir's library, inventoried after his death, contained, in addition to numerous titles published by the Academy during his absence, volumes of the *Notes* up to 1736 (V.N. Aleksandrenko, *K biografii kniazia A.D. Kantemira* (Warsaw, 1896), pp. 33–4).

⁵⁶ L.V. Pumpianskii, 'Ocherki po literature pervoi poloviny XVIII veka', *XVIII vek*, 1 (1935), pp. 83–132; V.J. Boss, 'Kantemir and Rolli-Milton's *Il Paradiso Perduto*', *Slavic Review*, 21/3 (1962), pp. 441–55; V.J. Boss, 'La quatrième ode de Kantemir et "L'Italia Liberata" de Gian Giorgio Trissino', *Cahiers du Monde russe et soviétique*, 4/1 (1963), pp. 47–55; I.Z. Serman, 'Antiokh Kantemir i Franchesko Al'garotti', *XVIII vek*, 21 (1999).

⁵⁷ G.E. Dorris, *Paolo Rolli and the Italian Circle in London, 1715–1744* (The Hague and Paris, 1967).

popular among the English aristocracy and who became a close friend of Cantemir's.⁵⁸ The circle was closely linked to the Opera of the Nobility, one of the two rival opera companies active in London in the mid-1730s, which functioned 'as a place where polite discourse would supplant faction and disorder ... more aristocratic than the coffee-house but still sharing its civic virtues'.⁵⁹ Patronage and friendship operated alongside each other: Cantemir commissioned portraits of Peter I and Anna Ioannovna from Amigoni, while also taking lessons and 'devoting [himself] to painting, not for the sake of money but for pleasure'.⁶⁰ (Quite a contrast to Tatishchev's views).

In London, 'both insular and cosmopolitan, observant of the traditional prerogatives of the ruling class and commercially dynamic', itinerant Italian intellectuals and artists provided Cantemir with a milieu that more closely approximated the developing culture of the St Petersburg court than he might otherwise have found.⁶¹ These Italian connections also gave a fresh stimulus to his literary work. As Pumpianskii suggested and Boss demonstrated, the odes composed by Cantemir in late 1735–early 1736 owe a great deal to Italian sources; among those that have been identified were Gian Giorgio

⁵⁸ On Amigoni's time in London, see M. Manfredi, 'Jacopo Amigoni: A Venetian Painter in Georgian London', *The Burlington Magazine*, 147/1231 (2005), pp. 676–9. Cantemir's lodgings in Golden Square were in the heart of what Manfredi describes as 'the district [at] the centre of the Italian ... community' (p. 677). On Cantemir and Amigoni, see S.A. Androsova, *Russkie zakazchiki i ital'ianskie khudozhniki v XVIII v.* (St Petersburg, 2003), pp. 110–54.

⁵⁹ W. Weber, 'Handel's London – Social, Political and Intellectual Contexts', in D. Burrows (ed.), *The Cambridge Companion to Handel* (Cambridge, 1997), p. 50. Cantemir's correspondence with other members of the 'club' is filled with references to performances, composers, and singers.

⁶⁰ Maria Cantemir to Antiochus Cantemir, 29 July 1736 (reprinted in G. Maiellaro, 'Perepiska kn. A. D. Kantemira s sestroi Mariei na ital'ianskom iazyke. 1734–1744 gg.', in D. Rizze and A. Shishkin (eds.), *Archivio Italo-russo. II* (Salerno, 2002), p. 46).

⁶¹ On the Italian artists' efforts to balance patronage and commerce, see L.G. Hennessey, 'Friends Serving Itinerant Muses: Jacopo Amigoni and Farinelli in Europe', in S. West (ed.), *Italian Culture in Northern Europe in the Eighteenth Century* (Cambridge, 1999), pp. 20–45 (quote from p. 33).

Trissino's *Italia Liberata* and Rolli's 1735 translation of John Milton's *Paradise Lost*.⁶² In these texts, as in his satires, sciences and learning occupy a central role: Ode I, *Against the Godless*, is a physico-theological poem 'proving the existence of God through his creation.'⁶³ Ode IV, *In Praise of Sciences*, is a *translatio studii* narrative that, in the author's words, 'describes the origins of wisdom ... and its utility to the human race'. 'By Wisdom', Cantemir notes, 'the poet means all sciences and arts, above all moral philosophy' – here, again, sharply contrasting the Tatishchev's prescriptive hierarchy despite the reference to utility.⁶⁴

Whereas Cantemir's first satires reflect contemporary Russian realities, and refer explicitly to them, the odes adopt a distinctly cosmopolitan attitude. They suggest that an aristocratic European identity based on Christian belief, polite sociability, and up-to-date knowledge of the arts and sciences could be constructed independently of specific national circumstances. This accorded well with British polite culture Cantemir was now exposed to. As Lawrence Klein has suggested,

While it was certainly easier for the gentleman of lineage and land to be polite, the individual who lacked those criteria for gentility might achieve or enhance a claim to gentility through his or her politeness itself. To be a gentleman or a lady was ... to make a cultural rather than a sociological claim about oneself.⁶⁵

In the light of arguments over the nature of nobility that served as the background to Cantemir's satires, this form of polite culture offered a way to reconcile anxieties about meritocracy based on the pursuit of 'Wisdom' – that is, European learning. Belonging to European aristocracy was a matter of internalizing this culture, so much so that the son of a Moldavian ruler, born in Constantinople and taught in Russia by Orthodox priests,

⁶² Pumpianskii, 'Ocherki po literature pervoi poloviny XVIII veka', 94–6; Boss, 'Kantemir and Rolli-Milton's *Il Paradiso Perduto*'; Boss, 'La quatrième ode de Kantemir'.

⁶³ Cantemir, *Sobranie stikhotvorenii*, 203.

⁶⁴ *Ibid.*, 206.

⁶⁵ L.E. Klein, 'Politeness and the Interpretation of the British Eighteenth Century', *The Historical Journal*, 45/4 (2002), p. 876.

Catholic monks, and Protestant German scholars, could become a respected member of a courtly coterie of Italian *litterati* in Georgian London. At the same time, shared intellectual interests helped to blur social distinctions – for the most part, Cantemir’s Italian friends were of a lower rank than the Russian ambassador. As Cantemir’s odes illustrate, this collective identity was built on a deep appreciation of Classical authors, Renaissance literature, refined arts such as opera and painting, and the new sciences – especially Newtonian physics.

Cantemir’s Ode IV concludes with an image that linked European imperialism with natural philosophy by presenting Newton’s discoveries in optics and physics as an extension of Columbus’ discovery of America. This stanza, absent in the earliest surviving version of the ode, was inspired by Francesco Algarotti’s (1712–1764) *Il Newtonianismo per le Dame*.⁶⁶ Algarotti, who first came to England in 1736, was another member of the Italian circle in London and Cantemir knew him personally.⁶⁷ The original Italian text of *Il Newtonianismo* was published in 1737 but it is likely that Cantemir would have read it in manuscript, completing a Russian translation of the book before his departure from London.⁶⁸ Most likely, the final stanza was added to Ode IV around the same time.⁶⁹

Algarotti’s influence on Cantemir’s poetry, as we have seen, has not escaped scholars’ attention. However, it seems likely that the Russian ambassador’s Italian ‘club’ was also the impetus behind Cantemir’s renewed efforts to publish Fontenelle’s *Entretiens sur la pluralité des mondes* in Russian.⁷⁰ Fontenelle, as is well-known, was a determined Cartesian and *Entretiens* reflected these views. Given Cantemir’s undoubted

⁶⁶ Boss, ‘La quatrième ode de Kantemir’, 55.

⁶⁷ Cantemir to Marquise de Monconseil, 10 July 1738 (reprinted in L.N. Maikov (ed.), *Materialy dlia biografii kniazia A.D. Kantemira* (St Petersburg, 1903), pp. 109–10): ‘Je le connais particulièrement’.

⁶⁸ Cantemir, *Satyres*, 64. The translation has never been found, although the recent archival discovery of Cantemir’s Russian-French dictionary, once also thought to have perished, suggests the Algarotti translation may still be extant.

⁶⁹ Serman, ‘Antiokh Kantemir i Franchesko Al’garotti’.

⁷⁰ B.L.B. de Fontenelle, *Razgovory o mnozhestve mirov*, trans. A. Cantemir (St Petersburg, 1740).

commitment to Newtonianism after 1735, his decision to revisit the translation has puzzled some scholars – especially so in the light of his work on Algarotti. Some have claimed that the manuscript was left in St Petersburg and took a decade to publish due to religious censorship; others have proposed that the Academy itself preferred Fontenelle’s Cartesianism to Algarotti’s Newtonianism.⁷¹ Neither view, however, appears satisfactory. The influence of the Italian circle and, in particular, Algarotti provides a measure of explanation.

The first claim in particular – that the Academy eventually published the original manuscript, submitted by Cantemir in 1731, after a long delay – is demonstrably erroneous. An oft-remarked upon feature of Cantemir’s translation (hereafter *Razgovory*) is its paratext: a preface and 161 footnotes providing explanations of scientific terms, notes on European cultural phenomena, and geographical or ethnographical descriptions. The use of footnotes was, for Cantemir, a standard practice: extensive notes accompany most of his works, including not only satires, odes, and translations but even epigrams.⁷² Significantly, the footnotes seem to have been associated for Cantemir with the preparation of a text for publication: the earliest versions of his satires, for example, did not have these notes, which were added as he assembled the first five into a single corpus prior to his departure in 1732.

The bulk of the translation was carried out between February 1728 and the end of 1730.⁷³ As Lemny notes, ‘the importance which Antiochus attached to the *Entretiens* is

⁷¹ For some examples of the former view, see A.S. Vucinich, *Science in Russian Culture: A History to 1860* (London, 1963), p. 116 and Iu.I. Maiorov, ‘Fontenel’ i ego “Razgovory o mnozhestve mirov”’, *Iaroslavskii Pedagogicheskii Vestnik*, 3 (15) (1998), p. 145; for the latter, V.J. Boss, *Newton and Russia: The Early Influence, 1698–1796* (Cambridge, MA, 1972), pp. 126–7.

⁷² Babaeva proposes a typology of Cantemir’s footnotes and points out that, taken together, they comprised something of an encyclopaedia of European culture (Babaeva, ‘Kantemir-entsiklopedist’).

⁷³ An entry in a list of books borrowed by Cantemir from Prince Peter Golitsyn in February 1728 reads ‘La pluralite des mondes.....I.’ (Cantemir, *Sochineniia, pis’ma i izbrannye perevody*, ii, 345). 1730 is the date of completion given by Cantemir himself. While we do not

corroborated by [the fact that] it is the only pre-1732 translation that he prepared with a view to its publication.⁷⁴ We may assume, therefore, that the manuscript submitted to Schumacher in 1731 also contained such footnotes. The subtitle given by Cantemir to his work ('Translated and embellished with useful comments by Prince Antiochus Cantemir in Moscow in 1730') and his 'Foreword' (signed 'Moscow 1730') suggests the same.

However, the notes themselves contain references to historical events that occurred and works that were published after Cantemir's departure from Russia. Notes 158 and 159 (*Vesuvius* and *Etna*), for example, refer readers to a series of articles on volcanos published in the *Notes* in 1733.⁷⁵ Notes 154 and 157 (*Sicily* and *Naples*) reference the conquest of Southern Italy during the War of the Polish Succession and therefore could not have been composed before the end of 1734.⁷⁶ Finally, cross-referencing the authors cited in the footnotes with his personal library, we find that the newest title mentioned in *Razgovory* is *Histoire Critique de la Philosophie par M.D. in 8*. The inventory of Cantemir's library includes a 1735 Amsterdam edition of this work.⁷⁷ Gershkovich has suggested that some of Cantemir's odes were written as he returned via the Netherlands from a brief voyage to Paris in August–September 1736.⁷⁸ If that is correct, which seems likely, he probably purchased Deslandes' book at that time.

know whether this was Kantemir's first encounter with Fontenelle's work, it seems safe to say that the translation was made after that. The Golitsyn family had one of the best private libraries in Russia (see B.A. Gradova, B.M. Kloss and V.I. Koretskii, 'K istorii Arkhangel'skoi biblioteki D. M. Golitsyna', *Arkheograficheskii ezhegodnik* (1979), pp. 238–53).

⁷⁴ Ş. Lemny, *Les Cantemir: l'aventure européenne d'une famille princière au XVIIIe siècle* (Paris, 2009), p. 197.

⁷⁵ de Fontenelle, *Razgovory o mnozhestve mirov*, 180.

⁷⁶ Ibid. pp. 179–80

⁷⁷ Aleksandrenko, *K biografii kniazia A.D. Kantemira*, 41, no. 701. 'M.D.' stands for André-Francois Boureau-Deslandes. The earliest edition in UK libraries is a 1737 *duodecimo* from Amsterdam, but the Slovenian National and University Library has a 1736 Amsterdam *octavo* described as a 'nouvelle edition', making it plausible that Cantemir owned an unknown first edition of the work, if the inventory is correct in its dating.

⁷⁸ Cantemir, *Sobranie stikhotvorenii*, 464.

This was, as we have seen, the moment at which Cantemir was fully enmeshed in London's Italian community. Indeed, Rolli's influence can also be traced in the footnotes, as Cantemir glosses Fontenelle's mention of an episode in Ariosto's *Orlando furioso* with a two-stanza quote in the original Italian, with no translation or commentary.⁷⁹ Ariosto's poetry figured prominently in Rolli's approach to teaching Italian, and Cantemir owned three different editions of *Orlando furioso* (all pre-1700) as well as other works by Ariosto, including a 1732 collection edited by Rolli himself. In the inventory these are grouped together with other Italian texts, including works by Rolli and other members of the London 'club'.⁸⁰ There can be no doubt that the Ariosto quote was included under the influence of Cantemir's Italian friendships, as he did not know Italian well enough before leaving Russia. One also wonders at the extent to which his experience of the London cultural scene influenced this description of theatre boxes in note 30, *Stalls*: 'From these, the noblest persons observe the Opera (and at the Opera, the noblest persons are those who have paid the most).'⁸¹

We can say with certainty, then, that Cantemir continued to work on the notes during his time in England, in 1735 and most likely 1736–7. In late 1737–early 1738, Cantemir raised – once again through Gross – the prospect of publishing the translation. In February 1738, Gross reported an apparently favourable response from Schumacher and on 10 April 1738, Cantemir dispatched a box with the manuscript of *Razgovory* and prints of Amigoni's portraits of Peter I and Anna Ioannovna to Russia.⁸² Thus, the publication of *Entretiens* in Russian a decade after the bulk of the translation had been finished was a conscious decision. Moreover, it came just as Cantemir had finished his translation

⁷⁹ de Fontenelle, *Razgovory o mnozhestve mirov*, 63–4.

⁸⁰ Aleksandrenko, *K biografii kniazia A.D. Kantemira*, 34–6. For a list of Italian books sent by Cantemir to his sister Maria in 1736–8, which included many of these titles, see Maiellaro, 'Perepiska kn. A. D. Kantemira s sestroi Mariei', 32–3.

⁸¹ de Fontenelle, *Razgovory o mnozhestve mirov*, 11.

⁸² Cantemir to Christian Gross, 10/21 April 1738 (reprinted in Cantemir, *Sochineniia, pis'ma i izbrannye perevody*, ii, 325–7, which erroneously identifies Baron von Korff as the addressee).

of Algarotti's *Il Newtonianismo per le Dame* and added verses about Newton to Ode IV. His Newtonianism is also apparent from a letter from the same period expressing doubts about Voltaire's talents as a scientific popularizer:

The philosophy of Newton treated by M. Voltaire ... Do you not laugh, madame, at this proposal? If the poor man has made armies fly without leaving a trace ... judge by this, what he will do when he wants to explain the movements of celestial bodies! I am afraid we are not secure on the earth.⁸³

Cantemir's preference for Newton over Descartes was also reflected in a last-minute change he tried to make to one of the footnotes. After sending the manuscript to Gross, he wrote to him asking to omit from note 36, *Descartes*, 'the description of his philosophy, because it is more suitable for Mr Newton'. As the requested change was never made, we can consult note 36 for that 'description': 'In his philosophy he uses proofs Mathematical, that is, probable, and explains the actions of all things clearly; or admits that he does not understand their underlying reasons.'⁸⁴

Why did Cantemir choose Fontenelle, whose cosmology he disagreed with, over Algarotti, whose views and company he shared? Writing about Russian literary debates of Cantemir's time, Serman noted that their participants

...saw themselves as working in a literary vacuum, without being able to rely on any kind of context. To solve this problem ... they had no other choice but to create a context.⁸⁵

The creation of cultural context was the central aim of Cantemir's extensive paratexts to everything from satires to epigrams. In his foreword to *Razgovory*, Cantemir noted

⁸³ Cantemir to Marquise de Monconseil, 21 January 1737 (reprinted in Maikov (ed.), *Materialy dlia biografii kniazia A.D. Kantemira*, 70–2). Cantemir was unhappy with Voltaire's treatment of the Great Northern War in his history of Charles XII, as well as his quarrel with Rolli over epic poetry.

⁸⁴ de Fontenelle, *Razgovory o mnozhestve mirov*, 14.

⁸⁵ I.Z. Serman, 'Kantemir et le problème du contexte dans le mouvement littéraire russe du XVIII^e siècle', *Studies on Voltaire and the Eighteenth Century*, 193 (1980), p. 1644.

that his footnotes not only explained foreign terms, but also ‘furnish[ed] the reader with every means necessary for the complete understanding of this book’.⁸⁶ Indeed, the majority of Cantemir’s footnotes to *Razgovory* concern European history, geography, or cultural phenomena like opera.⁸⁷ To the extent that the largest group of footnotes, those on scientific terms and concepts, contributed to the emerging image of science as a key element of European polite culture, it fulfilled the same role of context creation. But so did the publication of Fontenelle’s work itself.

By the 1730s, *Entretiens sur la pluralité des mondes*, first published in 1686, could lay a claim to enormous cultural significance and capital. As Cantemir’s himself noted in the foreword,

This book, as soon as it had been published by Mr Fontenelle, was translated into almost every language, and read by different nations with a similar degree of pleasure and avarice, to the great glory of its author.⁸⁸

Its cultural function extended beyond providing a model for how members of aristocratic elites might converse about natural philosophy in a polite and decorous manner, although that, too, was important. As J.B. Shank suggests, Fontenelle’s book challenged the monopoly on the production of natural knowledge claimed by the all-male world of savants of the Académie Royale des Sciences and the wider Republic of Letters.⁸⁹ Famously, *Entretiens* is framed as a dialogue between the expert philosopher-narrator and the initially uninformed but intelligent Marquise. Far from a straightforward, top-down popularization of contemporary natural philosophy, Fontenelle’s construction of

⁸⁶ de Fontenelle, *Razgovory o mnozhestve mirov*, ‘Predislovie k chitateliu’.

⁸⁷ For a quantitative analysis of the footnotes to *Razgovory*, see A. Iosad, ‘K istorii “Razgovorov of mnozhestve mirov” v perevode Antiokha Kantemira’, *Russkaia filologiya: Sbornik nauchnykh rabot molodykh filologov*, 22 (2011), pp. 20–5.

⁸⁸ de Fontenelle, *Razgovory o mnozhestve mirov*, ‘Predislovie k chitateliu’.

⁸⁹ J.B. Shank, ‘Neither Natural Philosophy, Nor Science, Nor Literature. Gender, Writing, and the Pursuit of Nature in Fontenelle’s *Entretiens sur la pluralité des mondes habités*’, in J.P. Zinsser (ed.), *Men, Women, and the Birthing of Modern Science* (DeKalb, IL, 2005), pp. 86–109.

an ‘intersubjective encounter between two different but equally important interlocutors ... assumes a powerful role for both men and women in the enterprise of natural philosophy’.⁹⁰ Crucially, the two protagonists represented the two sides of ‘the contested border separating the savant world from the world of the *gens du monde*’, a divide defined by ‘a clear set of oppositions – pleasure versus utility, diversion versus knowledge, conversation versus demonstration’.⁹¹ By modelling a successful dialogue between them, Fontenelle suggested the possibility of a hybrid literary space where academic and courtly sensibilities could peacefully co-exist and indeed reinforce each other.

In the Russian context, it was this divide between scholars and courtiers rather than Fontenelle’s view of gender relations that was central to the relevance of *Razgovory*.⁹² This was, as we have seen, a central concern in the relationship between Russian elites and the St Petersburg Academy in the years following its foundation. It was precisely the issue that Cantemir’s satires of 1729–30 addressed, and it is no surprise that he began his work on *Razgovory* at that same time. In London, moreover, Cantemir saw first-hand how this hybrid culture could support a shared collective identity independent (though not unaware) of national or social distinctions. Fontenelle’s celebrated book offered an alternative to the sometimes uneasy balance of utility and pleasure in the polite cameralism of the *Notes* by showing that ‘proper philosophical practice and exposition [we] re in no essential way different from proper literary practice’.⁹³ This, too, must have appealed to Cantemir’s sense of European ‘Wisdom’ as the sum of all arts and sciences,

⁹⁰ Ibid., 101.

⁹¹ Ibid., 95.

⁹² A proper discussion of gender relations in eighteenth century Russia is beyond the scope of this thesis. It is worth briefly noting the value of Fontenelle’s dialogues in a country where mixed-sex assemblies were only introduced in 1717. At the same time, between 1725 and 1796 Russia only had two male rulers, on the throne for three years and six months respectively – a fact that would have greatly reinforced the association between feminine sociability and court culture.

⁹³ Ibid., 102.

even as the Academy itself increasingly privileged branches of natural philosophy over other disciplines, leading to the expulsion of humanities from the Academy proper in the *Charter* of 1747.

Thus, claims about the irrelevance of *Razgovory* on the basis of its embrace of Cartesian philosophy only make sense if we focus on the book's contents. To approach *Entretiens* purely as a work of popular science is to impose severely anachronistic views. Indeed, the cultural context in which *Razgovory* operated and which it helped to shape points towards a plausible explanation for Cantemir's apparent snub of Algarotti's *Il Newtonianismo*. As Paula Findlen has shown, Fontenelle's work helped to legitimize female interest in natural philosophy in contemporary Italy, leading to the emergence of a group of 'beautiful Cartesians'. This was the context in which Algarotti's own dialogues about Newton were conceived and created. In form and language, they owed much to Fontenelle's model – indeed, the first edition was dedicated to the Académie Royale's perpetual secretary.⁹⁴ Unlike Fontenelle, Algarotti was a relatively little-known figure; following the former's model allowed the latter to share in his fame and cultural prestige.⁹⁵ In Russia, however, where Fontenelle was not as widely known, Algarotti's work would not have benefitted from such an association and could not function as intended. The publication of *Entretiens* was a necessary, if not sufficient, condition of Algarotti's future success, and Cantemir's return to his translation of the former prepared the cultural ground for the acceptance of his friend's Newtonian dialogues.

When the translation was finally published in 1740, it apparently proved to be rather popular. The Academy clearly expected much from the book, investing significant resources into its printing: it had an elaborate engraved frontispiece and each chapter was

⁹⁴ The second, published in 1739, was dedicated to Anna Ioannovna – no doubt under the influence of Cantemir, who is mentioned in the dedication as 'the propagator of Newton in the vast Russian Empire' (see Boss, *Newton and Russia: The Early Influence, 1698–1796*, 126).

⁹⁵ C.L. Smeall, 'How to Become a Renowned Writer: Francesco Algarotti (1712–1764) and the Uses of Networking in Eighteenth-Century Europe', PhD thesis, McGill University, 2010, pp. 165–6.

given a large headpiece specific to its contents. The design of these decorative elements was copied from Bernard Picart's engravings for a 1728 *folio* edition of Fontenelle's works printed in the Hague, but adopted for *Razgovory*'s *octavo* format.⁹⁶ Unfortunately, we do not know the book's print run or sales figures. It seems to have become quite scarce soon after publication: a marginal note in a copy at the Yaroslavl Pedagogical Institute library tells us that the owner bought the book in January 1742 for 50 roubles, a very large sum.⁹⁷ When, despite some resistance from the Synod, a second edition was brought out in 1761, it had a print run of 1,233 copies; by 1763, as warehouse records show us, 90% of that print run had been bought up.⁹⁸ The book's cultural significance clearly outweighed its scientific accuracy. As late as 1765, the suggestion that *Razgovory* should be read by Catherine II's son Paul was met with 'great approval' by Count Nikita Panin, who oversaw the heir's education. There followed a discussion of Fontenelle's merits in 'presenting in such a pleasant manner the most complicated of things', which concluded, appropriately enough, with jokes about Paul's mathematics tutor, Semen Poroshin, and his 'adventures with a certain lady'.⁹⁹

###

To the Academy, the cultural prestige of Fontenelle's volume represented an opportunity to enlist Cantemir's translation in support of its own *dulce et utile* narrative. This made for some incongruous passages, as when a quote from *Razgovory* was shoehorned into a discussion of the utility of lunar observations in the calendar for 1741.¹⁰⁰ Fontenelle could persuade a certain kind of reader where Winsheim's less fanciful approach failed, the calendar maker admitted: 'If some should find all of the above insufficient to prove

⁹⁶ B.L.B. de Fontenelle, *Oeuvres diverses* (The Hague, 1728).

⁹⁷ Maiorov Iu. I., 'Fontenel' i ego "Razgovory o mnozhestve mirov", 142.

⁹⁸ B.E. Raikov, *Ocherki po istorii geliotsentricheskogo mirovozzreniia v Rossii: iz proshlogo russkogo estestvoznaniia* (2nd ed., Moscow, 1947), pp. 311–3.

⁹⁹ S.A. Poroshin, 'Zapiski, sluzhashchie k istorii velikogo kniazia Pavla Petrovicha', in A. Skorobogatov (ed.), *Russkii Gamlet* (Moscow, 2004), p. 195.

¹⁰⁰ *Kalendar' ... na leto ... 1741*, p. [68].

the existence of the lunar atmosphere,' he wrote at the end of a closely argued seven-page article, 'perhaps the invention of the witty Fontenelle ... would make it seem more probable ... That is, that without an atmosphere the moon would appear unclothed'.¹⁰¹

The slightly exasperated tone of Winsheim's conclusion points to the fact that while Fontenelle's style could be adopted to address the audience at court, the book itself represented a threat to the Academy's position. In particular, it drew attention away from utility, which was assuming ever greater importance in the Academy's presentation of its scientific work, and challenged disciplinary divisions.

Cantemir himself was not unaware of the sway the discourse of utility held over his compatriots and at the Academy. In 1738, after sending the manuscript of *Razgovory* to St Petersburg, Cantemir received word that Schumacher was considering a change in the book's title. In a letter to Schumacher, he proposed an alternative calculated to 'avoid the displeasure of bigoted or unduly scrupulous people': *Astronomical Conversations, where the Most Useful Tenets of that Science are Briefly and Sensibly Explained to Society by Mr Fontenelle*.¹⁰² The reference to utility in the extended title, however, had more to do with the potential readership's expectations than Cantemir's own views, which he expressed six weeks earlier in a letter to Marquise de Monconseil:

You feel that nothing should be done except for two reasons, that is, for utility and for pleasure. Do you think, madam, that men always act on these principles... For my part, I believe that most of our actions are a stroke of chance; or else they are to our great inconvenience ... That lady who applies herself to the philosophy of Newton surely does not do so either for utility or for pleasure, since typically I see her very annoyed.¹⁰³

¹⁰¹ *Kalendar' ... na leto ... 1742*, p. [74].

¹⁰² Cantemir to Schumacher, 7 July 1738 (reprinted in Cantemir, *Sochineniia, pis'ma i izbrannnye perevody*, ii, 328).

¹⁰³ Cantemir to de Monconseil, 25 May 1738 (reprinted in Maikov (ed.), *Materialy dlia biografii kniazia A.D. Kantemira*, 105–6). He is probably referring to Lady Mary Wortley Montagu, who played, alongside Émilie du Châtelet, a key role in Algarotti's conception of *Il Newtonianismo per le Dame*.

Cantemir's use of the language of utility, then, did not indicate his acceptance of its importance. A year later, in Satire VII, 'On education', he emphasised the role of moral philosophy as the basis of good upbringing. Good mores (*nravy*), he wrote, underpin both useful service and polite behaviour:

...Thus your son
Is rendered useful to his motherland, agreeable to all people ...
To that end all sciences
And all arts must contribute.¹⁰⁴

Different forms of expertise could, Cantemir admitted, increase the Empire's prosperity and advance human knowledge in general, as the St Petersburg Academy's publications emphasised time and again. However,

The knowledge of civil law, skilful management of state revenues and spending, navigation, astronomy, natural philosophy, and other arts may give a man the name of a wise man and, perhaps, will provide a means of acquiring some high rank; but if he lacks virtue ... he will not be loved.¹⁰⁵

Given a choice between a virtuous uneducated man and a learned but corrupt man, Cantemir concluded, he would choose the former. Satire VII thus combined criticism of cameralist utility, with its failure to instil good morals, and of the pride, avarice, and self-interest implicitly associated with the culture of the court.

Cantemir's focus on ethics was itself the product of his education at the St Petersburg Academy of Sciences, and in particular of Gross' tutelage. Cantemir remained in close touch with the Academy, continued to read its publications, and was aware of the learned society's efforts to situate sciences at the intersection of pleasure and utility. However, away from the Academy's direct influence, his view of the value and function of learning diverged quite sharply from that so heavily promoted by the Academy. In particular, Cantemir came to see knowledge of science as the basis of companionship

¹⁰⁴ Cantemir, *Sobranie stikhotvorenii*, 159.

¹⁰⁵ *Ibid.*, 166.

among representatives of a variety of nations, something that could bring together a Russian envoy and an Italian poet in the capital of Britain. More than just safe fodder for polite conversation, this variety of aristocratic learning challenged the Academic monopoly on the production of natural knowledge by emphasizing the importance of sociability and moral behaviour, without which even the most useful of sciences would not stand up to proper scrutiny.

The Academy and its alternatives: science and social mobility in Elizabethan Russia

Antiochus Cantemir's attitude towards the role of learning may have been idiosyncratic, increasingly so after he left Russia. Nonetheless, his literary work addressed contemporary realities and there can be no doubt of the continuing relevance of its recurrent themes. Should the value of sciences be judged on utility, reputational gain, or cultural significance? What is the relationship between nobility and meritocracy? Can learning transform social prospects? As we have seen, the general discursive framework for such discussions was set by the Academy of Sciences, particularly through its printing ventures. At the same time, attitudes promoted and indeed embodied by the Academy were under constant negotiation among educated Russians of all ranks, from Prince Cantemir to aspirational members of lower estates for whom it represented a possible path to social mobility.

A fascinating early manifestation of this process is *Gistoriia o nekoem shliakhetskom syne, kako chrez vysokuiu i slavnuiu svoiu nauku zaslužil sebe velikuiu slavu i chest'* ('The story of a nobleman's son and how he acquired great glory and honour through his sublime and glorious learning'). Composed in the late 1720s–early 1730s and circulated in manuscript, it survives in two known copies: one from around 1742 and one from the early 1750s.¹ Its first protagonist, an emperor who collects with 'great appetite ... the most glorious of objects' and invites 'from everywhere the wisest teachers, treating them with the greatest honour ... at that Academy', is clearly inspired by Peter I. His heir the princess is, at the age of twelve, sent to study at the Academy, where 'the chief amongst the professors greeted her appropriately and wisely ... arranged a rich canopy and covered a table with a gold cloth and stood before her, teaching her sciences' – likely

¹ Reprinted first in G.N. Moiseeva, 'Neizvestnaia povest' pervoi poloviny XVIII v.', *Trudy Otdela drevnerusskoi literatury*, 13 (1957), pp. 519–40, later in G.N. Moiseeva, *Russkie povesti pervoi treti XVIII veka* (Moscow and Leningrad, 1965). I am grateful to Kirill Ospovat for bringing the text to my attention.

a reference to the reception held for academicians by Elizabeth I and Goldbach's role as tutor to Peter II and Princess Natal'ia. At the Academy, she initially 'sat below everyone according to her learning', but within three years 'surpassed everyone at that Academy in learning ... and so began to produce (or publish, *izdavat*') a lot of science.'²

It is at the Academy that the princess meets the tale's protagonist, a poor nobleman's son whose command of sciences and rhetoric earns him first the princess' patronage and then her love, as well as high ranks and honours (eventually he is adopted by the king of England as his rightful heir). To recount the full fantastic story would be redundant. However, the tale's narrative revolves around the assumption that it is through the demonstration of learning – the production of a 'book of diverse sciences', his ability to converse 'of the things visible and invisible', and the composition of panegyrics – that the hero achieves his elevated position, advancing through the Table of Ranks. His enemies are 'senators and ministers' who object to his rise as he is an 'unworthy low-born person' and conspire to send him out of the country as an envoy to England. Noticeably absent from the text is the rhetoric of utility. No mention at all is made of scientific expertise in the service of a cameralist state. The tale is therefore a remarkably close reflection of the sensibilities expressed in the Academy of Science's Project, the hopes for social advancement through sciences and education that it inspired, and the intra-elite conflicts over birth and merit of the later 1720s–early 1730s.³

By the mid-1730s, some of these hopes began to fade. In that decade, Cantemir's satires continued to find their readers, copyists, and imitators in Russia. One such imitation, long ascribed to Cantemir himself, is known to scholars as Satire IX, 'On the

² Moiseeva, 'Neizvestnaia povest', 530–1. Incidentally, Princess Natal'ia was twelve in 1726–7, when Goldbach became her teacher.

³ In Moiseeva's view, the text originated among followers of the future Empress Elizabeth in 1725–6 (Moiseeva, *Russkie povesti pervoi treti XVIII veka*, 150–9). However, as we have seen previously, many of its themes were as relevant in 1730 as in 1726. The author's familiarity with Academy practices also suggests they may have had some direct contact with it. As Moiseeva herself notes, some descriptions of court ceremonies in one of the tale's manuscript copies were directly inspired by articles in the *SPV* (p. 130).

state of this world'.⁴ As Murav'eva has shown, this syllabic poem, furnished with the requisite Cantemirian footnotes, most likely originated among a group of former students at Feofan Prokopovich's St Petersburg school. Satire IX, composed in late July 1738, is a critique of the state of Russian Orthodoxy that, as Murav'eva notes, reflects many of Prokopovich's own concerns.⁵ There is a distinctly Protestant slant to these criticisms of the lack of respect for the Bible, the priests' neglect of meaningful sermons, and the prevalence of superstitious and incorrect beliefs, in geocentrism among other things. The text satirizes, in several places, simpletons' hatred of foreigners and foreign dress. Drawing a parallel between the sad state of religion to society at large, however, the author moves on to a new target: the Academy of Sciences. That 'palace of learning', the satire notes, was built at great expense and much effort went into establishing its reputation, 'by word (if not by deed)', with newspapers promising universal access to 'sublime learning'. There, however, the eager student

...finds [only] a great deal of flattery (*komplimenty*)
And no trace of sublime sciences.
With so much money spent without a pause,
One can hardly wonder at the amount of flattery.⁶

The central point of contention here is the mode of sociability adopted at the Academy, Schumacher's efforts to align the Academy with Anna Ioannovna's court, and Korff's attempts to turn its gymnasium into a rival to the Cadet Corps. The passage makes plain the author's disappointment in the Academy's ability to provide the kind of useful education they were looking for, and Murav'eva notes that similar sentiments were expressed

⁴ The theory of Cantemir's authorship of Satire IX was convincingly disproved in 1962, after its text had been included in an authoritative collection of the prince's poetry (L.R. Murav'eva, 'Problema tak nazyvaemoi "deviatoi" satiry A.D. Kantemira', *XVIII vek*, 5 (1962), pp. 153–78).

⁵ Murav'eva, 'Problema tak nazyvaemoi "deviatoi" satiry' p.

⁶ A. Cantemir, *Sobranie stikhotvorenii*, ed. Z.I. Gershkovich (Leningrad, 1956), pp. 184–5.

in letters bound together with the earliest known version of the satire. By focusing its attention on the nobility, the Academy alienated those for whom it represented a genuine chance of social mobility.⁷

To examine this view of the Academy's role in Russian society in more detail, it is useful to consider career strategies adopted by people within the Academy. As we have seen, the Academy's roles as a source of glory, cultural exemplar, and a centre of cameralist expertise were the cause of some tension from its foundation. The Project downplayed the latter function. However, with Peter I's death many attempts were made to enlist the institution and its individual members in the service of the state, with varying levels of success. The Academy, in turn, tried to maintain its independence within the cameralist structures of the empire, seeking a role as more than a collection of experts for the needs of the state.

Responding to such requests made sense in terms of securing the institution's position and many such cases are well attested in the history of the Academy.⁸ Academicians evaluated new machines, provided advice on mechanics and metallurgy, helped to prepare maps, and drew up heraldic insignia for army regiments. Almost invariably, these were collective contributions, discussed in the Academic Conference and then presented to the state as the products of institutional rather than personal expertise. In some cases, government officials seeking academic advice were told that the information they

⁷ This is one example where a focus on the interplay of utility and politeness points the way to a more nuanced understanding of the cultural role of the Academy and natural sciences more generally. By contrast, Soviet scholars interpreted this passage as an attack on the prevalence of Germans at the Academy (Cantemir, *Sobranie stikhotvorenii*, 460; Murav'eva, 'Problema tak nazyvaemoi "deviatoi" satiry', 164–5).

⁸ For an overview, see Iu.Kh. Kopelevich, *Osnovanie Peterburgskoi Akademii nauk* (Leningrad, 1977), pp. 159–76. As Werrett notes, such 'useful' work did not necessarily stand in opposition to other strategies for securing the patronage at court and often intertwined with it (S. Werrett, 'An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia', PhD dissertation, University of Cambridge, 2000, pp. 85–126 passim).

needed could already be found in the pages of the *Notes*.⁹ On occasion, however, government colleges attempted to draw individual members away from the Academy. In 1734, for example, the Senate's asked for a mathematician to be transferred from the Academy to the College of Foreign Affairs (presumably, as a cryptographer). Korff refused, replying that 'the Academy cannot spare any of its mathematicians, because the observatory will waste away.'¹⁰ However, transfers from the Academy to government colleges did occur and represented a viable career choice.

From that point of view, the exclusion of the Academy from the Table of Ranks represented both a threat and an opportunity to its members' social prospects. Like the society's own irregular institutional standing before 1747, the lack of well-defined regulations afforded its members a substantial degree of freedom to determine their own career path. One option was to leave the Academy and earn a rank elsewhere. Early on, most cases where members left the Academy for civil service were the result of personal patronage relationships between Russian grandees and foreign scholars. One early example was Christian Gross, Cantemir's teacher: he was engaged by Count Ostermann as a tutor to his children in 1728 and left the Academy in 1731, when he became a secretary to the embassy of Braunschweig-Wolfenbüttel in Russia – a sinecure arranged by Ostermann. He maintained close links with Ostermann and the Academy (as its honorary member), eventually committing suicide when the former was accused of treason in 1741.¹¹

More successful examples included the poet Gottlob Friedrich Wilhelm Juncker, who gained the favour of von Münnich with his panegyrics and fireworks prospects. Münnich arranged for Juncker to accompany him as a 'historiographer' during the war against Turkey between 1735 and 1737, during which time he also proposed reforms to salt mining in Russia. On his return to St Petersburg, Juncker was given the rank of

⁹ *MIAN*, ii, 72–3.

¹⁰ *MIAN*, ii, 533.

¹¹ P.P. Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge* (St Petersburg, 1870), i, pp. 213–25.

court councillor (class 8 in the Table of Ranks), which gave him the right to hereditary nobility, and appointed to oversee Ukrainian salt mines. Fellow academicians recognized the source of his success: 'He now puts on the air of a noble lord who has learned the art of attracting attention at court and finding his fortune there', one of them wrote to Müller.¹² Christian Goldbach, having earned his first rank as Peter II's tutor, became a collegiate councillor (class 6) in 1737 as a reward for his administrative work at the Academy. In 1741–2, as uncertainty over the Academy's status in the reign of Elizabeth I loomed, Goldbach was offered a transfer to the Foreign Affairs College, which he accepted. For his cryptographic work, he was first made a state councillor (class 5) and eventually rose to the rank of privy councillor (class 3).¹³

Several German scholars, then, were able to parlay the access to court grandees that the Academy afforded them into successful careers outside the scientific society. From the 1740s onwards, their example was followed by numerous Russians, foremost among them Vasilii Adodurov, the first Russian adjunct professor: in 1741, he transferred to the Heraldry College in the rank of assessor (class 8), was patronised by the Razumovskii family, and in 1744 became a collegiate councillor and tutor to Princess Sophie Friederike Auguste von Anhalt-Zerbst-Dornburg – the future Empress Catherine II. Like others before him, he maintained close links with the Academy, but the rest of his very successful career came outside it.¹⁴

Thus, to aspiring Russians from lower ranks of society (like the students of Prokopovich's school, discussed above) the Academy could present a path to patronage and ranks beyond its walls. Obviously, such an attitude marginalized the study of nature as a form of state service, a view that went against the Academy's own discourse of utility and could deprive it of native Russian members if they decided to pursue other

¹² Ibid., 484–7.

¹³ A.P. Iushkevich and Iu.Kh. Kopelevich, *Khristian Gol'dbakh. 1690–1764* (Moscow, 1983), pp. 82–3, 95–7.

¹⁴ Pekarskii, *Istoriia Imperatorskoi akademii nauk v Peterburge*, i, 511–16. Adodurov eventually became the president of the Manufacturing College during Catherine II's reign.

career paths. To engage in scientific study meant, potentially, to jeopardize one's social standing in the future. In addressing these concerns, the Academy emphasized time and again the utility of sciences and the viability of science as a career. In order to explore the extent to which Russian students bought into these ideas – that is, the extent to which the Academy's discourse of utility was accepted by its Russian audience – we will examine the careers of two prominent Russian members who were active at the Academy throughout 1740s and 1750s: Stepan Krasheninnikov and Mikhailo Lomonosov.

###

There are important similarities to how Krasheninnikov and Lomonosov arrived at the Academy. Both came from the lower ranks of society: the former was a soldier's son; the latter's father was a provincial peasant, though a relatively prosperous one. Both studied at the Slavo-Greco-Latin Academy in Moscow and were transferred, among groups of peers, to the St Petersburg Academy in order to bolster the number of students there. (Ecclesiastical schools, whose pupils were taught Latin and Aristotelian physics, were often raided in this manner). Both had their intellectual promise and potential recognized by the professors and sent on voyages intended to improve their education and provide them with practical experience. This was the stage at which their paths diverged: Krasheninnikov, in 1733, departed east for Siberia and Kamchatka; Lomonosov, three years later, travelled first to the University of Marburg, where he was taught by Christian Wolff, and then to Saxony to study metallurgy and mining. Both returned to St Petersburg in the early 1740s and chose to tie their future careers to the Academy of Sciences.¹⁵

¹⁵ Lomonosov is, without a doubt, the best known and most studied of all Russian scientists of the eighteenth century. A sufficient treatment of his biography in English can be found in B.N. Menshutkin, *Russia's Lomonosov: Chemist, Courtier, Physicist, Poet* (Princeton, 1952). For a recent study of Lomonosov's career strategies and the subsequent development of 'the Lomonosov myth', from the eighteenth century to the present, see S.A. Usitalo, *Invention of Mikhail Lomonosov: A Russian National Myth* (Boston, 2013).

In Chapter Five, we have looked at Krasheninnikov's experience during the Second Kamchatka expedition and what it revealed about the relationship between academic science in St Petersburg and the rest of the Russian Empire in the eighteenth century. In particular, we saw the extent to which he internalized the methods and assumptions underlying the practice of European natural philosophy. This was the direct result of the education he received as a student during the expedition. The principles that guided his teachers, as so much else concerning the expedition, were fixed in an instruction given to the expedition's professors before their departure. If a student did well, the instruction said, it was the students' zeal rather than intelligence and judgment that merited praise – so as not to discourage other students by comparison. Intelligent but lazy students, however, were to be reprimanded for squandering their divinely-given intelligence, for their ingratitude towards the Empress, and for undermining the expedition's utility to the state. Utility and imperial duty, then, formed the basis of the students' education – by reminding them of these things, the professors were expected to encourage correct behaviour. A corresponding, and much shorter, instruction to the students exhorted them to fear God, treat their professors politely, 'and make every effort to serve God, the Empress, and the motherland.' By applying themselves to the sciences, the instruction concluded, the students would undoubtedly gain God's blessing, the Empress' favour, and thus all manner of glory and praise.¹⁶

In no uncertain terms, then, the instruction presented participation in the expedition as a form of useful and praiseworthy service. Rather than the application of scientific expertise to the needs of the state, as would be the case at any of the state colleges, the service was the study of nature itself. Moreover, the association with scientific work granted the students attributes of higher social ranks – leisure and polite treatment – with the promise of greater benefits and glory to come. This, combined with his

¹⁶ The instructions are reprinted in W. Hintzsche, N. Lind Ochotina and P.U. Møller (eds.), *Dokumente zur 2. Kamčatkaexpedition 1730-1733. Akademiegruppe* (Halle, 2004), pp. 328–32.

experience as an emissary of ‘European civilization’ in a far-flung imperial colony, was what shaped Krasheninnikov’s perception of the social and cultural role of science for the rest of his career.

On his return to St Petersburg in 1743, at the tail end of the Schumacher affair, Krasheninnikov was assigned to the Academy’s Botanic Garden, then overseen by Johann Siegesbeck. Initially, he continued in his student status – now at the Academy university rather than with the expedition. His appointment as an adjunct in botany in 1745 came after he petitioned the Empress directly, apparently bypassing the Academy Conference that ordinarily made these decisions. The petition emphasized Krasheninnikov’s experience of the expedition rather than his studies at the Academy, noting in particular that on his return he was given a salary but not a rank. Essentially, Krasheninnikov presented the Academy’s adjunct position, despite its absence from the official Table of Ranks, as equivalent to a promotion within the civil service. In return, Krasheninnikov promised, he would be able to share his expertise with others and, given the chance, ‘carry out my own observations for the utility of the motherland’.¹⁷

By 1750, Krasheninnikov was a full professor with students and proteges of his own. Presumably to highlight his appointment, Krasheninnikov was given the task of composing and delivering the main oration at the Academy’s public assembly that year. The topic of the speech, apparently suggested by the Academy’s president, was the utility of sciences and arts. Interpretations of this relatively well-known text have focused on Krasheninnikov’s recitation of the practical uses of advanced disciplines such as astronomy and algebra, taken by scholars to represent a highly utilitarian view of science said to be typical of the Russian Enlightenment.¹⁸ On that count, Krasheninnikov’s perfor-

¹⁷ *MIAN*, vii, 385–6.

¹⁸ Two representative recent English-language examples are D.J.B. Shaw, ‘Utility in Natural History: Some Eighteenth-century Russian Perceptions of the Living Environment’, *Istoriko-biologicheskie issledovaniia*, 2/4 (2010), pp. 35–50 and R.T. Jones, *Empire of Extinction: Russians and the North Pacific’s Strange Beasts of the Sea, 1741–1867* (2014), pp. 44–5.

mance was hardly original, reiterating well-worn connections between astronomy and cartography or geometry and fortification that Russian audiences had been subjected to since before the Academy's foundation. So familiar were these, that they served largely as rhetorical flourishes, as formulaic as the customary praise of Elizabeth's adherence to Petrine principles. The professor's Kamchatkan experience, however, gave him a unique perspective on science's cultural role.

Unlike Tatishchev, to whose *Razgovor o pol'ze nauk* the oration has been likened, the botanist highlighted the close, unbreakable union of all sciences: 'If they were to be divided, they would be useless to the same extent to which together they are fruitful'.¹⁹ Krasheninnikov went so far as to criticize cameralism's narrow focus on practical expertise, whether in agriculture, manufacturing, or mining. The true utility of sciences, the professor contended, was in their potential to improve the lot of humanity. Throughout the speech, Krasheninnikov presented mastery of philosophy, and natural philosophy in particular, as the main point of difference between Russians and their colonial subjects. To illustrate this point, he resorted to descriptions of Kamchatka's native peoples. In one passage, he imagined what life would be like without the kind of progress made possible by the pursuit of philosophical knowledge:

If we take ethics away from humanity, will it not be left a wild and barbarian people? Take regulations, arms, machinery, and uniforms away from the army ... it will be a disordered multitude, dressed in animal skins ... Take machinery and the necessary instruments away from manufacturing and it will turn into bare Kamchatkan handicraft.²⁰

What made all these advances possible was philosophy and, more specifically, the constant pursuit of abstract, non-applied knowledge. The physicist's scrupulous daily record

¹⁹ S.P. Krasheninnikov, 'Rech' o pol'ze nauk i khudozhestv, chitannaia Stepanom Krasheninnikovym, botaniki i istorii natural'noi professorom v publichnom akademicheskom sobranii sentiabria 6 dnia, 1750 godu', in *S.P. Krasheninnikov v Sibiri. Neopublikovannye materialy* (Moscow, 1966), pp. 232–3.

²⁰ *Ibid.*, 238.

of weather or the chemist's mixing, smelting, and distilling of various substances may appear ridiculous, and indeed they have no specific practical ends in mind. Were philosophy to be abandoned, however, progress would stop and ruin would follow, just as when Athens turned away from philosophers and lost its hegemony. More than the quality of Russian arms and the size of Russian ships, it was the country's commitment to the advancement of learning that made imperial domination of Siberian peoples possible. In this context, Russian successes in shipbuilding or exploitation of mineral resources – while spectacular – could only be sustained by the continued support of the Academy of Sciences. The latter, Krasheninnikov concluded in a Horatian reference, was 'a monument that Her Imperial Majesty has erected in her own honour, which will outlast all pyramids ... and be perpetually renewed'.²¹

Krasheninnikov's was a model Academic career: that of a native, non-noble Russian who, thanks to his diligence and practical expertise, came up through the ranks. In the context of mid-eighteenth century Russia, this career path, chosen over formal civil service or the cultivation of patronage at court, needed to be justified. Krasheninnikov's 1750 oration presented an image of sciences as a prerequisite to the advancement and improvement of societies and individuals alike. Whether in Ancient Athens, contemporary European 'monarchies', or the growing Russian Empire, a sustained interest in the 'growth of philosophy', regardless of immediate practical applications, was the key to a polity's success. Similarly, born the son of a soldier and now the professor of botany and natural history, Krasheninnikov himself was an example of how the pursuit of even apparently impractical knowledge could improve one's prospects. In both cases, it was the cultural role of learning that made such spectacular progress possible and gave sciences their utility.

Krasheninnikov's embrace of science as a viable career path was impossible without an implicit acceptance of the restrictive social hierarchies of Academic natural philosophy. Nowhere was this more evident than in the posthumous preface to the

²¹ Ibid., 235–9.

second volume of his 1755 magnum opus, *Opisanie zemli Kamchatki*. Its author was Krasheninnikov's old professor, Gerhard Friedrich Müller, who had since the expedition clashed with Krasheninnikov on a number of fronts. One of the sources of their conflict, as discussions of Krasheninnikov's draft of the book in the Academic Conference revealed, was that the former student had allowed himself to criticize his former teachers Müller and Steller.²² Krasheninnikov's death gave Müller the chance to control the framing of his former student's narrative through paratext. His preface noted the division of intellectual labour between the expedition's professors and their Russian students; Krasheninnikov's work in Kamchatka, Müller noted, was carried out in preparation for the professors' arrival and in accordance with their instructions: 'When he encountered some difficulty in scientific work, which Professors could see from the reports he frequently sent them, they would give him new guidance on every occasion'. Similarly, Steller's arrival on Kamchatka, Müller wrote, meant that 'just as Mr Krasheninnikov could aid him through his skill, Mr Steller on some occasions gave him useful directions'.²³ The hierarchical relationship between the Russian student and his German professor persisted, in the preface, even after both had died.

Müller's other goal in the preface was to situate Krasheninnikov's work within the Academy's *dulce et utile* discourse. The latter had begun to compose his own foreword before his death, which began with a brief appeal to the cameralist utility of exploration.²⁴ Müller expanded this passage quite significantly, detailing the kinds of useful practical knowledge expeditions may provide. He also did not neglect to point out the exotic nature of the book's content, noting that 'if a land lies far from us, if we know little about it, then news of it are all the more pleasant'.²⁵ (In his draft, Krasheninnikov had

²² *OZK*, pp. 57–60.

²³ *Ibid.*, 92–3.

²⁴ The foreword, which survives in what is clearly an early draft, went on to link the Second Kamchatka expedition to Petrine reforms and pointed out that it contributed to the Russian Empire's glory in addition to producing useful knowledge (*ibid.*, 87–9).

²⁵ *Ibid.*, 91.

by contrast expressed disdain for such fruitless curiosity: ‘The knowledge of lands belonging to other nations is but an amusement that lasts for an hour, like a theatrical play, or even less’). In Müller’s framing, *Opisanie zemli Kamchatki* – in the best traditions of the Academic press’ output – had a dual purpose, to amuse and to inform:

He who wishes to read it for entertainment will find most of its contents amusing. Those who look for utility will discover without much effort items of use, whether in sciences or in everyday life.²⁶

As the differences between Krasheninnikov’s and Müller’s prefaces suggest, the conception of scientific utility offered by the Russian botanist in his 1750 oration differed in many aspects from the attitudes ordinarily promoted by the Academy of Sciences. Indeed, we can tell as much from a review of the first draft of Krasheninnikov’s speech signed by Lomonosov and other Russian members of the Academy in August 1750, who found that ‘the speech does not say much about the true utility of sciences’. One point of criticism was that he had erred in his description of practical uses by ascribing inappropriate functions to specific disciplines, ‘as, for example, to geography that which rightly belongs to astronomy’: a clear indication of the purely rhetorical function of such familiar tropes. A separate report noted that parts of Krasheninnikov’s oration ‘repeat almost everything that was said by Mr Lomonosov in his speech’, meaning Lomonosov’s panegyric to Empress Elizabeth delivered in November 1749.²⁷ The latter provides an interesting point of comparison.

Lomonosov’s *Slovo pokhval’noe Eia Velichestvu ... Elisavete Petrovne* (‘Panegyric oration to Her Majesty ... Elizabeth Petrovna’) was composed to mark the Academy’s first public assembly since the 1747 Charter. In it, Lomonosov extolled the virtues and achievements of Empress Elizabeth and her parents, Peter I and Catherine I, and painted

²⁶ Ibid., 93.

²⁷ M. Lomonosov, *Polnoe sobranie sochinenii* (hereafter PSS), eds. S.I. Vavilov and T.P. Kravets (11 vols., Moscow and Leningrad, 1950–83), ix, 630, 946–7. For the full text of both reports, see *MIAN*, x, 527–30.

a rosy picture of the well-ordered cameralist state ruled by the Empress: farmers frolicked, sailors celebrated, civil servants conversed politely, and colonial subjects obeyed. Above all, sciences flourished, with benefits to all: 'There is no place in all of Russia, enlightened by Peter, where sciences would not be able to bear fruit; there is no man who could not expect some utility from them'.²⁸ The customary listing of the practical uses of astronomy, physics, geography, chemistry, and so on followed, with some remarks on Russia's unique wealth of natural resources and natural wonders alike. Lomonosov concluded with an image of the Academy as an exemplar to all Russians:

The mansion of sciences has not been erected in this imperial city for nothing, but so that civil servants in their courts, the military men in their ... fortresses, Her Majesty's attendants in Her shining palace, the builders and conductors of the navy, ... and the trading people on their ships and wharves looked at this building, thought of sciences as they went about their business, and came to love them.²⁹

Representing the Academy in an official capacity, Lomonosov hewed closely to the utilitarian and educational vision of the learned society's purpose proposed in the ratified Charter of 1747. On literary merit alone, his florid oration was undoubtedly superior to Krashenninnikov's speech. Judging by its reception and subsequent publication history, it also, unlike the botanist's speech, fulfilled the expectations of its listeners and readers.

###

Upon his return from Germany, Lomonosov had embraced the Academy's *dulce et utile* ethos. He was an active contributor to the *Notes* in that journal's final years, both as a translator and as an author of panegyric poetry. In other works from this period, particularly those addressed to the wider Russian public, the chemist emphasized science's utility and its associations with polite culture. In a dedication to his translation of a textbook of experimental physics based on Christian Wolff's methods, for example, Lomonosov claimed that respect for scientific knowledge was

²⁸ Lomonosov, *PSS*, viii, 252.

²⁹ *Ibid.*, 255.

... no longer found only among those whose duty it is to exercise themselves in the sciences; it is clearly to be seen even among those who are otherwise burdened by the most important of government affairs. It is now rare for the noble persons of the military, the civil service, or the court to converse without praising sciences in their discourse.³⁰

Here, we see the duality of purpose familiar from the *Notes*: to some, science is a duty; to others, who serve the empire in different – perhaps more significant – ways, it is a topic of polite, pleasant, and appropriate conversation.

As Lomonosov's stature at the Academy grew, it was the latter audience to which he addressed himself. Lomonosov's relationship with the scientific society was an ambiguous one. On the one hand, he realized that membership of the Academy offered a measure of social prestige and institutional protection, gave him access to resources necessary to carry out his scientific work (which he seems to have cared deeply about), and opened a path to outside patronage. On the other hand, the opportunities for advancement afforded by the Academy were severely curtailed by the structure of Russian society. Despite Lomonosov's incessant lobbying, the link between academic positions and the all-important rank remained elusive. The Russian professor's combative nature made him few friends and more than once earned him the censure of the Academic Conference for threatening – sometimes physically – senior colleagues. The Academy's hierarchical collegiality was not to his taste. Increasingly, Lomonosov searched for alternative paths to social advancement. His solution, as several recent studies have explored, was to seek an alternative power base, fashioning himself as a scientist outside the Academy – at court.³¹

³⁰ Dedication to Mikhail Illarinovich Vorontsov, in *Volfianskaia eksperimental'naia fizika*, trans. M. Lomonosov (St Petersburg, 1746).

³¹ Lomonosov's tireless self-fashioning has in recent years been the subject of several invaluable studies. See Usitalo, *Invention of Mikhail Lomonosov: A Russian National Myth*, 27–73; K. Ospovat, 'Lomonosov i "Pis'mo o pol'ze stekla": Poeziia i nauka pri dvore Elizavety Petrovny', *Novoe Literaturnoe Obozrenie*, 87 (2007), pp. 148–83; K. Ospovat, 'Mikhail Lomonosov Writes to his Patron: Professional Ethos, Literary Rhetoric and Social Ambition', *Jahrbücher für Geschichte Osteuropas*, 59/2 (2011), pp. 240–66.

Central to these efforts was his relationship with Count Ivan Shuvalov (1727–1797), who became Empress Elizabeth’s new favourite in late 1749. It is unclear how Lomonosov and Shuvalov met but the relationship quickly bore fruit: in August 1750, Shuvalov arranged for Lomonosov to visit the Empress at her residence in Tsarskoe Selo, where the two discussed Lomonosov’s literary and scientific achievements. Within months – by March 1751 – Lomonosov received the official rank of collegiate councillor (class 6) by personal edict, conferring on him the right of hereditary nobility. Throughout the 1750s, Shuvalov and Lomonosov continued to collaborate closely on a number of projects, ranging from the production of fireworks and mosaics to the foundation of the Moscow University in 1755. As Werrett has argued, this was a mutually beneficial relationship with clear parallels to the model originally adopted by Schumacher in the 1730s. In exchange for access to resources and protection against critics, Lomonosov furnished Shuvalov with the literary and intellectual expertise needed to accumulate ‘a veritable empire’s worth of cultural capital’. Unlike most other members of Elizabeth’s court, Shuvalov did not belong to a noble clan of long standing; the provincial Shuvalov family rose to power through their support of the coup that brought the Empress to the throne. As her personal favourite, Ivan Shuvalov was in a particularly precarious position. His union with Lomonosov allowed both of them to function outside the established social hierarchies of the Academy and the court. Lomonosov’s position no longer had to depend on his acceptance of academic sociability. Shuvalov, in turn, was able to assume the persona of an enlightened Maecenas, professing a lack of interest in ranks and honours at court while preserving political power through his control of cultural institutions.³²

The relationship between Shuvalov and Lomonosov played out in a cultural context shaped, to a large extent, by the Academy’s publication programme, and in particular by its emphasis on the association between sciences and aristocratic polite culture. Indeed,

³² For an analysis of the relationship, Werrett, ‘An Odd Sort of Exhibition’, 151–8, 169–71. Among other factors, Werrett notes the rivalry between Shuvalovs and Razumovskiiis, another upstart family that owed its rise to favouritism and which controlled the Academy through its presidency.

the success of Shuvalov's enlightened persona depended on the Russian elite's internalization of the Academy's earlier efforts to raise the cultural prestige of science. Literature played a key role in articulating such connections and Lomonosov proved particularly adept at this. Krasheninnikov's *exegi monumentum* moment was his 1750 oration, with the Academy of Sciences standing in for Horace's eternal monument. Lomonosov's, by contrast, came two years prior, when he included a translation of Horace's ode in his textbook on the art of rhetoric, which cemented his reputation as the foremost Russian poet of the age.³³ As Kirill Ospovat has shown,

...as far as the court was concerned, poetry, history and eloquence constituted [Lomonosov's] main occupation ... [T]he literary idiom of the court was the medium where Lomonosov's social identity took shape.³⁴

Crucially, the literary identity was inextricably linked to his scientific work. Indeed, I would argue that the choice between science as a form of state service and of polite entertainment, initially articulated by the Academy, was what made it possible for Lomonosov to invent for himself a fluid identity as both a scientist and a poet at court.

As Prince Antiochus Cantemir's insistence that he had composed his verses in his free time shows, the same anxieties about the danger of pedantry that threatened the cultural prestige of science applied to literary pursuits. As a main occupation, neither science nor literature conferred the social standing Lomonosov craved. For members of Russian nobility with literary aspirations, like Cantemir or Lomonosov's contemporary and rival Aleksandr Sumarokov (1717–1777), this was not, for the most part, a problem. They already possessed ranks and had other careers to fall back on, whether in the diplomatic corps, civil service, or the military. In these circumstances, literary work, presented as an appropriate form of refined leisure, could in fact highlight the author's high social status. This was true even when, as in Sumarokov's case, the actual service was rather nominal. Lomonosov, by contrast, did not have the standing to engage in

³³ Lomonosov, *PSS*, viii, 184.

³⁴ Ospovat, 'Mikhail Lomonosov Writes to his Patron', 252.

literary work alone, even had he wished to do so, – perhaps one of the reasons he never fully broke with the Academy of Sciences. Instead, he played off the two sides of his identity, scientific service and artistic pursuits, against each other.³⁵

As Ospovat notes, Lomonosov's successful pursuit of patronage

put him in a position resembling that of a Horatian client, so that his learned occupations – from poetry to glass-making – won recognition among the courtly and political elite ... as prestigious attributes of aristocratic leisure rather than a 'useful' source of state benefit.³⁶

However, for this strategy to succeed Lomonosov first needed to demonstrate that his literary endeavours were, indeed, a form of leisure – and that, by extension, scientific practice was his way of serving the Empress and the state. This Lomonosov accomplished by invoking the discourse of utility and presenting his and his colleagues' research in a manner adapted to the tastes and interests of Russian aristocracy. Thus, his 1751 *Oda, v kotoroi Eia Velichestvu blagodarenie ot sochinitelia prinositia...* ('An ode of thanks to Her Majesty from the author...'), composed after the audience with Empress that brought Lomonosov his collegiate councillor rank, listed off – this time, in verse – the practical uses of various sciences, from mechanics and chemistry to astronomy and meteorology. In the same year, Lomonosov delivered another oration at the Academy's public assembly, this time on the subject of the utility of chemistry (*Slovo o pol'ze khimii...*).³⁷ This speech, in addition to traditional arguments about chemistry's contributions to mining, manufacture, and metallurgy, argued for its importance to the material aspects of courtly culture: jewellery, luxurious clothes, paints for

³⁵ On Sumarokov, see A. Ewington, *A Voltaire for Russia: A. P. Sumarokov's Journey from Poet-Critic to Russian Philosophe* (Evanston, IL, 2010). Sumarokov came from an ancient and well-off family and was in the first intake of students at the Cadet Corps. After the 1741 coup, he served as an officer in Empress Elizabeth's personal Life Guards company and never saw actual military service, focusing on the management of the imperial theatre..

³⁶ Ospovat, 'Mikhail Lomonosov Writes to his Patron', 252.

³⁷ Lomonosov, *PSS*, ii, 345–69.

beautiful works of art. The uses of chemistry were no longer confined to the needs of the cameralist or mercantilist state; instead, chemistry – and, by extension, chemists like Lomonosov – made possible the splendour of Elizabeth’s court.³⁸

Thus, Lomonosov could demonstrate the utility of his professional occupation (important in the context of compulsory service) while making a claim to the higher social standing of which leisure was a mark. Similarly, when literary work threatened to take up too much of his time, Lomonosov could invoke his scientific interests to uphold his claim to leisure. An oft-quoted passage from a letter to Shuvalov is usually taken as a sign of Lomonosov’s dissatisfaction with the demands that the composition of literary and historical works placed on his time:

As for my other occupations in physics and chemistry, I neither need nor am able to forsake them. Every man desires some rest from his labours: thus, leaving aside his main occupation, he seeks to pass his time in company or with his family at cards, checkers, or other amusements ... in which I find nothing but boredom. So, I hope that for my own leisure ... I will be allowed several hours a day so that I may use them, instead of billiards, on physical and chemical experiments, which not only take the place of diversions ... but above all may bring utility and honour to the motherland.³⁹

The need to maintain a balance between science and literature as service and leisure, described above, allows us to see this passage in a new light. Aware of the precarious social position of professional writers in mid-eighteenth century Russia, Lomonosov invokes the trope of science as a form of useful and refined leisure. If Shuvalov wishes him to abandon service through science in favour of literature, Lomonosov says, he will instead pursue natural knowledge in his spare time and thus maintain his present social standing.

³⁸ Lomonosov pursued a similar line of argument in his 1753 poem *Pis'mo o pol'ze stekla* ('Epistle on the uses of glass'), dedicated to Shuvalov and designed to secure royal permission to establish a mosaics factor (Ospovat, 'Lomonosov i "Pis'mo o pol'ze stekla"').

³⁹ Lomonosov to Shuvalov, 4 January 1753 (reprinted in Lomonosov, *PSS*, x, 474–6).

Nonetheless, Lomonosov's efforts to carve out a social niche outside the Academy were not without their perils. The Academy afforded its members a measure of protection that was in some ways less precarious than personal patronage relationships. As an established institution, the Academy of Sciences had secured for itself and its members a degree of intellectual autonomy, which included a kind of tacit understanding with the Holy Synod. Historical precedent meant that Academy members enjoyed institutional privileges.

This was not the case for, to take one example, the Moscow University, which was designed by Shuvalov and Lomonosov to challenge the Academy's intellectual monopoly but lacked the latter's institutional clout. As a consequence, even Shuvalov's patronage often failed to protect its staff. When Lomonosov's pupil Nikolai Popovskii (1730–1760) translated, at his mentor's urging, Alexander Pope's *An Essay on Man* into Russian, the Synod objected to the poem's deist claims and, in particular, references to the plurality of worlds. Popovskii had studied at the St Petersburg Academy and had completed the translation while he still worked there, but by 1756, when he tried to publish this work, he had already been appointed as a professor at the Moscow University. Despite Shuvalov's mediation efforts, the Synod insisted on censoring the text.⁴⁰ Subsequently, the Moscow University's professors and its printing press were regularly subject to church censorship.⁴¹

⁴⁰ For a summary of the episode in English, see L.M. Arinshtein, 'Pope in Russian Translations of the Eighteenth Century', *Studies in Bibliography*, 24 (1971), pp. 166–75. Famously, Shuvalov and Popovskii responded by printing the amendments proposed by the church censor in larger type. See also L.B. Modzalevskii, 'Lomonosov i ego uchenik Popovskii (O literaturnoi preemstvennosti)', *XVIII vek*, 3 (1958), pp. 111–69 and N.D. Kochetkova, 'K istorii perevoda N. N. Popovskogo poemy A. Popy "Opyt o cheloveke" (Ranniaia redaktsiia)', *XVIII vek*, 23 (2004), pp. 306–37.

⁴¹ See G. Kosmolinskaia, 'Tsenzura v Moskovskom universitete XVIII veka ("donovikovskii" period)', in R. Bartlett and G. Lehmann-Carli (eds.), *Eighteenth-Century Russia: Society, Culture, Economy* (Berlin, 2007), pp. 139–55 passim and O.A. Tsapina, 'Voiny za Prosveshchenie? Moskovskii universitet i dukhovnaia tsenzura v kontse 50-kh - nachale

By contrast, Lomonosov largely managed to avoid serious conflict with the Church, thanks in part to maintaining his official status as a professor of the Imperial Academy. His only major confrontation with the Synod came in 1756–7, when it submitted an official complaint to Empress Elizabeth about a number of poems and translations published in the Academy's *Ezhemesiachnye sochineniia, k pol'ze i uveseleniiu sluzhashchie* ('Monthly works serving utility and pleasure'). That journal was set up as a direct successor to the *Notes*, with Müller as its editor. With a mix of popularizing articles on sciences, history, and cameralist disciplines together with original and translated works of poetry and prose, the *Monthly Works* carried forward the Academy's *dulce et utile* ethos, as its title made clear.

The conflict began when Trediakovskii, incensed that a contribution of his had been ignored by Müller, denounced the journal to the Synod for publishing Sumarokov's ode version of Psalm 106 (107 in the Protestant tradition) that 'talks, of its own invention and not on the basis of the Psalms, of the infinity of the universe and the plurality of worlds'.⁴² Having previously resolutely ignored the *Monthly Works*, the Synod now had an official reason to examine its contents. After more than a year's consideration, it submitted to the Empress a list of objectionable texts found in the journal, adding to Sumarokov's ode (September 1755) his abridged translation of Voltaire's *Micromegas* (January 1756), Andrei Nartov's poem 'Son' ('Dream', August 1755), and Semen Poroshin's translated 'Razmyshlenie o Velichestve Bozhiem' ('Meditation on God's greatness', November 1756).⁴³ These texts, as the Synod explained in an accompanying request to the Empress,

70-kh gg. XVIII v.', in the same volume, pp. 157–71. The foundation of the University, which had its own printing press, marked the end of the Academy's monopoly on secular print. The Cadet Corps printing press, established in 1757, faced similar issues with censorship (D.D. Shamrai, 'Tsenzurnyi nadzor nad tipografiei Sukhoputnogo shliakhetnogo kadetskogo korpusa', *XVIII vek*, 2 (1940), pp. 293–329).

⁴² P.P. Pekarskii, *Istoriia Imperatorskoi Akademii nauk v Peterburge* (St Petersburg, 1873), ii, 187.

⁴³ T.V. Barsov, 'O dukhovnoi tsenzure v Rossii. IX. Uchastie Sv. Sinoda v tsenzure svetskikh knig', *Khristianskoe chtenie*, 212/7 (1901), p. 112.

‘affirmed the existence of a plurality and even infinity of worlds, which is highly contrary to the Scripture and Christian faith and gives many unsteady souls reasons for naturalism and atheism’. To combat this, the Synod asked to ban the Academy from ‘writing and publishing anything about the plurality of worlds’ in the future and, in that same spirit, to confiscate copies of Prince Cantemir’s translation of Fontenelle ‘which are now found in the hands of many’.⁴⁴

Thus, Trediakovskii’s complaint gave the Synod an opening to challenge the Academy’s new publication. In doing so, it focused on texts that could plausibly be connected to matters of religion and thus the Synod’s area of expertise through the contentious subject of the plurality of worlds.⁴⁵ Note that although Popovskii’s translation of Pope was being investigated by the Synod at the same time and under the same pretext, the request to the Empress focused specifically on the Academy of Sciences press. This allows us to see this dispute as an attempt to shift the boundaries of established spheres of intellectual influence rather than an all-out attack on secular science. However, even in this case the Synod struggled to find a precedent to support its case: the request mentioned two secular titles confiscated on the Empress’ orders for religious reasons, neither of which had been printed by the Academy. Correspondingly, the request was ignored and the Academy later published a second edition of Cantemir’s translation.

The conflict, however, was not over. In late 1756–early 1757, incensed by the Synod’s interventions, Lomonosov wrote ‘*Gimn borode*’ (‘A hymn to the beard’). The poem satirized the Russian clergy in no uncertain terms and included lines comparing their beards – unfavourably – to female pubic hair. That the outburst was caused by the

⁴⁴ ‘Doklad Sviateishego Sinoda Imperatritse Elisavete Petrovne o knigakh, protivnykh vere i nravstvennosti’, *ChOIDR*, 1/5 (1867), pp. 7–8.

⁴⁵ A full investigation of views on the plurality of worlds in the Russian Orthodox Church does not fall within the bounds of this thesis. However, the fact that ‘plurality of worlds’ is typically linked to ‘naturalism’ – that is, Spinozism – in Synod documents concerning this and similar affairs points to Jonathan Israel’s ‘two enlightenments’ framework as a potential starting point for a future study of this relationship.

Synod's censorship efforts is beyond doubt. Indeed, Lomonosov explicitly attacked the Church's opposition to the notion of inhabited worlds, suggesting that if other planets were inhabited,

It is certain that their wise men
And especially their priests
Swear by their beards
That we do not exist.⁴⁶

The poem proved popular, spreading in manuscript copies, and its vulgar tone attracted the Synod's ire. An initial, unofficial attempt to chastise the poet in a private meeting failed when Lomonosov angrily berated the Synod's representatives. He also wrote a second satire, this time comparing the beards of priests to those of goats. This was too much for the Synod. In March 1757, its members submitted another request to the Empress, this time asking for the two poems to be banned and publicly burned and for Lomonosov 'to be sent to the Synod to be duly reprimanded and corrected'. Even then, Lomonosov's position protected him. The request's authors noted that the poems were more likely to sway public opinion because they had been written by a professor of the Academy of Sciences, suggesting that this official rank was more important than Lomonosov's relationship with his patrons at court. In trying to justify the punishment they were proposing, the Synod's members referred to Peter I's *Military Articles*, implicitly acknowledging that, despite the Academy's absence from the Table of Ranks, its members were servitors of the state and their conduct was to be governed by the same rules.⁴⁷ Even then, Lomonosov seems to have escaped any punishment; instead, he received an appointment to the Academic Chancellery that regularized, in a display of institutional solidarity, the rank of collegiate councillor he had received through Shuvalov's personal patronage in 1751.

⁴⁶ Lomonosov, *PSS*, viii, 622–3.

⁴⁷ For the text of the complaint, see V.I. Lamanskii (ed.), 'Doklad Sinoda Gosudaryne na Lomonosova', *ChOIDR*, 1/5 (1865), pp. 59–61.

Thus, while Lomonosov chose to pursue alternative paths to the kind of model Academic career exemplified by Krasheninnikov, his status and security depended on the maintenance of links with the Academy. The latter was also more tolerant of Lomonosov's manifest failure to adopt the polite modes of sociability required at court and in public representations of academic life – perhaps because the Academy had significant experience in mediating between different social protocols and hiding such transgressions 'backstage'.⁴⁸ By contrast, Lomonosov's temper and 'scholastic boorishness' was a constant source of conflict with other members of the Shuvalov circle, including Sumarokov; outside the Academy, the rejection of politesse made Lomonosov a pedant.⁴⁹

Examining career strategies adopted by different members of the Academy of Sciences, we can trace the development of the notion that science could be a form of useful service and a path to social advancement for Russians of non-noble birth. Initial hopes that membership of the Academy would bring fame and high ranks, up to and including heirloom of the British crown, may have been somewhat inflated. Nonetheless, those who internalized the intellectual and social hierarchies of the Academy could and did progress to full professorship, a position that brought social stability, institutional protection, and a public role at home and in the global Republic of Letters. Stepan Krasheninnikov was perhaps the most straightforward example of this in the first half of the century, but others followed in his steps – including a number of students from Feofan Prokovich's school whose disillusionment had been reflected in the so-called Satire IX.⁵⁰

⁴⁸ See Ch. 2, pp. page 77ff.

⁴⁹ See K. Ospovat, 'Estetika Sumarokova: K sotsial'nym izmereniiam literaturnoi refleksii', in R. Vroon (ed.), *Ody torzhestvennyia. Elegii liubovnyia* (Moscow, 2009), p. 525. As Ospovat shows elsewhere, the rejection of courtly norms formed a part of Lomonosov's identity as a man of learning (Ospovat, 'Mikhail Lomonosov Writes to his Patron').

⁵⁰ From among their number, Semen Kotel'nikov (1723–1806) and Aleksei Protasov (1724–1796) both attained the ranks of full professors, in 1760 and 1771 respectively, following periods of study at the Academic university and abroad (I. Chistovich, *Feofan Prokopovich i ego vremia* (St Petersburg, 1868), pp. 635–8).

At the same time, the Academy's virtual monopoly over certain forms of learned expertise gave its members unprecedented access to potential patrons within government colleges and at court. Some academics, like Goldbach and Adodurov, eventually leveraged this to pursue successful careers elsewhere.⁵¹ Choosing this path, however, required a commitment to state service at the expense of academic research. Goldbach, for example, continued to discuss mathematics in letters to former colleagues like Euler, but never published anything after leaving the Academy.

Lomonosov, who wished to continue his research but whose social ambitions were not satisfied by the prospects offered at the Academy, was someone who tried to combine the two career strategies outlined above.⁵² The extent to which he succeeded is up for debate. There can be no doubt that he was the best-known and highest ranking native-born Russian academician of the eighteenth century. This he achieved by presenting his scientific work in a form calculated to attract the attention of the court while maintaining his role at the Academy, which enabled him to carry on research and to assert a kind of independence from his noble patrons. From that point of view, Lomonosov in a way epitomised the Academy's *dulce et utile* ethos. However, he was never fully accepted by either his academic colleagues or his noble audience. Fellow academicians cast doubt on his competence as a scientist, ascribing his modest achievements in that area to his lack of focus and excessive desire to succeed at court.⁵³ Among Russian grantees, by contrast, Lomonosov was hamstrung by his 'low' birth and his failure to adopt the polite modes of sociability that were suggested, to a large extent, by the Academy's

⁵¹ One interesting example is Konstantin Shchepin (1728–1770), a protege of Krasheninnikov's who was studying in Leiden when the latter died and, after learning of his Academic patron's demise, requested a transfer to the Medical Chancellery. See R. Koroloff, 'Seeds of Exchange: Collecting for Russia's Apothecary and Botanical Gardens in the Seventeenth and Eighteenth Centuries', PhD dissertation, University of Illinois at Urbana-Champaign, 2014, pp. 165–82.

⁵² Lomonosov's rival Franz Aepinus (1724–1802) was another example of this mixed strategy – see R.W. Home, 'Science as a Career in Eighteenth-Century Russia: The Case of FUT Aepinus', *The Slavonic and East European Review* (1973).

⁵³ Ospovat, 'Mikhail Lomonosov Writes to his Patron', 252.

own efforts to address that audience in the 1730s–40s. By the 1750s, polite science had begun to make its mark on the culture and Europeanized self-identities of members of the Russian elite. Central to this was the concept of science as refined leisure.

CHAPTER NINE

The connoisseur, the electrician, and the major-general: science in the public and private lives of Russian nobility

One episode from Lomonosov's later life reflects the contradictions inherent in his efforts to earn recognition as a man of science and letters in the social milieu of the court. On 16 April 1760, Lomonosov attended a gathering at the literary salon of Baron (later Count) Aleksandr Stroganov (1733–1811), where he heard a French abbé's discourse on the progress of Russian arts. The author placed Lomonosov on the same level as Sumarokov, to which the former objected. Stroganov, by contrast, wished to have the speech printed and berated the scientist, pointing out in the course of the argument his non-noble birth. Lomonosov responded by appealing to Shuvalov for protection.¹

In his letter, Lomonosov traced the roots of the argument to conflicting patronage networks: Stroganov, he wrote, favoured Lomonosov's rival Müller. 'Why else,' the scientist wondered, 'considering his love of Russian letters and of minerals, would he scorn me?' When Lomonosov contrasted Stroganov's 'long-standing coldness' with the ardour shown for his work by Shuvalov and members of the Vorontsov family, he pointed, perhaps inadvertently, to another factor: Stroganov was locked in an increasingly unhappy marriage to Anna Vorontsova, from whom he eventually separated in 1764. At the same time, as Ospovat has shown, at the heart of Stroganov's argument with Lomonosov were Shuvalov's efforts to reproduce at the Russian court, for political reasons, the atmosphere of 'pleasant and useful' disputes associated with the polite salon culture of *Ancien Régime* France.² Seen in that light, it was Lomonosov's refusal to conform to these social norms in his treatment of Sumarokov that gave Stroganov the license to

¹ Lomonosov to Ivan Shuvalov, 17 April 1760 (reprinted in Lomonosov, *PSS*, x, 538–9).

² K. Ospovat, 'Gosudarstvennaia slovesnost': Lomonosov, Sumarokov i literaturnaia politika I.I. Shuvalova v kontse 1750-kh gg., in P. Pesonen, G. Obatnin and T. Huttunen (eds.), *Evropa v Rossii: Sbornik statei* (Moscow, 2010), pp. 6–65.

invoke Lomonosov's 'base origins'. Yet, as Lomonosov gleefully pointed out, 'by holding my lack of nobility against me, [Stroganov] himself acted ignobly'.

That last remark hints at just how fragile the notion of nobility could be in mid-eighteenth century Russia. That such cracks showed in the context of learned disputes aptly demonstrates the importance of sciences in sustaining an internal sense of belonging to European aristocracy and shaping the performance of such belonging in society. As we have seen, the Academy of Sciences was one of the key channels for the mediation of these ideas over the previous decades. From the 1740s onwards, greater numbers of Russians began to come into direct contact with contemporary Europe, diminishing but not negating the role of the Academy's and its discourse. Count Stroganov, as it happens, was a prime example of this.

At the age of 19, Stroganov, accompanied by his French tutor Jean Anthoine, embarked on a Grand Tour of Europe. By the 1750s, it was not unprecedented for members of the Russian nobility to send their sons to study in Europe.³ The instruction given to one of such student, Vasilii Khanenko, by his father gives some idea of the purpose of such journeys: 'Dd your best to master both theory and practice', the document exhorted, 'so that on your return to our native land you could demonstrate that your sojourn in foreign lands was not for nought and your time was not spent in vain'.⁴ For students of this group, German university education was seen as a useful alternative to studying at the Academy of Sciences; upon returning to Russia, many turned their foreign studies to social advantage, securing positions in the military, the civil service, and even at the Academy of Sciences or Moscow University themselves.⁵

³ This was, as Andreev found, particularly widespread among the Ukrainian nobility, which provided close to fifty matriculated students at German universities between 1744 and 1761 (A.Iu. Andreev, *Russkie studenty v nemetskikh universitetakh XVIII – pervoi poloviny XIX veka* (Moscow, 2005), p. 161).

⁴ O. Bodlianskii, 'Istoricheskoe svedenie o general'nom khoruzhem, Nikolae Daniloviche Khanenke', *ChOIDR*, 1/5 (1858), pp. i–xxi p. xv.

⁵ See Andreev, *Russkie studenty v nemetskikh universitetakh*, 161–72 for an overview of some career paths. See also P.I. Khoteev, 'Russkie studenty v universitetakh Germanii v pervoi polovine XVIII veka', *XVIII vek*, 24/24 (2006), pp. 71–81.

By contrast, young aristocrats like Stroganov were expected to use their time abroad to familiarize themselves with European languages and manners – that is, to receive an education in polite sociability rather than acquire ‘useful’ skills that would enable them to occupy higher ranks. In the eyes of their fathers, who bankrolled such expeditions, the boisterous culture of ‘academic freedom’ found at many European universities was not conducive to this task. Thus, while young nobles often travelled to university towns, where tutors could be more easily found, they rarely became full-time students.⁶

Aleksandr Stroganov’s voyage began in March 1752; furnished with letters of recommendation from Count Mikhail Vorontsov, the Russian foreign affairs minister, he travelled first through Germany and on to Geneva.⁷ Everywhere, he found the most refined company, feted by Russian envoys (many of whom themselves belonged to influential clans like the Chernyshevs and Golitsyns) and introduced to local aristocrats: counts, princes, and even, in Hanover, the British King George II. Aleksandr’s letters to his father, Baron Sergei Stroganov, served to demonstrate his progress and allow us a glimpse of the cultural role of sciences in the eyes of a young Russian grandee.⁸

On the way to Geneva, Stroganov reported what was ‘memorable’ (*dostopamiatnogo*) about each place he visited. This included palaces, churches, libraries, and curiosity cabinets. Retracing the steps taken by Schumacher thirty years earlier, though for a very different purpose, Stroganov visited *kunstammern* in Berlin, Hanover, Kassel, and Frankfurt am Main. There is little trace of Petrine curiosity in his reports from these

⁶ For the diminished role of universities in polite culture, see L.E. Klein, ‘Politeness and the Interpretation of the British Eighteenth Century’, *The Historical Journal*, 45/4 (2002), pp. 892–4. Even Göttingen University, despite its efforts to market itself as ‘the most polite and fashionable university in the Holy Roman Empire’ to attract wealthy students from abroad (see A. Wakefield, *The Disordered Police State: German Cameralism as Science and Practice* (Chicago, 2009), pp. 49–51), only had three students from among the Russian aristocracy (the Demidov brothers, scions of a mining empire) during this period.

⁷ N.M. Kolmakov, ‘Dom i familiia grafov Strogonovykh, 1752–1887 gg.’, *Russkaia starina*, 53 (1887), p. 583.

⁸ Reprinted in K. Pisarenko (ed.), ‘Iz semeinoi khroniki roda Stroganovykh. Pis’ma barona A.S. Stroganova otsu iz-za granitsy. 1752–1756 gg.’, *Rossiiskii arkhiv*, xiv (2005), pp. 9–70.

places. While his sense of wonder at such sights is palpable, the letters suggest his main concern was with the comparative size of each collection rather than its unique contents. In an entry in his private diary, he noted that although a nail in the Berlin curiosity cabinet appeared to be half-metal, half-gold with no visible joints, the legend that it had been transformed through alchemy did not seem credible to him.⁹ However, Stroganov quickly grasped the potential of scientific collections for social legitimization. This was not something that the Academy had devoted much attention to in its publications, suggesting that this realization was the result of his first-hand European experience. Writing from Hanover, a few months into his trip, Aleksandr asked his father to acquire from the family's estates in the Ural Mountains a specimen of asbestos (the same material that had launched the *Notes*) and 'leather coins' used by locals.¹⁰ Once procured, these were to be sent to Geneva.

At this stage of the voyage, Stroganov used his access to Russian rarities to bolster his standing among the learned and discerning inhabitants of the Swiss city. Upon arrival, he made a point of showing 'some scholarly persons' a copy of an algebra textbook by Nikolai Murav'ev, a teacher at the Cadet Corps, edited and printed at the St Petersburg Academy in 1752. As expected, the volume drew praise, which reflected well on Russia and on Stroganov as a Russian aristocrat.¹¹ Stroganov also asked for and received a drawing of a silver vase 'found in the ground' in Siberia, Academy atlases of Russia, and a pouch of green tea. (The latter, demonstrating Russia's commercial links with China, proved especially popular among his friends). In Geneva, Stroganov also made the first steps towards a European collection of his own when he 'found many fossilized shells' on the banks of the Rhône.¹² In the summer of 1753, he wrote:

⁹ S. Jaeger, *Alexander S. Stroganov (1733–1811). Sammler und Mäzen im Russland der Aufklärung* (Cologne and Weimar, 2007), pp. 496–7.

¹⁰ Aleksandr Stroganov to Sergei Stroganov, 10 August 1752 N.S. (reprinted in Pisarenko (ed.), 'Pis'ma barona A.S. Stroganova otsu', 14).

¹¹ Aleksandr Stroganov to Sergei Stroganov, 31 October 1752 N.S. (reprinted in *ibid.*, 18).

¹² Aleksandr Stroganov to Sergei Stroganov, 30 March 1753 N.S. (reprinted in *ibid.*, 22). By the end of his time in Geneva, the collection had grown to include a number of 'books, medals,

There is a local custom that all foreigners who have studied here make a gift of several books to the library. Thus, I humbly ask you to send a Bible in our language ... Also, all the commentaries of our academy.¹³

Stroganov's view of the social role of collection and patronage was thus vindicated by what locals themselves were accustomed to; for his own legacy in Geneva's library, he chose the Academy's *Commentarii*, a symbol of Russia's scientific progress, and a copy of the so-called Elizabethan bible, a new translation of Scripture into Church Slavonic commissioned by the Empress and printed in 1751.

By that stage, his father was expecting Aleksandr to move on from Switzerland. The young aristocrat refused to budge, throwing himself into studies and engaging tutors in a variety of disciplines. He took music lessons and attended public demonstrations of physical experiments by Louis Necker. Such a strong interest in the sciences alarmed his father, who urged Aleksandr not to neglect more appropriate pursuits, such as horse riding. By late 1753, with the old count growing impatient, Aleksandr was constantly justifying the need to study each new subject. Embarking on a course of '*physica dogmatica*', he proclaimed simply: 'Of that science I am greatly in need'.¹⁴ By 1754, his father had had enough:

I have infinite hope in your diligence, which after two years in this place should have given you the foundation for an honest and useful life. As for [other studies], you can always continue these elsewhere ... It is also to be considered that you will not always need to live in solitude, thinking only of learned things. But you will have a much greater need to exist in high society.¹⁵

Thus, while the study of various European sciences was useful, it was not the purpose of Stroganov's Grand Tour. Once his son was back on the road, the old baron noted

antiquities, and natural curiosities' (p. 35).

¹³ Aleksandr Stroganov to Sergei Stroganov, 13 July 1753 N.S. (reprinted in *ibid.*, 25).

¹⁴ Aleksandr Stroganov to Sergei Stroganov, 30 November 1753 N.S. (reprinted in *ibid.*, 29).

¹⁵ Sergei Stroganov to Aleksandr Stroganov, 14 February 1754 (quoted in *ibid.*, 69).

his satisfaction at the news that he had met the king and royal family in Turin: 'I ask the Creator to always have such glad tidings from you'. In the same letter, he urged Aleksandr to meet with another Russian grandee then travelling to Venice, in the hope that 'when he returns, he will be able to praise your conduct'.¹⁶ The reputational gains of the Grand Tour were potentially quite high.

Stroganov continued to develop his scientific interests on the next leg of his journey, in Italy. He met 'the famous Laura Bassi, professor and doctor ... who gives public physical lectures' and tried on the role of a scientific intermediary, promising to send her relative, the botanist Ferdinando Bassi, specimens from Russia in exchange for a gift of 'natural curiosities'.¹⁷ Stroganov also began in earnest to build the art collection for which he is renowned to this day. By the time he arrived in Paris, he was well prepared to take advantage of its cultural opportunities. He had also learnt to temper his scientific interests: he studied physics with Jean-Antoine Nollet and chemistry, 'which science', he wrote, 'I greatly need', but also devoted several hours a day to horse riding and dancing lessons.¹⁸ He spent a fantastic sum – 1,600 roubles, or 8,000 livres – on his cabinet but, he wrote with pride, local connoisseurs spent hours browsing its contents

...among which, I may say, there are things of solitary nature (*unique*), which no other cabinets have ... The reason for that is that, to my misfortune, I have a great love of curious objects. And I want very much to compose a pretty cabinet. I am consoled by the thought that the money has not been needlessly wasted.¹⁹

He took a more considered approach to the expansion of his collection, engaging local experts to guide him through the Paris art market; when he went on an expedition to collect fossilized shells near Versailles, he engaged 'a very learned person' to go with

¹⁶ Sergei Stroganov to Aleksandr Stroganov, 18 October 1754 (reprinted in Jaeger, *Alexander S. Stroganov*, 424–5).

¹⁷ Aleksandr Stroganov to Sergei Stroganov, 29 March 1755 N.S. (reprinted in Pisarenko (ed.), 'Pis'ma barona A.S. Stroganova otsu', 41–2).

¹⁸ Aleksandr Stroganov to Sergei Stroganov, 23 February 1756 N.S. (reprinted in *ibid.*, 56–7).

¹⁹ Aleksandr Stroganov to Sergei Stroganov, 12 April 1756 N.S. (reprinted in *ibid.*, 57–8).

him. It is worth noting at this stage that Aleksandr was not alone among Russian contemporaries in his love of collecting. His father, Sergei, had started a collection of his own (which Aleksandr made use of in securing his position in Geneva).²⁰ Other noble families, such as the Demidovs and Sheremet'evs, also had private cabinets. However, Stroganov's collecting activities had a far more pronounced element of public self-representation to them. On that count, the Grand Tour succeeded. As Stroganov left Paris, the Russian envoy to France wrote:

He has earned a very honourable reputation among the nobility here. I wish all Russians had travelled abroad with such utility ... Apart from his pleasant character and polite conversation, I cannot think of many among our youths who would be so successful in sciences.²¹

Thus, Aleksandr Stroganov's direct encounter with European culture gave him the tools to bolster his reputation, both within the Republic of Letters which held such fascination for him during the Geneva years and among the high ranks of European aristocracy. Initially, he relied on his access to rarities and trade commodities available through Russia but not in Europe to gain friends and bolster his country's reputation. Gradually, he developed as a collector whose cabinet eventually rivalled many that he had seen on his voyage, relying on local scientific expertise and building networks of correspondence and exchange. At the same time, he reconciled himself to the part of an aristocratic amateur and patron rather than a scholar, mastering the appropriate social protocols. That Stroganov found himself mobilizing these acquisitions, material and cultural, to strengthen his position among the Russian aristocracy tells us much about the role of learning in the culture of Russian nobility on the eve of Catherine II's accession to the throne.

²⁰ Kolmakov, 'Dom i familiia grafov Strogonovykh', 585.

²¹ Fedor Bekhteev to Sergei Stroganov, 12 September 1756 (reprinted in Pisarenko (ed.), 'Pis'ma barona A.S. Stroganova otsu', 65).

Aleksandr Stroganov's reproach of Lomonosov for his lack of noble origins was all the more interesting because the aristocrat himself found his nobility questioned by his peers. As Alexei Evstratov has brilliantly explored, the Stroganov family origins gave some members of the court society reasons to cast doubt on whether they really did belong to the nobility. The roots of this conflict can be traced to the debates around the nature of nobility and meritocracy during the succession crisis of 1730.²² Stroganovs, like the Demidovs, were 'new' nobility, granted titles in 1722 for their successful management of important commercial enterprises, including salt mines and ironworks in the Urals. Thus, when Stroganov was cast as a 'rich but unrefined uncle' or a 'marquis' manager (*intendant*) in amateur theatrical performances at Catherine II's court, his acting roles both reflected, to some degree, his 'public image' and presented a comic contrast 'between his social persona and the dramatic character ... at court, Stroganov came across as a wealthy and not particularly economical grandee'.²³ In that light, Stroganov's careful cultivation of an image of a discerning but spendthrift connoisseur of art and natural curiosities can be seen as an attempt to distance himself from this 'public image'. His comment to Lomonosov must have reflected some deep-seated anxieties. Having used his collections to gain 'an honourable reputation among the nobility' of Paris, the count was forced to do the same in Russia. In both cases, mastery of polite science served as a mark of belonging to European aristocracy.

This required a public performance of patronage and learning. As we have seen, Stroganov sponsored a literary salon frequented by the leading Russian authors of

²² See Ch. 7, pp.200ff.

²³ A. Evstratov, 'Dramatic Conflicts and Social Performance at the Russian Court in the 1760s: A Sociocultural Perspective on Marital Infidelity', in A. Schönle, A. Zorin and A. Evstratov (eds.), *The Europeanized Elite in Russia, 1762–1825: Public Role and Subjective Self* (DeKalb, IL, 2016), pp. 78–9. Similarly, Stroganov was cast as George Dandin, Molière's rich peasant marrying into nobility, and the 'ennobled, cuckolded, booed, and happy bourgeois' in a satirical catalogue of imaginary plays circulating at Catherine II's court in the mid-1760s, quite possibly authored by Stroganov himself (pp. 80–3).

the age. He also made his private library available to other members of the court and their clients. As a series of notes made between 1760 and 1764 attest, in that time he lent out about ninety titles to around fifty people including Ivan Shuvalov and members of Chernyshev, Buturlin, Kurakin, Iaguzhinskii, and other noble clans. The books varied in genres from novels to natural histories (including Buffon) and from Voltaire and Montesquieu to Lucretius and 's Gravesande. The notes also show that Stroganov, who had several telescopes in his collection, was willing to lend them to others, like Aleksandr Sumarokov.²⁴

It is small hints like this that give us a glimpse of the role science played in the everyday life of Russian elites in the 1750s. Very few sources survive that point clearly to their use of scientific instruments or explicitly discuss the cultural significance of natural sciences. That is, while it is clear that the Academy of Sciences worked hard to emphasize the link between polite culture and scientific learning, it is often difficult to pinpoint the reception of these efforts. We have seen, however, that the patronage of learning, and natural sciences in particular, could serve to bolster claims to nobility and high social status at court, as was the case with Shuvalov and Stroganov.²⁵ Traces of the Russian nobility's scientific leisure in the material culture of the age allow us to add to this picture.

Noble families other than the Stroganovs owned telescopes, too. Preparing for the transit of Venus in 1761, Mikhail Vorontsov wrote to his daughter Anna, Aleksandr Stroganov's wife: 'I had asked [Stroganov's secretary] to send me a telescope to observe tomorrow's transit of Venus across the sun; but, *having my own telescope*, I will

²⁴ V.A. Somov, 'Krug chteniia peterburgskogo obshchestva v nachale 1760-kh godov. (Iz istorii biblioteki grafa A. S. Stroganova)', *XVIII vek*, 22 (2002), pp. 200–34.

²⁵ Another family that invested heavily in scientific collection was the Demidovs, who had established botanical gardens in Siberia and, later, Moscow and developed extensive networks of correspondence and exchange with European botanists that bypassed the Academy of Sciences (R. Koroloff, 'Seeds of Exchange: Collecting for Russia's Apothecary and Botanical Gardens in the Seventeenth and Eighteenth Centuries', PhD dissertation, University of Illinois at Urbana-Champaign, 2014, pp. 183–205).

tomorrow observe this phenomenon and let him know afterwards'.²⁶ Vorontsov's scientific tastes were not limited to such rare events and, in fact, can be traced back to Antiochus Cantemir. After Elizabeth's accession in 1742, the Russian ambassador in Paris approached Vorontsov, who owed his rise to his support of the new Empress, and offered his services as an agent in Europe. By 1743, Cantemir compiled for Vorontsov 'a list of books that, in my view, make a choice and useful library. I know every book on the list and each is the best of its kind'.²⁷ Thus, Cantemir served as Vorontsov's guide to European literary and scientific culture; the books were intended as a diversion for the winter months.²⁸ Later, in 1745–6, Mikhail Vorontsov himself travelled to Europe, visiting Germany, Italy, France, and the Netherlands. Yet Vorontsov felt the same ambivalence towards some forms of scientific pursuits that Baron Sergei Stroganov had shown towards his son's Genevan occupations. Writing about his niece Princess Dashkova, the future director of the Academy of Sciences, he noted: 'She is, it seems to me, of a corrupt and vain character, spending her time for the most part in frivolity and false sublime reasoning, in sciences and futility'.²⁹ Without polite sociability, an interest in the sciences was a liability, even a potential moral failing.

There are other suggestions of Russian noblemen engaging in scientific entertainment. Among the more amusing examples is a report from the Academy of Sciences, who were asked in 1753 to investigate a fire that had destroyed the house of the head of the St Petersburg police, general Aleksei Tatishchev. As their investigation found, the fire started in a disused gallery that housed a camera obscura. The instruments' lenses acted as a burning glass, concentrating the sun's rays and causing the fire.³⁰ That the

²⁶ Anna Vorontsova and Mikhail Vorontsov to Anna Stroganova, 23 May 1761 (reprinted in *AV*, iv, 470). Emphasis mine.

²⁷ Cantemir to Vorontsov, 16 May 1743 (reprinted in *AV*, i, 361–2).

²⁸ Cantemir to Vorontsov, 10 November 1743 (reprinted in *AV*, i, 373–4). In addition to his list, Cantemir purchased a 63-volume collection of articles from the *Journal des savans* for Vorontsov.

²⁹ Mikhail Vorontsov to Aleksandr Vorontsov, 21 August 1762 (reprinted in *AV*, v, 104–7).

³⁰ V.L. Chenakal, *Ivan Ivanovich Beliaev – russkii optik XVIII veka. 1710–1788 gg.* (Leningrad, 1976), p. 41.

gallery was locked and unfrequented suggests, however, that whatever the reasoning behind the original purchase, the camera obscura was no longer in use.

From the 1740s onwards, the Academy's shop began to sell scientific instruments made in its own workshop – in 1743, for example, two microscopes were sold in a span of three months.³¹ While small, these numbers indicate a growing interest in the private use of instruments. Other members of the nobility, it seems, purchased instruments from German, English, and Dutch workshops. In 1753, for example, Ivan Shuvalov ordered, through the Academy of Sciences, an electrical machine for himself. In an apparent case of clan rivalry, a member of the Panin family approached the Academy to purchase another one for himself soon after Shuvalov's machine arrived. Müller described the buyer thus: 'Vasilii Panin, a councillor of the Empress and supervisor of the state coffers, who is not the least among the grandees of the court and all of Russia to enjoy physical experiments. Until now, like many others, he had ordered physical and mathematical machines in England and Germany'.³²

It remains unclear whether the Academy served simply as a conduit to European instrument makers or whether such purchases were paid for out of the Academy's budget. What is certain is that scientific instruments carried enough cultural prestige to be used for securing patronage by both scientists and members of the nobility. When Lomonosov presented Mikhail Vorontsov with some kind of meteorological instrument of his own invention, the latter replied that he found it 'useful and superior to ordinary ones' and attempted to make a gift of it to Empress Catherine II; however, he continued, 'bestowing her praise on the instrument, she pleased to return it, because she already had the one that you had sent to His Illustrious Highness Count Grigorii Orlov'.³³ One wonders how widespread such competitive gift-giving was.

³¹ Ibid., 36.

³² V.L. Chenakal, 'Elektricheskie mashiny v Rossii XVIII v.', in A.T. Grigorian (ed.), *Istoriia fiziko-matematicheskikh nauk* (Moscow, 1961), p. 66. I was unable to identify a Vasilii Panin; however, a likely candidate is Aleksei Panin, a one-time president of the Audit College.

³³ Mikhail Vorontsov to Lomonosov, 17 February 1763 (reprinted in *AV*, iv, 498).

The role of scientific instruments in public self-representation carried over into pictorial arts. From about the mid-century, instruments begin to appear in portraits of Russian nobles. One such example is a posthumous portrait of Anastasiia Ivanovna Trubetskaia, Antiochus Cantemir's step-mother, painted by Alexander Roslin in 1757. Anastasiia is depicted sitting at a desk in a richly decorated study. Books, open and closed, are piled in front of her and on the floor; she holds an unbound volume in her hands, caught in the act of reading. In the bottom left corner is a globe, with the outlines of Europe visible. Outside the window, a storm is raging, with a ship about to founder. Solitary studies are here depicted as a refuge from a life of turbulence and distress; at the same time, as the globe suggests, Anastasiia's apparent embrace of such pursuits shows her European nature (ILL. 13, p. 291).

Natural sciences, particularly astronomy, also played a role in the decoration of Russian palaces. Here, European examples provided the model to be copied. A fascinating example of this is a *dessus-de-port* attributed to Boris Sukhodol'skii (c. 1754), now in the Moscow Tretyakov Gallery (ILL. 14, p. 292). This painting, intended to be hung above a door, depicts a group of ladies and gentlemen among classical ruins, engaged in a variety of astronomical pursuits: a lady looking through a telescope, held helpfully by a man next to her, two other men looking at a globe and an armillary sphere. A quadrant and other instruments are strewn about the ground. Another man and a woman off to the right side are conversing, ostensibly also on the topic of astronomy. The painting depicts with great precision the kind of polite, mixed-gender sociability promoted by Fontenelle.

What is remarkable about this painting is that the scene is identical to that of a *circa* 1750 English print sold by Robert Sayer in London, entitled *Astronomy* (ILL. 15, p. 292). A clue to the uncanny similarity between the two works of art can be found in Robert Sayer's catalogue for 1774, which contains an entry for a series of six mezzotints called *Arts and Sciences*, 'taken from designs of Ameconi, viz. 1. Painting. 2. Poetry ... 4. Astronomy'. This was no one other than Jacopo Amigoni, Antiochus Cantemir's friend

in London. As descriptions of other prints sold alongside Ameconi's designs suggest, Sayer targeted a polite audience (for example, 'ladies in agreeable attitudes, and genteely dressed').³⁴

The catalogue of the Russian Museum in St Petersburg indicates that two other dessus-de-ports by Sukhodol'skii from the same series, depicting groups of aristocrats engaged in similarly elegant pursuits (poetry and music), came to its collection from the Ekaterinhof Palace near St Petersburg, which was rebuilt on Empress Elizabeth's orders in the early 1750s. Clearly, the dessus-de-ports, comprising a single series also taken from Amigoni's design, were produced for the decoration of that palace. Moreover, the catalogue notes that from 1743 Sukhodol'skii served in the household of Prince Nikita Trubetskoi.³⁵ Prince Trubetskoi, of course, was Cantemir's closest friend in Russia, to whom he had addressed his satire 'On education'. One recalls, too, that, alongside his translation of Fontenelle and Amigoni's portraits of Russian rulers, Cantemir sent to Russia a number of prints by Amigoni, which could include this series. Alternatively, Trubetskoi could have found them among Cantemir's papers after his death. Whatever the case may be, Sukhodol'skii used Amigoni's designs, most likely acquired through Cantemir via the painter's patron Prince Trubetskoi, to depict astronomy as a refined form of aristocratic leisure in the decoration of an imperial palace. Thus, science and its polite associations were mobilized in the representation of court sociability.

Sukhodol'skii's painting also hints at an important difference between Russian and British views of polite science in the middle of the eighteenth century. Although Sayer's print depicts the polite associations of astronomy, it also sheds a satirical light on the fashionable interest in natural philosophy. The lady in the middle is clearly shown to be looking through the wrong end of her telescope, mockingly suggesting that to be seen

³⁴ R. Sayer, *Robert Sayer's new and enlarged catalogue for the year MDCCLXXIV* ([London], 1774), pp. 15–6.

³⁵ G. Goldovskii (ed.), *Gosudarstvennyi Russkii muzei. Zhivopis' XVIII vek. Katalog* (St Petersburg, 1998), p. 159.

using one was more important than to actually see anything through it.³⁶ Unfortunately, we do not know what Amigoni's original design showed. In Sukhodol'skii's painting, however, the lady holds the telescope correctly, so there is no similar satirical element to his depiction. An accurate depiction of ideal courtly sociability was deemed more important than the satirical opportunities offered by the aristocrats' dilettantism. Science's utility in the demonstration of one's nobility was not a subject of ridicule but rather an accepted social norm.

As an examination of the role of natural knowledge in the lives of Russian elites in the 1740s–50s shows, science – seen largely through the lens of the Academy *dulce et utile* discourse – became a small but not insignificant part of their identity as Europeans. Science offered a real prospect of social mobility to Russians of non-noble birth who were willing to accept Academic hierarchies of knowledge and rank. The nobility at court largely internalized the Academy's earlier efforts to promote science's polite associations and the patronage of art and science became an integral part of many grandees' strategies of self-representation. It is notable in particular that demonstrating an interest in science seems to have been of greater concern to nobles whose rise resulted from imperial patronage or successful commercial endeavours, like the Shuvalovs, Vorontsovs, Stroganovs, and Demidovs, than to families tracing their elevated positions in society to pre-Petrine times. As far as science played a role in the material culture of this social group, it was a largely uncritical emulation of contemporary polite scientific culture as depicted by the Academy or encountered by members of the nobility entering into direct contact with their European counterparts. Even as connoisseurs like Stroganov began to assemble collections of their own, whether of art or natural curiosities, they were driven by concerns about self-representation and notions of the value of different objects that differed significantly from the principles behind Peter I's Kunstkamera. Just two decades after the curious Tsar's death, very little trace of his conception of curiosity was to be found in the public eye.

³⁶ A.N. Walters, 'Conversation Pieces: Science and Politeness in Eighteenth-Century England', *History of Science*, 35/108 (1997), p. 124.

Within the context of polite culture, Petrine curiosity underwent a kind of reformulation. Given the insistence of polite conversation on keeping its topics varied, curiosity (and its associated discourse of collecting) could be seen as a way to ensure no one topic received too much attention: just as a cabinet contains many different objects, a conversation could cover a variety of topics. This was the kind of curiosity that served as a point of reference in the emergent journal culture of the late 1750s–early 1760s, where a single issue would contain articles on topics from astronomy to economics, as well as verses and literary translations.³⁷ On the other hand, curiosity was (in accordance with the broader European trend discussed in previous chapters) marginalized and excised from official scientific discourse, afforded at best the role of a first, almost involuntary impulse towards the study of an object.³⁸ A 1770 translation into Russian of two articles from the *Encyclopédie* paired the entry on curiosity with the entry on divination. (Of course, this was exactly the manner in which curiosity was presented in the original text itself). As Stroganov's dismissal of alchemy shows, many Russian nobles internalized this rejection of curiosity; Count Aleksei Bestuzhev-Riumin (1693–1767) ascribed his son's loose morals to the latter's love of 'chiromantic and other books filled with all sorts of superstition', which had to be confiscated on the personal orders of Empress Elizabeth.³⁹

Yet in a moment of crisis, when public representations were challenged, alternative attitudes made themselves known. Three responses to the death of professor Georg

³⁷ See, for example, A. Ewington, *A Voltaire for Russia: A. P. Sumarokov's Journey from Poet-Critic to Russian Philosopher* (Evanston, IL, 2010), p. 85 on *Monthly Works*. On the taming of curiosity in polite literary culture, see B.M. Benedict, 'The Eighteenth-Century Anthology and the Construction of the Expert Reader', *Poetics*, 28/5 (2001), pp. 377–97.

³⁸ See, for example, F.U.T. Aepinus, *Rech' o skhodstve elektricheskoi sily s magnitnoi*, trans. M. Sofronov (St Petersburg, 1758), p. 5.

³⁹ Aleksei Bestuzhev-Riumin to Andrei Bestuzhev-Riumin, 2 September 1765 (reprinted in K. Pisarenko (ed.), 'Pis'mo A.P. Bestuzheva-Riumina synu A.A. Bestuzhevu-Riuminu', *Rossiiskii arkhiv*, xiv (2005), pp. 92–110).

Wilhelm Richmann's (1711–1753) in the course of a physics experiment provide a fascinating glimpse of the coexistence of Petrine and post-Petrine attitudes to natural knowledge among the Russian nobility.

On 26 July 1753, Richmann was observing the effects of a sudden thunderstorm on a lightning rod installed in his home when a lightning ball separated from the rod and struck him on the forehead.⁴⁰ Similar experiments were at the time being conducted in Europe and American colonies, following Benjamin Franklin's discoveries of the previous few years. Richmann was the first known victim of an electrical experiment. To date, two contemporary responses to this tragic event involving members of the Russian elites have attracted the attention of scholars, and the two demonstrate perfectly the dual roles of utility and pleasure in public representations of science.

The first, a letter from Lomonosov to Shuvalov, was written on 26 July within hours of the author learning of Richmann's death. (Lomonosov himself was engaged in the same kind of experiment at his own home when the lightning struck). Something of a literary masterpiece, the letter is at the same time representative of the Academy's image of science as a variety of state service. The letter makes known Lomonosov's sense of fear ('I do not yet know,' he writes, 'or at the very least I have some doubt as to whether I am alive or dead'); but its main focus is on the particulars of the tragic event and on the fact that Richmann, 'by his deplorable experience/experiment (*plachevnyy opytom*), has proven that the electrical power of thunder may be diverted.' As a consequence, Lomonosov characterizes Richmann's death as 'beautiful ... [suffered] in the midst of performing his professional duties.'⁴¹

⁴⁰ More specifically, Richmann was using an ungrounded 'electrometer' – essentially a lightning rod separated into two pieces with a small gap in the middle – designed to measure the force of a lightning strike rather than divert it away from a building.

⁴¹ Lomonosov to Shuvalov, 26 July 1753 (reprinted in Lomonosov, *PSS*, x, 484–5). Lomonosov echoed this line in a letter asking Mikhail Vorontsov to arrange a pension for Richmann's widow: 'He lost his life fulfilling his duty, in the service of Her Majesty' (Lomonosov to Vorontsov, 30 August 1753 (reprinted in *AV*, iv, 481)).

The other well-known response comes in another letter addressed to Shuvalov, this time from Count Ivan Chernyshev (1726–1797). Writing in French, in reply to a note from Shuvalov that mentioned Richmann's demise, Chernyshev implores his correspondent to abandon his own use of an electrometer:

As for the news ... of the Poor Professor Richmann, I was exceedingly struck by it. You can imagine, Your Excellency, that there came to my mind all the dangers this damned machine posed to you and how all of us ran to it, although it was but a mere amusement to us. Would this have continued were it not for this case of poor Richmann? But now, of course, Your Excellency will be more careful and will not risk your life because of such a useless and very dangerous curiosity.⁴²

Although the existence of the letter has been noted by other scholars, its contents have not to my knowledge been analyzed beyond noting Chernyshev's aversion to the continuation of these experiments. However, a closer reading reveals the complex interaction of the discourses of pleasure and utility. On the one hand, this is the clearest evidence we have that scientific instruments – in this case, an electrometer – were used as a means of polite entertainment by members of the nobility like Shuvalov and Chernyshev.⁴³ It also appears that some enjoyed such spectacles somewhat reluctantly: Chernyshev wonders 'what Mikhail Illarionovich [Vorontsov] thinks of the Electrical Machine, which he denigrated even before we knew it was deadly.' A powerful emotion like fear can disrupt the ideal model of an enlightened grandee engaging in refined electrical entertainment. Moreover, as Chernyshev points out, there are boundaries to 'appropriate' polite entertainment. The letter implies that the use of a dangerous but useful object would be justified by its utility; as a 'mere amusement', a useless but harmless one would also not

⁴² Ivan Chernyshev to Shuvalov, 8 August 1753 (reprinted in I.G. Chernyshev, 'Pis'ma k I. I. Shuvalovu', *Russkii arkhiv*, 7/11 (1869), pp. 1780–1).

⁴³ Chernyshev uses the words 'la Machine Electrique,' which were more typically applied to an electrostatic generator. However, the generator Shuvalov had purchased in the Netherlands had not yet arrived by then (Chenakal, 'Elektricheskie mashiny', 60–3). The fact that Chernyshev 'ran to' the machine indicates that during thunderstorms members of Shuvalov's circle would assemble to observe its effects on the instrument before the storm passed.

cause any concern. By describing the electrometer as both ‘dangerous’ and ‘useless’, the count casts it as something that is transgressive of both elements of the *dulce et utile* discourse: a ‘curiosity’. Its meaning in his letter is far removed from Petrine use.

The responses by Lomonosov and Chernyshev mirror quite closely the reaction that news of Richmann’s death produced in the European and colonial context, where the tragedy became a focal point for arguments over the uses of electricity and the limits of technology.⁴⁴ As late as 1780, the Russian example was used as an argument against the erection of a lightning rod in a French court case that served as a launchpad for the legal career of Maximilien Robespierre.⁴⁵ On the other hand, the ‘professional’ element was celebrated by Joseph Priestley in his *The History and Present State of Electricity*, in which he lamented that ‘it is not given to every electrician to die in so glorious a manner as the justly envied Richman.’⁴⁶ Benjamin Franklin ended his account of the tragedy in *The Pennsylvania Gazette* by noting that ‘the new Doctrine of Lightning is, however, confirmed’.⁴⁷ For a member of the Russian elite to see Richmann’s research in terms of either utility or polite entertainment was to be on the same page as their contemporaries elsewhere in Europe and its colonies. Electrical demonstrations continued to gain in popularity – Abbé Nollet, who taught physics to Aleksandr Stroganov in Paris two years later, was renowned for them. Indeed, Russians like Shuvalov and Panin, as we have seen, did not lose their taste for electrical machines, despite Chernyshev’s fears.⁴⁸

⁴⁴ See J. Delbourgo, *A Most Amazing Scene of Wonders: Electricity And Enlightenment in Early America* (Cambridge, MA, 2006), pp. 58–62 for the colonial American context.

⁴⁵ J. Riskin, ‘The Lawyer and the Lightning Rod’, *Science in Context*, 12/01 (1999), p. 23. Amusingly, the French aldermen confused Richmann with another Russian academician and were later ‘justly reproached ... for having killed the celebrated Daniel Bernoulli’ in Robespierre’s legal brief.

⁴⁶ J. Priestley, *The History and Present State of Electricity, with Original Experiments* (London, 1767), p. 84.

⁴⁷ Quoted in M.B. Schiffer, *Draw the Lightning Down: Benjamin Franklin and Electrical Technology in the Age of Enlightenment* (Berkeley, CA, 2003), p. 166.

⁴⁸ Shuvalov’s electrostatic generator arrived in September 1753 and was collected by him in July 1754. Panin (see above, p. 262) purchased his electrical machine in March 1754.

The two responses we have considered so far both invoked the utility-pleasure discourse. However, the ‘curious’ mode of thinking about the study of nature had not disappeared entirely. The third response to Richmann’s demise can be found in the diary of Vasilii Nashchokin (1707–1760?), a nobleman and officer in the Izmailovskii Life Guards Regiment. Nashchokin was in many ways a typical representative of the Russian officer class. Cantemir’s contemporary, he was born in Moscow into a noble family that was not, however, a powerful and ancient clan. The family moved to St Petersburg in 1716 and Vasilii was entered on the books of a regular army regiment, beginning service in earnest from 1722. Joining other officers in supporting Anna Ioannovna’s autocratic rule, he was made an adjutant of her new Izmailovskii Life Guards. He fought with distinction in several wars and by July 1753 had reached the rank of that regiment’s major. By that stage of his career, as the diary shows, his service brought him into contact with such grandees as Grigorii Stroganov and Nikita Trubetskoi; however, he was not by any means a member of the court society. In December 1753, he was promoted to the rank of major-general of the Izmailovskii Life Guards, then commanded by Kirill Razumovskii.

Among other events of that busy year, Nashchokin recorded his reaction to Richmann’s death. Dismissed by the modern editor of his diary as ‘largely uninteresting’, the entry for 26 July 1753 is in fact worth quoting in full:

On 26 July, thunder killed in St Petersburg professor Richmann, who was trying to restrain thunder and lightning through a machine, in order to save people from the coming thunder; but it happened to him first by that very machine he made. As for what was then published about that Richmann in the newspapers, it is appended here: he who is curious can read it. What happened with Richmann’s philosophizing (*mudrovanii*) is similar to what was written in ancient history about the Athenian poet Evskhilii⁴⁹, how he found out through astronomy about his death from an object falling from above, and so: *he left the city and sat down in the clear on barren ground; an eagle in the air, carrying a tortoise, searched for a stone to break the tortoise by dropping it from above, and Evskhilii’s head was bald; so by happenstance the eagle dropped the tortoise and it fell on his head*. And such was the unexpected end to this Richmann’s

⁴⁹ *i.e.*, Aeschylus.

invention: he came in for the same as Evskhilii. And it is written about Evskhilii in the book *Ifika i Ieropolitika*, on page 183.⁵⁰

By appending to this entry the article on Richmann's death published in the *SPV*, Nashchokin preserved for posterity both his own reaction and the official, public representation of the event. The newspaper account is a detailed description of the circumstances of Richmann's demise, the lightning strike's effect upon his body, the failure to resuscitate the fallen professor, and the results of his autopsy. The newspaper took care to note the dimensions of the room in which Richmann was killed, of the size and nature of various wounds, and so on. Thus, its purpose was not only to quell fears about the study of electricity among its readership, but to present the event as a new opportunity to further natural knowledge; indeed, it was seen as such by European and colonial electricians. Given that throughout 1753 the *SPV* regularly published accounts of Richmann and Lomonosov's studies of atmospheric electricity, the article also sought to situate the accident in the context of 'normal' science.⁵¹

Nashchokin's private reaction was very different from this public representation. At first glance, it could be interpreted as an example of 'obscurantist' opposition to scientific study, relying (as it does) on a reference to a religious text. *Ifika ieropolitika*, first published in 1712, was a neoscholastic compilation from the monks of the Kiev Caves monastery.⁵² The general tone of his comments is mildly disapproving. The word 'philosophizing' (*mudrovanie*), which he uses to characterize Richmann's studies, carried

⁵⁰ V. Nashchokin, 'Zapiski', in V. Naumov (ed.), *Imperiia posle Petra. 1725–1765* (Moscow, 1998), p. 283. Emphasis mine.

⁵¹ Such accounts appeared on 7 May, 11 May, 18 May, 4 June, and 13 July.

⁵² A footnote in all editions of Nashchokin's memoirs notes that *Ifika ieropolitika* was published *in octavo* by the Synodal typography at St Petersburg in 1764. This is clearly an editorial note: Nashchokin had died by 1761, and in the 1764 St Petersburg edition the Aeschylus passage is on page 202 instead. The reference to page 183 in the original text of the memoir is correct for both the Kiev *editio princeps* of 1712 and the editions of 1718 and 1724 printed in St Petersburg, largely identical to the original.

connotations of overwrought, false, or heretical conclusions or convictions.⁵³ Ultimately, Nashchokin suggests is that science and technology are powerless in the face of fate. His invocation of printed religious authorities is designed to support this view.

A closer examination of Nashchokin's source, however, shows that his interpretation of the death of Aeschylus differs from that of the text it is based on. *Ifika* was a collection of moral tales and recommendations on a large variety of topics (from different sins to the importance of schools), illustrated with examples from Biblical and Classical sources. The example of Aeschylus, taken from Pliny, is at the start of a section entitled 'Of false hope for life'. *Ifika*'s version of the story concludes: 'Aeschylus's unexpected chance encourages everyone to remember their weakness and not to pin their hopes on a life of many days.'⁵⁴ The author's ultimate conclusion is that one should be ready to face God at any moment, and thus avoid idleness and delay. This is somewhat different from the fatalism of Nashchokin, who situated Richmann's research within the discourse of utility and noted the irony of an inventor dying from the very danger he was hoping to mitigate.

But how did Nashchokin come to associate the story of Aeschylus with Richmann's death in the first place? Apart from both succumbing to fate, the two figures have another thing in common in Nashchokin's retelling: Aeschylus' attempt to use science – 'astronomiia' – to avoid his doom. Here, the word is used to refer to astrology rather than astronomy, as was done in Russian during and immediately after the Petrine period, before the Academy's concerted efforts to solidify disciplinary boundaries.⁵⁵ Significantly, there is no mention of astronomy at all in Nashchokin's source for the story; it is entirely his own interpretation. In *Ifika*, Aeschylus simply 'receives word' (*priem izveshchenie*) of his impending death from above, with no further details. A sidenote refers the reader to Book X of Pliny the Elder's *Natural History*, a description of eagles, which also does

⁵³ *Slovar' russkogo iazyka XVIII veka* (19 vols., Leningrad/St Petersburg, 1984–2011), xiii, 60–1.

⁵⁴ A. Mislavskii, *Ifika Ieropolitika, ili filosofia nravouchitel'naia. Simvolami i priupodoblenii iziasnenna, k nastavleniiu i pol'ze iunym* (St Petersburg, 1718), p. 184.

⁵⁵ *Slovar' russkogo iazyka XVIII veka*, i, 108–9.

not specify the source of Aeschylus' knowledge (*'praedictam fatis'*). In fact, *Ifika*'s compiler could not have used the original text of Pliny as his source, since the text mentions Aeschylus' bald head: a detail first found in another Classical text, Valerius Maximus' *Factorum et Dictorum Memorabilium* (Book 9.12.ext.2.). However, Valerius does not even mention the reason for Aeschylus' presence out of the city. Neither of the Classical sources has anything to say about astrology.

To find out more about this connection, we have to go back to the cultural context in which Nashchokin grew up and to which *Ifika ieropolitika* belonged. This neo-scholastic compilation of texts, composed in the Ruthenian milieu which produced such figures as Feofan Prokopovich, drew on a wide selection of sources, Classical and Biblical alike. In addition to the texts themselves, the Kiev edition included sixty-seven copper-engraved illustrations, frequently allegorical in nature; these were reproduced in the 1718 St Petersburg edition, with Arabic numerals corresponding to the Cyrillic page numbers for the relevant story. 'Of false hope for life' – the story of Aeschylus – is one of the illustrated texts: the tragedian, rather resembling a hermit, is sitting on a stone; an eagle soars above, with a tortoise between the man's head and the bird's extended claws.⁵⁶ Whereas in this case the illustration is fairly straightforward, other images make use of the language of *emblemata*: the text of 'Vanity', for example, is accompanied by a picture of a woman holding a book ('the word of God') in one hand and the sun in the other. Each illustration was accompanied by a short explanatory poem, such as, for 'Of false hope for life':

Healthy of body, mighty of strength, young of age
 Death has no patience to care for any of this
 Unexpected power, evil chance
 A tortoise crushing Aeschylus' head.

⁵⁶ U. Hoff, 'Meditation in Solitude', *Journal of the Warburg Institute*, 1/4 (1938), pp. 292–4 is a fascinating account of Aeschylus' recasting as a hermit in European visual culture in the Middle Ages.

In fact, the full title of the book is *Ifika ieropolitika simvolami i priupodoblenii iziasnenna, k nastavleniiu i pol'ze iunym* ('Ethics and politics of the clergy explained through symbols and allusions for the teaching and use of youths'). As its Kievan provenance suggests, the original edition was clearly a product of the Catholic baroque tradition, mediated through Poland and popular in the south of the Russian state at that time, the first of Rogov's 'three Russian baroques'.⁵⁷ In that light, the 1718 edition printed in St Petersburg 'by the order of the most pious sovereign ... Peter Alekseevich' (as the amended title page proclaimed) represented an attempt to reclaim a didactic text belonging to one variety of baroque scholarship in the name of another.

Taking into account the date of its second publication – the same as the foundation of the Kunstkamera, – we can firmly situate *Ifika* in the context of the Petrine emblematic culture of the 1700s–1720s: precisely the time of Nashchokin's youth and his education. Nashchokin himself was clearly familiar with this symbolic language. In entries describing the ceremonies following the Grengam victory and the Treaty of Nystad in 1720–1, he pays particular attention to a pyramid erected to celebrate the former, decorated with emblematic images, and correctly reads the meaning of the fireworks shown after the latter: 'And as they lit up the firework, it was made in the manner of monarchs, who closed the gate from both sides, that is, a sign of peace'.⁵⁸

Moreover, the contents of Nashchokin's diary demonstrate clearly the extent to which he internalized the Petrine culture of curiosity. In addition to entries typical of military memoirs of the time (records of battles and promotions), it includes a significant number of 'curious' items, mostly extracted from the *SPV*: reports of unusual weather, a solar eclipse, plagues of locusts, a siren caught by Danish fishermen. Significantly, he

⁵⁷ K. Rogov, 'Tri epokhi russkogo barokko', in M.O. Chudakova (ed.), *Tynianovskii sbornik. Desiatye — Odinnadtsatye — Dvenadtsatye Tynianovskie chteniia. Issledovaniia. Materialy*. (Moscow, 2006), pp. 12–14.

⁵⁸ Nashchokin, 'Zapiski', 230–3. In a letter to Prince Kurakin, Peter I described the pyramid as inscribed with 'problems' – images that required solving to get at their true meaning (M.I. Semevskii (ed.), *Arkhiv kniazia F.A. Kurakina* (10 vols., St Petersburg, 1890–1902), i, 22).

presented these as natural phenomena, corroborated by other sources (of which the *SPV* was the most authoritative one), rather than ‘miracles’. The value of these events was almost always their rare and unusual nature. The eclipse, for example, merited an entry ‘as a memorable event, which I happened to see for the first time in my life, like the others who were with me.’ The locusts were described as gathering in ‘extraordinary’ numbers. The siren was caught ‘contrary to expectations’: ‘This I have recorded because, although there have been many fables about sea marvels, this time it seems credible that this surprising sea monster has been captured.’⁵⁹ All in all, the diary presents Nashchokin as a man fully immersed in the discourse of curiosity that dominated Petrine views of nature and combined so well with that period’s emblematic, ‘object-oriented’ Baroque.

It is not unlikely, then, that in Nashchokin’s mind the story of Aeschylus served as an emblematic allegory for Richmann’s misfortune, thanks to a number of common elements: the ‘death from above’ (by tortoise or by lightning), the inevitability of fate, and the irony of trying to avoid it. In fact, it is not inconceivable that his reference to ‘astronomy’ (with its close links to meteorology) was motivated by much the same emblematic language: emblematic guidebooks of the eighteenth century note that an eagle could also serve as a symbol of astrology.⁶⁰ It is worth noting that the eagle was a well-known symbol of Zeus, whose other major attributes were thunder and lightning – a sufficient confluence of symbols for an emblematic link.⁶¹ Certainly, both eagles and lightning were widely used in Russian panegyric poetry, and Nashchokin’s familiarity with at least some *emblemata* is beyond doubt.

⁵⁹ Nashchokin, ‘Zapiski’, 269, 271–2.

⁶⁰ One example is in the 1788 Russian edition of *Symbola et emblemata*, which included a synopsis of H. Lacombe de Prezel’s *Dictionnaire iconologique* (see N. Maksimovič-Ambodik, *Emvlemy i simvoly (1788): The First Russian Emblem Book*, ed. A. Hippisley (Leiden, New York, Copenhagen, and Cologne, 1989). French and German iconological works were certainly available in Russia in Nashchokin’s time.

⁶¹ In a nice coincidence, the Nashchokin family crest depicted Zeus with arrows of lightning in his hands and an eagle at his feet (ILL. 16, p. 293).

The Petrine interpretation of the Northern European emblematic culture assumed the possibility of deeper meanings behind events and objects as well as pictorial or verbal representations. This can be seen, for example, in the emblematic significance attached to such objects as the *botik* of Peter I (the small boat known as ‘the grandfather of the Russian fleet’) or the bullet-riddled tricorn hat worn by Peter during the battle of Poltava. Ultimately, the significance of an object in this context is that it can have a meaning and a ‘rhetorical position’ of its own. The ‘main cultural practice of the Petrine era’, Rogov writes, ‘is the application of emblems to real “objects” – events, material things, and phenomena of “actual” reality, as a result of which there appears, so to speak, a secondary emblematic text.’⁶²

Nashchokin’s interpretation of Richmann’s death follows the same pattern of thought. He does not dispute the particular facts of the event as relayed in the public record of the newspaper: his response and the Academy’s are presented together, essentially on an equal footing. But the text of *Ifika* provides Nashchokin with an emblematic ‘key’ to the significance of Richmann’s demise: following the traditions of the Petrine ‘object-oriented’ Baroque, he ‘read’ Richmann’s death (much like Prokopovich ‘read’ the story of Peter’s bullet-ridden tricorn at Poltava) and uncovers a hidden meaning behind it. In doing so, he rejects as useless – powerless against fate – the discourse of utility which he himself imposed on Richmann’s ‘philosophizing’ in the first place. (The professor’s research was into the physical properties of lightning, using an electrometer, and not into lightning rods as protective devices).

It would be unfair to characterize Nashchokin as an ‘obscurantist’. While his credentials as an Orthodox Christian believer can not be doubted and his response was partly conditioned by the ‘courtly piety’ of the Elizabethan age, this does not in itself mark him as an opponent of the pursuit of natural knowledge. An ardent supporter of Peter’s reforms who himself occasionally dabbled in meteorological observations, Nashchokin

⁶² Rogov, ‘Tri epokhi russkogo barokko’, 18–27. Not coincidentally, Rogov characterizes such emblematic objects as belonging to the ‘*Kunstammer* type’ (*veshchi kunstkamernogo tipa*).

was the very model of a post-Petrine major-general. Yet his view of science and its value is an essentially Petrine view, underpinned by a characteristic curiosity for the rare and the unusual: a view in which natural objects and phenomena are just one element of a complex intersection of hidden meanings. In this, he entered into conflict with views promoted by another institution established by Peter, the St Petersburg Academy of Sciences, and held by members of the court society. That such a variety of attitudes towards the systematic study of nature could and did develop in Russia over the span of just four or five decades is testament enough to the complexities of knowledge transfer in the early modern era.

###

Mikhailo Lomonosov, the emblem of Russian science in the eighteenth century, died on 4 April 1765. By then, Lomonosov had somewhat fallen out of favour: his close association with Shuvalov, the favourite of the previous Empress, did not rate him highly in Catherine II's eyes. When her eleven-year-old son, Grand Duke Paul ((ILL. 17, p. 293)), learned of the scientist's death, his comment may well have reflected the view of at least some at her court: 'Why feel sad about the fool? He only wasted money from state coffers and never did anything'. Coming to Lomonosov's defence were Paul's mathematics tutor, the Cadet Corps graduate Semen Poroshin, and the court preacher Platon – that scourge of 'science strange and diverse'.⁶³

Platon's decision to have his catechism printed in the civil script – and thus, by necessity, at the Academy of Sciences, – signalled his intention to address not just the Grand Duke, to whom the book was dedicated, but the secular court society that surrounded him. As the diary kept by Poroshin between September 1764 and January 1766 attests, this elite group of Russians had embraced a European identity in which 'sciences strange and diverse' played a prominent role. Rarely did a week pass by

⁶³ S.A. Poroshin, 'Zapiski, sluzhashchie k istorii velikogo kniazia Pavla Petrovicha', in A. Skorobogatov (ed.), *Russkii Gamlet* (Moscow, 2004), p. 199.

without some substantive discussion of scientific issues or phenomena. Familiar faces appear frequently in Poroshin's diary: we find, for example, Aleksandr Stroganov praising Krashennnikov's description of Kamchatka and its role in promoting the Russian Empire's image abroad or having 'a long dispute about parabolic figures' with Count Grigorii Orlov, a favourite of Catherine II.⁶⁴

Scientific entertainment is in evidence at every turn: grandees play with electrical machines, rub their hands with phosphorus, and hide fireworks in candles to frighten each other.⁶⁵ The material aspects of a scientific culture are abundant: electrical machines, telescopes, thermometers, and other instruments as well as maps, scientific books, and calendars. In conversations with each other and the Grand Duke, courtiers routinely reject the discourse of curiosity, debunking reports of alchemical transmutation, tales of vampires, portentous dreams, and rains of grain and vegetables. Yet, even so, there are traces of the *Kunstkamera* in their amusements, especially when a giant is brought in to amuse the prince: 'A terrible monster ... we pinched him and walked under his arms and between his legs ... Everyone wondered at him excessively.'⁶⁶

As this suggests, by the early years of Catherine II's reign, science had infiltrated court culture in both guises promoted by the Academy of Sciences in the previous decades. Institutions set up by members of the imperial court specifically invoked the language of utility as it had developed in the Academy's publications, as was the case with the Free Economic Society, set up in 1765 to translate learned texts and implement new, useful discoveries in agriculture and related fields.⁶⁷ Beyond the court society, the language of utility and the idea of classification had also taken root. Thus, we find in 1772 an Arkhangelsk merchant who had written in an introduction to his treatise on the marine life of the White Sea, sent to the Academy of Sciences, that,

⁶⁴ Ibid., 60, 368.

⁶⁵ Ibid., 16, 35, 55, 62, 348–9.

⁶⁶ Ibid., 82, 96, 28, 108, 49, 204.

⁶⁷ C. Leckey, *Patrons of Enlightenment: The Free Economic Society in Eighteenth-Century Russia* (Newark, 2011).

...having read Pontoppidan, Ludovic, Andersen, Zorgdrager, Kranz, as well as extracts from the famous Linnaeus' system in the natural dictionary of Hübner, and so on, I could easily distinguish between the real and the fabulous in the whalers' tales.⁶⁸

The Academy's efforts to link natural philosophy with European aristocratic culture also had not been in vain. When, in the 1770s, the Russian artist Dmitrii Levitskii painted portraits of the first graduates of the Smol'nyi Institute for Noble Ladies, he depicted them engaged in polite and laudable forms of leisure. Several were shown performing European works of drama, opera, and ballet or playing musical instruments, but one was painted next to a vacuum pump. So strong was the link between science and a polite education that experimental physics could be elevated to the level of theatre, one of the dominant forms of Catherinian court culture (ILL. 18, p. 294).

As for Poroshin, the language of his entries is replete with scientific metaphors that would have been unthinkable half a century earlier. On one occasion, faced with his charge's uncooperative mood, Poroshin imagines himself as an electrical machine that could send a spark through the Grand Duke and overcome his resistance. 'To what purpose?', he asks, 'For public benefit (*pol'za obshchaia*), and [to restrain] a restless character, and for the sake of my devotion to the Imperial Majesty'. Even when used as a metaphor, science was intertwined with the idea of courtly life and useful service. In one of the last entries, written shortly before he was cast out of the Grand Duke's circle, Poroshin consoles himself: 'I have been sorting through the chaos of my affairs. The mathematical method can be as usefully applied to life in general as it can be in sciences.'⁶⁹

It is telling that the ability of science to order the world could serve as such a source of comfort for a Russian nobleman of the Catherinian era. Yet the institution that had done so much to shape the scientific culture of the Russian court ultimately proved

⁶⁸ Quoted in A.P. Shchapov, *Sochineniia (Works). St Petersburg, Irkutsk: 1906–1937* (Westmead, Farnborough, 1971), p. 565.

⁶⁹ Poroshin, 'Zapiski', 107, 371.

unable to establish for itself an equally prestigious role. Criticism of the Academy in its present form was a recurrent theme of conversations at the table of the Grand Duke, voiced by many, including Poroshin; so was the inability of scholars as a type to comply with the demands of courtly sociability. The idea that a scientific institution could, as the Petrine Project imagined, serve as an exemplar to others is found faintly ridiculous and downright unpatriotic:

How can it be to the utility and glory ... of our motherland if ten or twenty foreigners, assembled at a great cost, write in a language that few people know? Had the Crimean Khan offered them twice as much ... they would go there and write there, and the Tatars would remain the Tatars, their old unknowing self.⁷⁰

True transformation, this passage suggests, could not be accomplished by decree. It requires the internalization of the cultural value of science by the local elites. This, as we have seen throughout this study, was not a straightforward process.

⁷⁰ Ibid., 34.

Conclusion

In this thesis, I have proposed a novel approach to the role of science in Russian elite culture in the eighteenth century that examines the formulation of three distinct attitudes towards the study of nature. All three – curiosity, utility, and pleasure – were based on specifically European notions of what constituted ‘science’. They were not unique to Russia, and in fact in many ways they were rather derivative. In the Russian context, however, their interaction came to play a central role in the complex process of transmission and circulation that shaped the broader culture of the Russian elite and the fortunes of state-sponsored institutions like the *Kunstkamera* and the Academy of Sciences.

One advantage of the proposed framework is that it makes it possible to situate well-known texts (the *Kunstkamera* edict, the Academy’s Project, the poetry of Antiochus Cantemir, the letters of Mikhailo Lomonosov, and so on) within the wider culture of the era while bringing previously neglected sources (pictorial representations, responses to natural phenomena such as eclipses and lightning strikes, instructions produced in the course of scientific expeditions) to bear on the issue that has long puzzled scholars: to what extent did members of the Russian nobility engage with European notions of science? By considering their relationship to the general cultural framing of natural knowledge in the period, we can compare and contrast these often disparate types of evidence within the same methodological framework. It also highlights the changing nature of attitudes to science and the long-term survival of notions marginalized in public discourse.

This is something that may prove useful in the study of the cultural history of science in early modern Europe outside Russia. As noted above, there was little that was original about Russian views of the value and purpose of natural knowledge, which were based on European models. However, the Russian context shows that a deeper examination is possible of notions that have come to be seen as largely rhetorical – such as, for example,

the recurring appeals to the utility of natural knowledge that are familiar to any scholar of the period. The complex relationship of politeness and utility – as, for example, in the British ‘Industrial Enlightenment’ of the second half of the eighteenth century – may provide an interesting case for the application of the curiosity-utility-pleasure framework outlined in this thesis.

The themes raised in the pages of this study echo the broader concerns outlined in recent years by scholars exploring the nature of scholarship in the early modern era. As a recent collection of articles has demonstrated, the range of activities involved in becoming and being a scholar in the eighteenth century extended far beyond the production of knowledge:

The manifold interactions and feedback loops between scholarly knowledge and the scholarly community on the one hand, and the social, political and economic dynamics of the period on the other, are important factors ... that need to be taken into account.¹

This is precisely the approach that I have adopted in this thesis. Unfortunately, the collection itself stops short of extending its inquiry to Russia, despite the St Petersburg Academy’s relatively prominent position in the landscape of European scholarship in the eighteenth century. However, the key topics identified by the editors of the collection – the communication of knowledge, particularly in print; the variety of career strategies available to scholars; the growing importance of practical utility and expertise to contemporary conceptions of the natural world – are all addressed in my study. Moreover, as I hope to have demonstrated, there are important insights to be gained by paying particular attention to non-scholars and their interaction with the world of scholarship.

There is much more that remains to be said about the cultural role of science in eighteenth-century Russia. One major topic that I have largely set aside is the relationship

¹ ‘Introduction: Practices of Knowledge and the Figure of the Scholar in the Eighteenth Century’, in A. Holenstein, H. Steinke and M. Stuber (eds.), *Scholars in Action* (2 vols., Leiden, 2014), p. 8.

between science and religion. As I have suggested, many of the conflicts covered by scholars to date were institutional ‘border skirmishes’, as the Academy and the Synod both sought to define the limits of their intellectual influence. This subject requires a separate investigation that would focus as much on the administrative practices of the Synod and theological views of its members as it would on the Academy. It would also need to take into account the influence of Protestant and Catholic immigrants and texts, particularly in the post-Petrine era, in determining attitudes towards specific scientific theories and ideas. A particularly promising avenue to explore is the Synod’s opposition to the notion of the plurality of worlds and its apparent links to Spinozism.

Another important issue that does not quite fall within the parameters of this thesis is the complex relationship between the metropole and the periphery in the production and communication of natural knowledge. As is well known, many early modern scholars subscribed to a model that distinguished between natural history (collection) and natural philosophy (interpretation); in Chapter 5, we have seen how this model could be threatened by reality on the ground and how control over print made it possible to obscure such difficulties. Yet the Russian case presents another example of a complex metropole-periphery relationship: while St Petersburg undoubtedly served as a ‘centre of calculation’ for inhabitants of the Russian Empire, the city itself was largely peripheral to the European geography of scholarship. There are interesting parallels to be found here with the case of British American colonies, which developed their own scientific culture that nonetheless depended on the maintenance of a contact network in London for its access to the broader European community.² A comparative examination of the Russian and Colonial American contexts may prove to be a fruitful endeavour.

² These issues are raised and discussed at length in, for example, J. Delbourgo, *A Most Amazing Scene of Wonders: Electricity And Enlightenment in Early America* (Cambridge, MA, 2006) and N. Wrightson, “[Those with] Great Abilities Have Not Always the Best Information”: How Franklin’s Transatlantic Book-Trade and Scientific Networks Interacted, ca. 1730–1757’, *Early American Studies: An Interdisciplinary Journal*, 8/1 (2009), pp. 94–119. The latter study in particular points to the importance of print to scientific networks. .

Further attention needs to be paid to the role of science in the culture of the Russian court. One significant difference between the Russian and the Western European contexts is the apparent lack of a scientific demonstration culture until the era of Catherine II. It would be fruitful to explore in more detail the extent to which members of Russian nobility in the age of Elizabeth I engaged in scientific activity themselves or whether archival study would uncover a more widespread interest in public lecturing in that period than is apparent from published sources. From that point of view, it would be useful to extend the chronological boundaries into the age of Catherine II, for which a much greater quantity of sources, print and manuscript, is available. In the Catherinian period, the Academic print monopoly was broken and the abolition of compulsory state service gave the nobility the kind of leisure that the *Notes* had advertised as crucial for the development of amateur polite science. At the same time, the apparent links between Petrine curiosity and such alternatives to the ‘official’ court culture as the Moscow Rosicrucian circles, where alchemy and astrology played a significant role, suggest that the Academic discourse of polite cameralism may have met with increased scepticism in this later period.³ An in-depth examination of the relative prominence of attitudes examined in this thesis in the Catherinian period may provide new insights into their interplay over longer periods of time and help identify new developments, as well as the influence of French Enlightenment ideas, prominent as they were in the literary culture of Russian post-1765. Whatever the future directions of study, it is my hope that the application of the framework developed in this thesis will contribute to a variety of curious, useful, and pleasant discoveries.

³ A. Zorin, ‘The Emotional Culture of Moscow Rosicrucians: An Experiment in Alternative Europeanization’, in A. Schönle, A. Zorin and A. Evstratov (eds.), *The Europeanized Elite in Russia, 1762–1825: Public Role and Subjective Self* (DeKalb, IL, 2016), pp. 201–19. For some reflections on the role of alchemy in Russian Freemasonry, see R. Collis, ‘The Petersburg Crucible: Alchemy and the Russian Nobility in Catherine the Great’s Russia’, *Journal of Religion in Europe*, 5/1 (2012), pp. 56–99.

Illustrations

IMAGE removed from the ORA version
for reasons of copyright. The image was
sourced from [http://dbooks.bodleian.
ox.ac.uk/books/PDFs/N12178693.pdf](http://dbooks.bodleian.ox.ac.uk/books/PDFs/N12178693.pdf)

IMAGE removed from the ORA version
for reasons of copyright. The image
was sourced from [http://dlib.rsl.ru/
viewer/01003341394#?page=1](http://dlib.rsl.ru/viewer/01003341394#?page=1)

ILL. 1. *Left*: example of a page from F. Polikarpov-Orlov, *Leksikon treiazychnyi* (Moscow, 1704), set in *poluustav* with numerous diacritics.

ILL. 2. *Right*: example of a page from *Geografia ili kratkoe zemnago kruga opisanie* (Moscow, 1710), set in the civil script.

IMAGE removed from the ORA version
for reasons of copyright. The image
was sourced from [http://dlib.rsl.ru/
viewer/01003341400#?page=1](http://dlib.rsl.ru/viewer/01003341400#?page=1)

ILL. 3. Frontispiece to N.-F. Blondel, *Novaia manera, ukrepleniui gorodov* (Moscow, 1711), fragment. Russian territorial gains since 1700 are labeled 'Europe'.

IMAGE removed from the ORA version for reasons of copyright.

The image was sourced from

<http://dbooks.bodleian.ox.ac.uk/books/PDFs/N10731410.pdf>

ILL. 4. Frontispiece to *Symbola et emblemata* (Amsterdam, 1705), depicting Peter I and a number of emblems including several that rely on astronomical imagery.

IMAGE removed from the ORA version for reasons of copyright.

The image was sourced from

<http://dbooks.bodleian.ox.ac.uk/books/PDFs/N10731410.pdf>

ILL. 5. An eclipse emblem in *Symbola et emblemata* (Amsterdam, 1705), pp. 24–5 (fragment).

IMAGE removed from the ORA version for reasons of copyright.

The image was sourced from <http://www.e-rara.ch/doi/10.3931/e-rara-7420>

ILL. 6. The display of Ruysch's collection in the Kunstkamera in 1741, described as 'armoires, où se conservent les pieces d'Anatomie de Mr Ruysch'. From *Palaty Sanktpeterburgskoi Imperatorskoi Akademii nauk biblioteki i Kunstkamery* (St Petersburg, 1741), Tab. ix (fragment). In the Academy 'museum', spectacular curiosities were hidden from sight behind cabinet doors.

IMAGE removed from the ORA version

for reasons of copyright. The image was

sourced from <http://arch.rgdb.ru/xmlui/handle/123456789/33407#page/167/mode/iup>

ILL. 7. Sidenotes with synonyms. From J.-N. De L'Isle, *Sokrashchenie matematicheskoe dlia upotrebleniia Ego Velichestva Imperatora vseia Rossii. Kniga pervaiia. Soderzhashchaia astronomiiu i geografiu*, trans. I.S. Gorkitskii (St Petersburg, 1728), p. 6 (fragment).

IMAGE removed from the ORA version for reasons of copyright. The image was sourced from [https://commons.wikimedia.org/wiki/File:Ochotsk_\(1737\).jpg](https://commons.wikimedia.org/wiki/File:Ochotsk_(1737).jpg)

ILL. 8. A map of Okhotsk in 1737, with the ships of the Second Kamchatka Expedition in the bay. Note the presence of a scale and compass. The ship on the left is the sloop Fortuna, shortly to founder on the way to Kamchatka with Stepan Krasheninnikov on board.

IMAGE removed from the ORA version for reasons of copyright. The image of the item in the British Library collection was taken by the author for research purposes.

ILL. 9. A typical spread from the main calendar body. Note the busy righthand column on the verso page, with sorts for aspects and propitious days and weather predictions. From C.N. von Winsheim, *Sanktpeterbugskii kalendar' na leto ot rozhdestva Khristova 1738* (St Petersburg, 1737), pp. [2–3].

ILL. 10. Legend for astrological and astronomical sorts in the calendar, including good days for haircuts and wood logging. From C.N. von Winsheim, *Sanktpeterbugskii kalendar' na leto ot rozhdestva Khristova 1738* (St Petersburg, 1737), p. [51], fragment.

IMAGE removed from the ORA version for reasons of copyright. The image of the item in the British Library collection was taken by the author for research purposes.

ILL. 11. The Zodiac Man. From
C.N. von Winsheim, *Sanktpeterbugskii
kalendar' na leto ot rozhdestva Khristova 1738*
(St Petersburg, 1737), p. [71]. The same plate,
with captions in German, was used for almost
twenty years.

IMAGE removed from the ORA version
for reasons of copyright. The image of
the item in the British Library collection
was taken by the author for research
purposes.

IMAGE removed from the ORA version for reasons of copyright. The image
was sourced from [http://www.hermitagemuseum.org/wps/portal/hermitage/
digital-collection/04.+Engraving/1513054](http://www.hermitagemuseum.org/wps/portal/hermitage/digital-collection/04.+Engraving/1513054)

ILL. 12. O. Elliger, *Vid Dvotsovoi kantseliarii s sledushchimi Palaty* (1728). The Cantemir
mansion is number 3, far left. Locations of major buildings in St Petersburg, including
the Cantemir mansion, were determined by Peter I himself, determining the social setting
of Antiochus Cantemir's youth.

IMAGE removed from the ORA version for reasons of copyright.

The image was sourced from <http://www.ngv.vic.gov.au/explore/collection/work/4312/>

ILL. 13. A. Roslin, *Anastasia Ivanovna, Countess of Hesse-Homburg, Princess Trubetskaya* (1757).

Note the globe, maps, and books in the lower left corner and the storm raging outside the study.

IMAGE removed from the ORA version for reasons of copyright.

The image was sourced from <http://tretyakovgallery.blogspot.co.uk/2013/07/1754.html>

ILL. 14. B. Sukhodol'skii, *Astronomiia* (1754). An idealized depiction of European polite science used in the interior decoration of Empress Elizabeth's palace at Ekaterinhof.

IMAGE removed from the ORA version for reasons of copyright.

The image was sourced from <http://www.sothebys.com/en/auctions/ecatalogue/2016/schorsch-collection-n09466/lot.742.html>

ILL. 15. *Astronomy*. Printed for Robert Sayer (c. 1750), after Jacopo Amigoni. The lady on the left is shown looking through the wrong end of the telescope.

IMAGE removed from the ORA version for reasons of copyright.

The image was sourced from <https://gerbovnik.ru/arms/314>

ILL. 16. The Nashchokin family crest, depicting Zeus with lighting bolts and an eagle.

ILL. 17. V. Eriksen, *Grand Duke Paul in His Study Room* (1766). The globe is turned to the Russian possessions in the North-West of the Pacific Ocean, including the Kamchatka Peninsula, mapped by the Academy of Sciences.

IMAGE removed from the ORA version

for reasons of copyright. The image

was sourced from

<http://www.hermitage-museum.org/wps/portal/hermitage/digital-collection/01.%20Paintings/40360>

IMAGE removed from the ORA version
for reasons of copyright. The image was
sourced from
[https://commons.wikimedia.org/wiki/
File:LevitzkyAlymova1775.jpg](https://commons.wikimedia.org/wiki/File:LevitzkyAlymova1775.jpg)

IMAGE removed from the ORA version
for reasons of copyright. The image was
sourced from
[https://commons.wikimedia.org/wiki/
File:Borschova_by_levitskiy.jpg](https://commons.wikimedia.org/wiki/File:Borschova_by_levitskiy.jpg)

IMAGE removed from the ORA version
for reasons of copyright. The image was
sourced from
[https://commons.wikimedia.org/wiki/
File:Molchanova_by_levitskiy.jpg](https://commons.wikimedia.org/wiki/File:Molchanova_by_levitskiy.jpg)

ILL. 18. D. Levitskii, '*Smolianki*' (1770s).
Clockwise: Glafira Alymova (music), Nataliia
Borshchova (dance), Ekaterina Molchanova
(science).

List of Illustrations

FIGURES

- FIG. 1. Volumes published in each year by the Academy of Sciences press (1727–47), by language of publication (p. 102)
- FIG. 2. Foreign-language volumes published in each year by the Academy press (1727–47), by author's affiliation (p. 124)
- FIG. 3. Russian-language volumes published in each year by the Academy press (1727–47), by author's affiliation (p. 124)
- FIG. 4. Known print runs of Academy calendars (1725–65) (p. 176)

ILLUSTRATIONS

- ILL. 1. Example of a page from F. Polikarpov-Orlov, *Leksikon treiazychnyi* (Moscow, 1704). Bodleian Library.
- ILL. 2. Example of a page from *Geografia ili kratkoe zemnago kruga opisanie* (Moscow, 1710). Bodleian Library.
- ILL. 3. Frontispiece to N.-F. Blondel, *Novaia manera, ukrepleniui gorodov* (Moscow, 1711), fragment. Bodleian Library.
- ILL. 4. Frontispiece to *Symbola et emblemata* (Amsterdam, 1705). Bodleian Library.
- ILL. 5. An eclipse emblem in *Symbola et emblemata* (Amsterdam, 1705), pp. 24–5 (fragment). Bodleian Library.
- ILL. 6. The display of Ruysch's collection in the Kunstkamera in 1741, described as 'armoires, où se conservent les pieces d'Anatomie de Mr Ruysch'. From *Palaty Sanktpeterburgskoi Imperatorskoi Akademii nauk biblioteki i Kunstkamery* (St Petersburg, 1741), Tab. ix (fragment). ETH-Bibliothek Zurich.
- ILL. 7. J.-N. De L'Isle, *Sokrashchenie matematicheskoe dlia upotrebleniia Ego Velichestva Imperatora vseia Rossii. Kniga pervaiia. Soderzhashchaia astronomiiu i geografiu*, trans. I.S. Gorlitskii (St Petersburg, 1728), p. 6 (fragment). Bodleian Library.
- ILL. 8. 'Map of Okhotskoi Ostrog, ink drawing, 1737 (State Marine Archive St. Petersburg)'. Public domain. Retrieved from:
<[https://commons.wikimedia.org/wiki/File:Ochotsk_\(1737\).jpg](https://commons.wikimedia.org/wiki/File:Ochotsk_(1737).jpg)>

- ILL. 9. A typical spread from the main calendar body. From C.N. von Winsheim, *Sanktpeterbugskii kalendar' na leto ot rozhdestva Khristova 1738* (St Petersburg, 1737), pp. [2–3]. British Library.
- ILL. 10. Legend for astrological and astronomical sorts in the calendar. From C.N. von Winsheim, *Sanktpeterbugskii kalendar' na leto ot rozhdestva Khristova 1738* (St Petersburg, 1737), p. [51], fragment. British Library.
- ILL. 11. The Zodiac Man. From C.N. von Winsheim, *Sanktpeterbugskii kalendar' na leto ot rozhdestva Khristova 1738* (St Petersburg, 1737), p. [71]. British Library.
- ILL. 12. O. Elliger, *Vid Dvotsovoi kantseliarii s sledushchimi Palaty* (1728). The State Hermitage Museum, St Petersburg. Retrieved from: <<http://www.hermitagemuseum.org/wps/portal/hermitage/digital-collection/04.+Engraving/1513054>>
- ILL. 13. A. Roslin, *Anastasia Ivanovna, Countess of Hesse-Homburg, Princess Trubetskaya* (1757). National Gallery of Victoria, Melbourne. Retrieved from: <<http://www.ngv.vic.gov.au/explore/collection/work/4312/>>
- ILL. 14. B. Sukhodol'skii, *Astronomiia* (1754). The State Tretyakov Gallery, Moscow. Retrieved from: <<http://tretiyakovgallery.blogspot.co.uk/2013/07/1754.html>>
- ILL. 15. *Astronomy. Printed for Robert Sayer* (c. 1750). Sotheby's. Retrieved from: <<http://www.sothebys.com/en/auctions/ecatalogue/2016/schorsch-collection-no9466/lot.742.html>>
- ILL. 16. The Nashchokin family crest, depicting Zeus with lightning bolts and an eagle (*Obshchii gerbovnik dvorianskikh rodov Vserossiiskii Imperii, nachaty v 1797 godu*, iii, #14). Public domain. Retrieved from: <<https://gerbovnik.ru/arms/314>>
- ILL. 17. V. Eriksen, *Grand Duke Paul in his Study Room* (1766). The State Hermitage Museum, St Petersburg. Retrieved from: <<http://www.hermitagemuseum.org/wps/portal/hermitage/digital-collection/01.%20Paintings/40360>>
- ILL. 18. D. Levitskii, *'Smolianki'* (1770s). Public domain. Retrieved from: <https://ru.wikipedia.org/wiki/Смолянки_Левицкого>

Works Cited

MANUSCRIPT SOURCES AND SPECIFIC COPIES CITED

Russian State Archive of Ancient Documents (RGADA), Moscow, Russia

Fond 77 ('Snosheniia Rossii s Persiei'), *opis'* 1, 1715–1718, *edinitsa khraneniia* 2 ('Zhurnal (sobstvennoruchnyi, otyskannyi v bumagakh posle grafa Ostermana) podpolkovnika Artemiia Volynskago, bytnosti ego u persidskago Shakha Khuseina v poslannikakh')

Russian National Library, St Petersburg, Russia

Kalendar' ili mesiatsoslov na leto or Rozhdestva Gospoda nashego Iisusa Khrista 1736 (St Petersburg, 1735). Shelfmark 38.34.3.13.

Russian State Library, Moscow, Russia

Primechaniia na Vedomosti (St Petersburg, 1733). Shelfmark Л-3А, inventory number 20109.

Primechaniia na Vedomosti (St Petersburg, 1734). Shelfmark Л-3А, inventory number 20083.

PERIODICALS AND ANNUAL PUBLICATIONS

Commentarii Academiae scientiarum Imperialis Petropolitanae (10 vols., St Petersburg, 1728–47)

Istoricheskiia, genealogicheskiia i geograficheskiia Primechaniia na Vedomosti (St Petersburg, 1729–42)

Kalendar' ili mesiatsoslov na leto ot Rozhdestva Gospoda nashego Iisusa Khrista (St Petersburg, 1726–)

Sanktpeterburgskie vedomosti (St Petersburg, 1728–)

PRINTED PRIMARY SOURCES

'Addition a l'Histoire de MDCCXX', *Histoire de L'Académie Royale des Sciences* (1722), pp. 125–31

Aepinus, Franz Ulrich Theodor, *Rech' o skhodstve elektricheskoi sily s magnitnoi*, trans. M. Sofronov (St Petersburg, 1758)

Aurelius, Marcus and Johann Adolf Hoffmann, *Zhitie i dela Marka Avreliia Antonina Tsesaria Rimskago*, trans. S. Volchkov (St Petersburg, 1740)

Bayer, Gottlieb Siegfried, *Auszug der älteren Staats-Geschichte zum Gebrauch Ihro Kayserl. Majestät Petri des II* (St Petersburg, 1728)

- Blondel, Nicolas-Francois, *Novaia manera, ukrepleniui gorodov*, trans. I.N. Zotov (Moscow, 1711)
- Bruce, Peter Henry, *Memoirs of Peter Henry Bruce, Esq., a Military Officer, in the Services of Prussia, Russia, and Great Britain* (London, 1782)
- Cantemir, Antiochus, *Satyres de Monsieur le prince Cantemir, avec l'histoire de sa vie, traduites en François*, ed. O. de Guasco (London, 1749)
- de Fontenelle, Bernard le Bovier, *Oeuvres diverses* (The Hague, 1728)
- *Razgovory o mnozhestve mirov*, trans. A. Cantemir (St Petersburg, 1740)
- De L'Isle, Joseph-Nicolas, *Abregé des mathematiques pour l'usage de sa Majesté Imperiale de toutes les Russies. Tome II. Contenant l'Astronomie et la Geographie* (St Petersburg, 1728)
- *Sokrashchenie matematicheskoe dlia upotrebleniia Ego Velichestva Imperatora vseia Rossii. Kniga pervaiia. Soderzhashchaia astronomiiu i geografiu*, trans. I.S. Gorlitskii (St Petersburg, 1728)
- and Daniel Bernoulli, *Discours lu dans l'assemblée publique de l'Académie des sciences, le 2 mars 1728, par Mr. De l'Isle, avec la réponse de Mr. Bernoulli* (St Petersburg, 1728)
- de La Mottraye, Aubry, *The Voyages and Travels of A. de la Mottraye in Several Provinces and Places of the Kingdoms and Dukedoms of Prussia, Russia, Poland, &c.* (London, 1732)
- Gessner, Christian Friedrich, *Der so nöthig als nützliche Buchdruckerkunst und Schriftgießerey. Dritter Theil* (Leipzig, 1741)
- Gracian y Morales, Baltasar, *Gratsian pridvornoi chelovek*, trans. S. Volchkov ([St Petersburg], 1742)
- Hermann, Jakob, *Abregé des mathematiques pour l'usage de sa Majesté Imperiale de toutes les Russies. Tome I. Contenant l'arithmetique, la geometrie et la trigonometrie* (St Petersburg, 1728)
- *Abregé des mathematiques pour l'usage de sa Majesté Imperiale de toutes les Russies. Tome III. Contenant la fortification* (St Petersburg, 1728)
- *Sokrashchenie matematicheskoe ko upotrebleniui Ego Velichestva Imperatora vseia Rossii. Chast' pervaiia. Soderzhashchaia Arifmetiku, Geometriu, i Trigonometriu*, trans. I.S. Gorlitskii (St Petersburg, 1728)
- *Sokrashchenie matematicheskoe ko upotrebleniui Ego Velichestva Imperatora vseia Rossii. Chast' tretiia, soderzhashchaia fortifikatsiiu*, trans. I.S. Gorlitskii (St Petersburg, 1730)
- [Huygens, Christian],

- Krafft, Georg Wolfgang, *Description et représentation exacte de la maison de glace construite a St. Petersbourg au mois de janvier 1740* (St Petersburg, 1741)
- Krasheninnikov, Stepan Petrovich, *Opisanie zemli Kamchatki* (2 vols., St Petersburg, 1755)
- Kratkoe opisanie kommentariiev Akademii nauk. Chast' pervaiia na 1726 god*
(St Petersburg, 1728)
- Levshin, Platon, *Pravoslavnoe uchenie, ili Sokrashchennaia khristianskaia bogosloviia*
(St Petersburg, 1765)
- Malygin, Stepan, *Sokrashchennaia navigatsiia po karte de reduksion* (St Petersburg, 1733)
- Mislavskii, Afanasii, *Ifika Ieropolitika, ili filosofiiia nrovouchitel'naia. Simvolami i priupodoblenii iziasnenna, k nastavlennii i pol'ze iunym* (St Petersburg, 1718)
- Palaty Sanktpeterburgskoi Imperatorskoi Akademii Nauk Biblioteki i Kunstkamery*
(St Petersburg, 1741)
- Perry, John, *The State of Russia, Under the Present Czar* (London, 1716)
- Priestley, Joseph, *The History and Present State of Electricity, with Original Experiments*
(London, 1767)
- Pürkenstein, von, A. E. Burckhard, *Priemy tsirkulia i lineiki, ili Izbranneishee nachalo v matematicheskikh iskusstvakh*, trans. J. Bruce (Moscow, 1709)
- Sayer, Robert, *Robert Sayer's New and Enlarged Catalogue for the Year MDCCLXXIV*
([London], 1774)
- Sinopeus, Damianus, *Parerga medica* (St Petersburg, 1734)
- Stählin, Jacob von, *Originalanekdoten von Peter dem Grossen* (Leipzig, 1785)
- Symbola et emblemata* (Amsterdam, 1705)
- Toucement, Jean Chretien, *Des Deusch François Jean Chretien Toucement Adieu von alle Rarités was ßu St. Peterburg* (Leipzig, 1736)
- Trediakovskii, Vasilii, *Rech', kotoruii v Sanktpeterburgskoi imp. Akademii nauk, k chlenam Rossiiskago sobraniia, vo vremia pervago onykh zasedaniia, marta 14 dn., 1735 goda, govoril Vasilii Trediakovskii Sanktpeterburgskii imp. Akademii nauk sekretar'*
(St Petersburg, 1735)
- Volfianskaia eksperimental'naia fizika s nemetskago podlinnika na latinskom iazyke sokrashchennaia*, trans. M. Lomonosov (St Petersburg, 1746)
- Wahn, Hermann, *Hamburgischer Staats-Calender, auf das 1726. Jahr Christi* (Hamburg, 1725)

PRINTED SECONDARY WORKS

- Akopian, Ovanes L., 'Maksim Grek, Savonarola i bor'ba s astrologiei', *Dialog so vremenem*, 42 (2013), pp. 91–103
- Aleksandrenko, V. N., *K biografii kniazia A.D. Kantemira* (Warsaw, 1896)
- Alekseeva, N. Iu., 'Dva avtografa Trediakovskogo 1736 goda', *XVIII vek*, 23 (2004), pp. 70–9
- Anderson, Perry, 'One Exceptional Figure Stood Out', *London Review of Books*, 30 July 2015
- Andreev, A. I., 'Osnovanie Akademii nauk v Peterburge', in A.I. Andreev (ed.), *Petr Velikii. Sbornik statei* (Moscow and Leningrad, 1947), pp. 284–333
- Andreev, Andrei Iu., *Russkie studenty v nemetskikh universitetakh XVIII – pervoi poloviny XIX veka* (Moscow, 2005)
- Anemone, Anthony, 'The Monsters of Peter the Great: The Culture of the St. Petersburg Kunstkamera in the Eighteenth Century', *The Slavic and East European Journal* (2000), pp. 583–602
- Arinshtein, Leonid Matveevich, 'Pope in Russian Translations of the Eighteenth Century', *Studies in Bibliography*, 24 (1971), pp. 166–75
- Ashworth, William B., 'Emblematic Natural History of the Renaissance', in N. Jardine, J.A. Secord and E.C. Spary (eds.), *Cultures of Natural History* (Cambridge, 1996), pp. 17–37
- Babaeva, E. E., 'Kantemir-entsiklopedist: k postanovke voprosa', in V.M. Kruglov (ed.), *Russkii iazyk kontsa XVIII – nachala XIX veka. Voprosy izucheniia i opisaniia. Sbornik 3* (St Petersburg, 2009), pp. 7–38
- Baehr, Stephen L., *The Paradise Myth in Eighteenth-Century Russia: Utopian Patterns in Early Secular Russian Literature and Culture* (Stanford, 1991)
- Bagrow, Leo, 'Ivan Kirilov, Compiler of the First Russian Atlas, 1689–1737', *Imago Mundi*, 2/1 (1937), pp. 78–82
- Baird, Olga A., 'I Want the People to Observe and to Learn! The St Petersburg Kunstkamera in the Eighteenth Century', *History of Education*, 37/4 (2008), pp. 531–47
- Barsov, T. V., 'O dukhovnoi tsenzure v Rossii. IX. Uchastie Sv. Sinoda v tsenzure svetskikh knig', *Khristsianskoe chtenie*, 212/7 (1901), pp. 108–30
- Bartenev, Petr (ed.), *Arkhiv kniazia Vorontsova* (40 vols., Moscow, 1870–95)
- Bassin, Mark, 'Russia between Europe and Asia: The Ideological Construction of Geographical Space', *Slavic Review*, 50/1 (1991), pp. 1–17
- Benedict, Barbara M., 'The Eighteenth-Century Anthology and the Construction of the Expert Reader', *Poetics*, 28/5 (2001), pp. 377–97

- Bensaude-Vincent, Bernadette and Christine Blondel, *Science and Spectacle in the European Enlightenment* (Aldreshot, 2008)
- Berk, Karl Reinkhold, 'Putevye zametki o Rossii', in I.N. Bespiatykh (ed.), *Peterburg Anny Ioannovny v inostrannykh opisaniakh*, (St Petersburg, 1996), pp. 111–302
- Biagioli, Mario, *Galileo, Courtier: The Practice of Science in the Culture of Absolutism* (Chicago and London, 1993)
- Bodlianskii, O., 'Istoricheskoe svedenie o general'nom khoruzhem, Nikolae Daniloviche Khanenke', *ChOIDR*, 1/5 (1858), pp. i–xxi
- Bogdanov, A. P. and R. A. Simonov, 'Prognosticheskie pis'ma doktora Andreasa Engel'gardta tsariu Alekseiu Mikhailovichu', in R.A. Simonov (ed.), *Estestvennonauchnye predstavleniia Drevnei Rusi. Schislenie let. Simvolika chisel. 'Otrechennye' knigi. Astrologiia. Mineralogiia* (Moscow, 1988), pp. 151–208
- Bogdanov, Konstantin, 'Novye slova – novye veshchi', in *O krokodilakh v Rossii* (Moscow, 2006), pp. 19–48
- 'Petr Pervyi o meditsine: igra prirody, poriadok pravleniia', in E.V. Anisimov (ed.), *Petr Velikii* (Moscow, 2007), pp. 175–109
- Boltunova, Ekaterina, 'Dmitrii i Antiokh Kantemiry v Peterburge pervoi chetverti XVIII v.', *Rusin*, 3/5 (2006), pp. 48–54
- Boss, Valentin J, 'Kantemir and Rolli-Milton's *Il Paradiso Perduto*', *Slavic Review*, 21/3 (1962), pp. 441–55
- 'La quatrième ode de Kantemir et "L'italia Liberata" de Gian Giorgio Trissino', *Cahiers du Monde russe et soviétique*, 4/1 (1963), pp. 47–55
- *Newton and Russia: The Early Influence, 1698–1796* (Cambridge, MA, 1972)
- Bredenkamp, Horst, 'Kunstammer, Play-Palace, Shadow Theatre: Three Thought Loci by Gottfried Wilhelm Leibniz', in Helmar Schramm, Ludger Schwarte and Jan Lazardzig (eds.), *Collection, Laboratory, Theater Scences of Knowledge in the 17th Century* (Berlin, 2005), pp. 266–82
- Briggs, Robin, 'The Académie Royale Des Sciences and the Pursuit of Utility', *Past and Present*, 131 (1991), pp. 38–88
- Bushev, P. P., *Posol'stvo Artemiia Volynskogo v Iran v 1715–1718 gg. (Po russkim arkhivam)* (Moscow, 1978)
- Bushkovitch, Paul, 'Change and Culture in Early Modern Russia', *Kritika: Explorations in Russian and Eurasian History*, 16/2 (2015), pp. 291–316
- Bycroft, Michael, 'Wonders in the Academy', *Historical Studies in the Natural Sciences*, 43/3 (2013), pp. 334–70

- Calinger, Ronald, 'Leonhard Euler: The First St. Petersburg Years (1727–1741)', *Historia Mathematica*, 23/2 (1996), pp. 121–66
- *Leonhard Euler: Mathematical Genius in the Enlightenment* (Princeton and Oxford, 2016)
- Cantemir, Antiochus, *Sochineniia, pis'ma i izbrannye perevody*, ed. P.A. Efremov (2 vols., St Petersburg, 1867–8)
- *Sobranie stikhotvorenii*, ed. Z.I. Gershtovich (Leningrad, 1956)
- Capp, Bernard, *English Almanacs, 1500–1800: Astrology and the Popular Press* (Ithaca, 1979)
- Chambers, David Wade and Richard Gillespie, 'Locality in the History of Science: Colonial Science, Technoscience, and Indigenous Knowledge', *Osiris*, 15 (2000), pp. 221–40
- Charipova, Ludmilla, *Latin Books and the Eastern Orthodox Clerical Elite in Kiev, 1632–1780* (Manchester, 2006)
- Chenakal, Valentin L., 'Elektricheskie mashiny v Rossii XVIII v.', in A.T. Grigorian (ed.), *Istoriia fiziko-matematicheskikh nauk* (Moscow, 1961), pp. 50–111
- *Ivan Ivanovich Beliaev – russkii optik XVIII veka. 1710–1788 gg.* (Leningrad, 1976)
- , A. V. Topchiev and N. A. Figurovskii (eds.), *Letopis' zhizni i tvorchestva Lomonosova* (Moscow and Leningrad, 1961)
- Chernyshev, I. G., 'Pis'ma k I. I. Shuvalovu', *Russkii arkhiv*, 7/11 (1869), pp. 1779–83
- Chistovich, I., *Feofan Prokopovich i ego vremia* (St Petersburg, 1868)
- Chrissidis, Nikolaos A., *An Academy at the Court of the Tsars: Greek Scholars and Jesuit Education in Early Modern Russia* (DeKalb, IL, 2015)
- Clark, William, Jan V. Golinski and Simon Schaffer, 'Introduction', in W. Clark, J.V. Golinski and S. Schaffer (eds.), *The Sciences in Enlightened Europe* (Chicago and London, 1999), pp. 3–31
- Collis, Robert, *The Petrine Instauration: Religion, Esotericism and Science at the Court of Peter the Great, 1689–1725* (Leiden, 2011)
- 'The Petersburg Crucible: Alchemy and the Russian Nobility in Catherine the Great's Russia', *Journal of Religion in Europe*, 5/1 (2012), pp. 56–99
- Cooter, Roger and Stephen Pumfrey, 'Separate Spheres and Public Places: Reflections on the History of Science Popularization and Science in Popular Culture', *History of Science*, 32/97 (1994), pp. 237–67
- Cracraft, James, *The Petrine Revolution in Russian Culture* (Cambridge, MA and London, 2004)

- Darnton, Robert, *The Business of Enlightenment. A Publishing History of the Encyclopédie, 1775–1800* (Cambridge, MA, 1987)
- “‘What is the History of Books?’ Revisited’, *Modern Intellectual History*, 4/3 (2007), pp. 495–508
- Daston, Lorraine J., ‘Super-Vision: Weather Watching and Table Reading in the Early Modern Royal Society and Académie Royale des Sciences’, *Huntington Library Quarterly*, 78/2 (2015), pp. 187–215
- Daum, Andreas W., ‘Varieties of Popular Science and the Transformations of Public Knowledge: Some Historical Reflections’, *Isis*, 100/2 (2009), pp. 319–32
- Delbourgo, James, *A Most Amazing Scene of Wonders: Electricity And Enlightenment in Early America* (Cambridge, MA, 2006)
- and Nicholas Dew, *Science and Empire in the Atlantic World* (New York and London, 2008)
- Dorris, George E., *Paolo Rolli and the Italian Circle in London, 1715–1744* (The Hague and Paris, 1967)
- Eisenstein, Elizabeth, *The Printing Press as an Agent of Change : Communications and Cultural Transformations in Early Modern Europe* (2 vols., Cambridge, 1980)
- Evstratov, Alexei, ‘Dramatic Conflicts and Social Performance at the Russian Court in the 1760s: A Sociocultural Perspective on Marital Infidelity’, in A. Schönle, A. Zorin and A. Evstratov (eds.), *The Europeanized Elite in Russia, 1762–1825: Public Role and Subjective Self* (DeKalb, IL, 2016), pp. 70–89
- Ewington, Amanda, *A Voltaire for Russia: A. P. Sumarokov’s Journey from Poet-Critic to Russian Philosophe* (Evanston, IL, 2010)
- Fedyukin, Igor, ‘“An Infinite Variety of Inclinations and Appetites”: Génie and Governance in Post-Petrine Russia’, *Kritika: Explorations in Russian and Eurasian History*, 11/4 (2010), pp. 741–62
- “‘Prozhektery” kak administrativnye predprinimateli: stanovlenie rannemodernykh gosudarstvennykh institutov i individual’naia initsiativa’, in I. Fedyukin and M. Lavrinovich (eds.), ‘*Reguliarnaia akademiia uchrezhdена budet...*’: *Obrazovatel’nye proekty v Rossii v pervoi polovine XVIII veka* (Moscow, 2014), pp. 12–32
- ‘Rol’ administrativnogo predprinimatel’sтва v petrovskikh reformakh: Navigatskaia shkola i pozdnemoskovskie knizhniki’, *Rossiiskaia Istorii*, 4 (2014), pp. 80–101
- and Maiia Lavrinovich (eds.), ‘*Reguliarnaia akademiia uchrezhdена budet...*’: *Obrazovatel’nye proekty v Rossii v pervoi polovine XVIII veka* (Moscow, 2014)

- Findlen, Paula, 'Anatomy Theaters, Botanical Gardens, and Natural History Collections', in K. Park and L.J. Daston (eds.), *The Cambridge History of Science*, iii: *Early Modern Science* (Cambridge, 2006), pp. 272–89
- Fissell, Mary and Roger Cooter, 'Exploring Natural Knowledge: Science and the Popular', in R. Porter (ed.), *The Cambridge History of Science*, iv: *Eighteenth-Century Science* (Cambridge, 2003), pp. 129–58
- Flier, Michael S., 'Political Ideas and Rituals', in M. Perkins (ed.), *The Cambridge History of Russia*, i: *From Early Rus' to 1689* (Cambridge, 2006), pp. 387–408
- Fontes da Costa, P., 'The culture of curiosity at The Royal Society in the first half of the eighteenth century', *Notes and Records of the Royal Society*, 56/2 (2002), pp. 147–66
- Foucault, Michel, *The Order of Things: An Archaeology of the Human Sciences* (London, 2002)
- Franklin, Simon, 'Printing and Social Control in Russia 1: Passports', *Russian History*, 37/3 (2010), pp. 208–37
- 'Printing and Social Control in Russia 2: Decrees', *Russian History*, 38/4 (2011), pp. 467–92
- 'Printing and Social Control in Russia 3: Blank Forms', *Russian History*, 42/1 (2015), pp. 114–35
- Freeze, Gregory L., 'Handmaiden of the State? The Church in Imperial Russia Reconsidered', *The Journal of Ecclesiastical History*, 36/01 (1985), pp. 82–102
- 'Recent Scholarship on Russian Orthodoxy: A Critique', *Kritika: Explorations in Russian and Eurasian History*, 2/2 (2001), pp. 269–78
- Furman, Dmitrii, 'Vybor kniazia Vladimira', *Voprosy filosofii*, 6 (1988), pp. 90–103
- Genette, Gérard, *Paratexts: Thresholds of Interpretation*, trans. J.E. Lewin (Cambridge, 1997)
- Gershkovich, Z. I., 'K biografii A.D. Kantemira', *XVIII vek*, 3 (1958), pp. 456–9
- 'K istorii sozdaniia pervykh satir Kantemira', *XVIII vek*, 5 (1962), pp. 349–57
- Gnucheva, V. F. (ed.), *Materialy dlia istorii ekspeditsii Akademii nauk v XVIII i XIX vekakh: Khronologicheskie obzory i opisanie arkhivnykh materialov* (Moscow and Leningrad, 1940)
- Gol'dberg, A. L., 'Pervaia poema o Peterburge', *Pamiatniki kultury. Nove otkrytiia* (Leningrad, 1980)
- Goldovskii, Grigorii (ed.), *Gosudarstvennyi Russkii muzei. Zhivopis' XVIII vek. Katalog* (St Petersburg, 1998)
- Golinski, Jan V., *Making Natural Knowledge: Constructivism and the History of Science* (2nd ed., Chicago and London, 2005)

- Gordin, Michael D., 'The Importation of Being Earnest: The Early St. Petersburg Academy of Sciences', *Isis*, 91/1 (2000), pp. 1–31
- Gouzévitch, Irina, 'The Editorial Policy as a Mirror of Petrine Reforms: Textbooks and Their Translators in Early 18th Century Russia', *Science & Education*, 15/7–8 (2006), pp. 841–62
- and Dmitri Gouzévitch, 'Introducing Mathematics, Building an Empire: Russia Under Peter I', in E. Robson and J. Stedall (eds.), *The Oxford Handbook of the History of Mathematics* (Oxford, 2009), pp. 353–73
- Gradova, B. A., B. M. Kloss and V. I. Koretskii, 'K istorii Arkhangel'skoi biblioteki D. M. Golitsyna', *Arkheograficheskii ezhegodnik* (1979), pp. 238–53
- Grasshoff, Helmut, *A.D. Kantemir und Westeuropa: Ein russischer Schriftsteller des 18. Jahrhunderts und seine Beziehungen zur westeuropäischen Literatur und Kunst* (Berlin, 1966)
- 'Iz istorii sviazei Berlinskogo obshchestva nauk s Rossiei v 20-kh godakh XVIII v.', *XVIII vek*, 7 (1966), pp. 59–65
- Griffin, Clare Louise, 'In Search of an Audience: Popular Pharmacies and the Limits of Literate Medicine in Late Seventeenth- and Early Eighteenth-Century Russia', *Bulletin of the History of Medicine*, 89/4 (2015), pp. 705–32
- Griffiths, David M, 'The Early Years of Petersburg Academy of Sciences as Reflected in Recent Soviet Literature', *Canadian-American Slavic Studies*, 14/3 (1980)
- Harrison, Mark, 'From Medical Astrology to Medical Astronomy: Sol-Lunar and Planetary Theories of Disease in British Medicine, c. 1700–1850', *British Journal for the History of Science*, 33/1 (2000), pp. 25–48
- Hassell, J., 'Implementation of the Russian Table of Ranks during the Eighteenth Century', *Slavic Review*, 29/2 (1970), pp. 283–95
- Heesen, te, Anke, 'Boxes in Nature', *Studies in History and Philosophy of Science Part A*, 31/3 (2000), pp. 381–403
- Hennessey, Leslie Griffin, 'Friends Serving Itinerant Muses: Jacopo Amigoni and Farinelli in Europe', in S. West (ed.), *Italian Culture in Northern Europe in the Eighteenth Century* (Cambridge, 1999), pp. 20–45
- Hintzsche, Wieland, Natasha Lind Ochotina and Peter Ulf Møller (eds.), *Dokumente zur 2. Kamčatkaexpedition 1730–1733. Akademiegruppe* (Halle, 2004)
- , Heike Heklau, Kristina Küntzel, Bert Meister and O. V. Novochatko (eds.), *Dokumente zur 2. Kamčatkaexpedition Januar – Juni 1734. Akademiegruppe* (Halle, 2006)
- Hoff, Ursula, 'Meditation in Solitude', *Journal of the Warburg Institute*, 1/4 (1938), pp. 292–4

- Holenstein, André, H. Steinke, and M. Stuber, 'Introduction: Practices of Knowledge and the Figure of the Scholar in the Eighteenth Century', in A. Holenstein, H. Steinke and M. Stuber (eds.), *Scholars in Action* (2 vols., Leiden, 2014), pp. 1–41
- Home, R. W., 'Science as a Career in Eighteenth-Century Russia: The Case of F.U.T. Aepinus', *The Slavonic and East European Review* (1973)
- Hughes, Lindsey, 'Cultural and Intellectual Life', in M. Perkins (ed.), *The Cambridge History of Russia*, i: *From Early Rus' to 1689* (Cambridge, 2006), pp. 640–62
- Illife, Rob, 'Science and Voyages of Discovery', in R. Porter (ed.), *The Cambridge History of Science*, iv: *Eighteenth-Century Science* (Cambridge, 2003), pp. 618–45
- Iosad, Alexander, 'K istorii "Razgovorov of mnozhestve mirov" v perevode Antiokha Kantemira', *Russkaia filologiia: Sbornik nauchnykh rabot molodykh filologov*, 22 (2011), pp. 20–5
- 'Curiosity, Utility, Pleasure: Official Discourses of Natural Philosophy and Their Alternatives in Russia in the Run-up to 1762', in A. Schönle, A. Zorin and A. Evstratov (eds.), *The Europeanized Elite in Russia, 1762–1825: Public Role and Subjective Self* (DeKalb, IL, 2016), pp. 46–65
- Iukht, A. I. and A. B. Kamenskii, 'Nabliudeniia zatmenii Luny 16 (27) marta 1736 g. v Rossii', *Istoriko-astronomicheskie issledovaniia*, 17 (1984), pp. 421–4
- Iushkevich, A. P. and Iudif' Khaimovna Kopelevich, *Khristian Gol'dbakh. 1690–1764* (Moscow, 1983)
- Iushkevich, Amvrosii, 'Slovo v vysochaishii den' rozhdeniia blagochestiveishiiia samoderzhavneishiiia velikiia gosudaryni nasheia imperatritsy Elisavety Petrovny', in S.I. Nikolaev (ed.), *Petr I v russkoi literature XVIII veka. (Teksty i kommentarii)*, St Petersburg., 2006), pp. 123–34
- Jaeger, Susanne, *Alexander S. Stroganov (1733–1811). Sammler und Mäzen im Russland der Aufklärung* (Cologne and Weimar, 2007)
- Johns, Adrian, *The Nature of the Book: Print and Knowledge in the Making* (Chicago and London, 1998)
- Jones, Matthew L., *The Good Life in the Scientific Revolution: Descartes, Pascal, Leibniz, and the Cultivation of Virtue* (Chicago and London, 2006)
- Kahan, Arcadius, 'The Costs of "Westernization" in Russia: The Gentry and the Economy in the Eighteenth Century', *Slavic Review*, 25/1 (1966), pp. 40–66
- Kaldor, Ivan L., 'The Genesis of the Russian *Grazhdanskii Shrift* or Civil Type – Part I', *Journal of Typographic Research*, 3 (1969), pp. 315–44

- Keenan, Paul R., *St Petersburg and the Russian Court, 1703–1761* (Houndmills, Basingstoke, 2013)
- Kenny, Neil, *The Uses of Curiosity in Early Modern France and Germany* (Oxford, 2004)
- Keuten, Alla, 'K istorii russkikh i nemetskikh *Primechanii k Vedomostiam* (1728-1742)', *Russian Literature*, 75/1–4 (2014), pp. 265–304
- Khoteev, P. I., 'Russkie studenty v universitetakh Germanii v pervoi polovine XVIII veka', *XVIII vek*, 24/24 (2006), pp. 71–81
- Kiselev, Mikhail, 'Razvitie samosoznaniia "dvorianskogo sosloviia" v pervoi treti XVIII v. i mezhdutsarstvie 1730 g.: "shliakhetstvo" ili "famil'nye i shliakhetstvo"?' in N.N. Petrukhintsev and L. Erren (eds.), *Praviashchie elity i dvorianstvo Rossii vo vremia i posle petrovskikh reform* (Moscow, 2013), pp. 284–319
- Kivelson, Valerie A., *Cartographies of Tsardom: The Land and its Meanings in Seventeenth-century Russia* (Ithaca, 2006)
- "Between All Parts of the Universe": Russian Cosmographies and Imperial Strategies in Early Modern Siberia and Ukraine', *Imago Mundi*, 60/2 (2008), pp. 166–81
- *Desperate Magic. The Moral Economy of Witchcraft in Seventeenth-Century Russia* (Ithaca and London, 2013)
- and Jonathan Shaheen, 'Prosaic Witchcraft and Semiotic Totalitarianism: Muscovite Magic Reconsidered', *Slavic Review*, 70/1 (2011), pp. 23–44
- Klein, Lawrence E., 'Politeness and the Interpretation of the British Eighteenth Century', *The Historical Journal*, 45/4 (2002), pp. 869–98
- Kniazev, G. A and K. I. Shafranovskii, 'Akademicheskaiia gazeta 1727 g.', in A.A. Moiseeva, A.I. Kopanov and A.N. Stepanov (eds.), *Sbornik statei i materialov biblioteki AN SSSR po knigovedeniiu* (Leningrad, 1970), 139–53
- Knight, Christopher C., 'Natural Theology and the Eastern Orthodox Tradition', in R. Re Manning (ed.), *The Oxford Handbook of Natural Theology* (Oxford, 2013), pp. 213–26
- Kochetkova, N. D., 'K istorii perevoda N. N. Popovskogo poemu A. Popa "Opyt o cheloveke" (Ranniaia redaktsiia)', *XVIII vek*, 23 (2004), pp. 306–37
- Kolmakov, N. M., 'Dom i familiia grafov Strogonovykh, 1752–1887 gg.', *Russkaia starina*, 53 (1887), pp. 575–602
- Kopelevich, Iudif' Khaimovna, *Osnovanie Peterburgskoi Akademii nauk* (Leningrad, 1977)
- 'Pervaia zagranichnaia komandirovka peterburgskogo akademika (iz zapisok G.F. Millera o ego puteshestvii 1730–1731 gg.)', *Voprosy istorii estestvoznaniia i tekhniki*, 2 (43) (1973), pp. 47–52

- ‘Zabytye stranitsy “Primechanii na Vedomosti”’, in E.P. Karpeev (ed.), *Nauka i kultura Rossii XVIII v.* (Leningrad, 1984), pp. 38–51
- Kosmolinskaia, Galina, ‘Tsenzura v Moskovskom universitete XVIII veka (“donovikovskii” period)’, in R. Bartlett and G. Lehmann-Carli (eds.), *Eighteenth-Century Russia: Society, Culture, Economy* (Berlin, 2007), pp. 139–55
- Kostin, Andrei and Tatiana Kostina, ‘Reglament Gimnazii pri Imperatorskoi akademii nauk v Sankt-Peterburge Georga Vol’fganga Krafta 1739 goda i ego podgotovka’, in I. Fedyukin and M. Lavrinovich (eds.), ‘Reguliarnaia akademiia uchrezhdена budet...’: *Obrazovatel’nye proekty v Rossii v pervoi polovine XVIII veka* (Moscow, 2014), pp. 218–62
- Kostina, Tatiana, ‘K voprosu o chislennosti i statuse pervykh akademicheskikh studentov v Peterburge (1725–1732 gg.)’, *Vestnik PSTGU. II Istorii*, 68/1 (2016), pp. 32–44
- Krasheninnikov, Stepan Petrovich, *Opisanie zemli Kamchatki, s prilozheniem raportov, doneseni i drugikh neopublikovannykh materialov*, eds. L.S. Berg, A.A. Grigor’ev and N.N. Stepanov (Moscow, 1949)
- ‘Rech’ o pol’ze nauk i khudozhestv, chitannaia Stepanom Krasheninnikovym, botaniki i istorii natural’noi professorom v publichnom akademicheskome sobranii sentiabria 6 dnia, 1750 godu’, in *S.P. Krasheninnikov v Sibiri. Neopublikovannye materialy* (Moscow, 1966), pp. 225–40
- Kutina, Lidia L., *Formirovanie iazyka russkoi nauki (terminologii matematiki, astronomii, geografii v pervoi treti XVIII veka)* (Moscow and Leningrad, 1964)
- *Formirovanie terminologii fiziki v Rossii. Period predlomonosovskii: pervaiia tret’ XVIII veka* (Moscow and Leningrad, 1966)
- Lafuente, Antonio, ‘Enlightenment in an Imperial Context: Local Science in the Late-Eighteenth-Century Hispanic World’, *Osiris* (2000), pp. 155–73
- Lamanskii, V. I. (ed.), ‘Doklad Sinoda Gosudaryne na Lomonosova’, *ChOIDR*, 1/5 (1865), pp. 59–61
- Larina, Iana, ‘Osmyslenie roli obrazovaniia v gosudarstvennom stroitel’stve: proekty Genrikha Fika pervoi chetverti XVIII veka’, in I. Fedyukin and M. Lavrinovich (eds.), ‘Reguliarnaia akademiia uchrezhdена budet...’: *Obrazovatel’nye proekty v Rossii v pervoi polovine XVIII veka* (Moscow, 2014), pp. 70–97
- Leckey, Colum, *Patrons of Enlightenment: The Free Economic Society in Eighteenth-Century Russia* (Newark, 2011)
- Lemny, Ștefan, *Les Cantemir: l’aventure européenne d’une famille princière au XVIIIe siècle* (Paris, 2009)

- Levin, Eve, 'Muscovy and Its Mythologies: Pre-Petrine History in the Past Decade', *Kritika: Explorations in Russian and Eurasian History*, 12/4 (2011), pp. 773–88
- Lifschitz, Avi S., 'The Arbitrariness of the Linguistic Sign: Variations on an Enlightenment Theme', *Journal of the History of Ideas*, 73/4 (2012), pp. 537–57
- Lipski, Alexander, 'The Foundation of the Russian Academy of Sciences', *Isis*, 44/4 (1953), pp. 349–54
- 'A Re-Examination of the "Dark Era" of Anna Ioannovna', *Slavic Review*, 15/4 (1956), pp. 477–88
- Lomonosov, Mikhailo, *Polnoe sobranie sochinenii*, eds. S.I. Vavilov and T.P. Kravets (11 vols, Moscow and Leningrad, 1950–83)
- Lotman, Iurii, 'Poetika bytovogo povedeniia v russkoi kul'ture XVIII veka', in *Izbrannye stat'i v trekh tomakh*, i: *Stat'i po semiotike i tipologii kul'tury* (Tallinn, 1992), pp. 248–68
- Lukicheva, E.V., 'Fedor Polikarpov – perevodchik "Geografii general"noi' Bernarda Vareniiia', 9 (1974), pp. 289–96
- Luppov, Sergei P., *Kniga v Rossii v pervoi chetverti XVIII veka* (Leningrad, 1973)
- *Kniga v Rossii v poslepetrovskoe vremia* (Leningrad, 1976)
- Luyendijk-Elshout, Antonie M, 'Death Enlightened: A Study of Frederik Ruysch', *JAMA: The Journal of the American Medical Association*, 212/1 (1970), pp. 121–6
- Lynn, Michael R., *Popular Science and Public Opinion in Eighteenth-Century France* (Manchester, 2006)
- Maiellaro, Gina, 'Perepiska kn. A. D. Kantemira s sestroi Mariei na ital'ianskom iazyke. 1734–1744 gg.', in D. Rizze and A. Shishkin (eds.), *Archivio Italo-russo. II* (Salerno, 2002), pp. 25–01
- Maikov, L. N., 'Kniazhna Mariia Kantemirova', *Russkaia starina*, 89–91/1, 3, 6, 8 (1897), pp. 49–69
- (ed.), *Materialy dlia biografii kniazia A.D. Kantemira* (St Petersburg, 1903)
- Maierov, Iu. I., 'Fontenel' i ego "Razgovory o mnozhestve mirov"', *Iaroslavskii Pedagogicheskii Vestnik*, 3 (15) (1998), pp. 42–8
- Maksimovič-Ambodik, Nestor, *Emvlemy i simvoly (1788): The First Russian Emblem Book*, ed. A. Hippisley (Leiden, New York, Copenhagen, and Cologne, 1989)
- Manfredi, Martina, 'Jacopo Amigoni: A Venetian Painter in Georgian London', *The Burlington Magazine*, 147/1231 (2005), pp. 676–9
- Marker, Gary, 'Russia and the "Printing Revolution": Notes and Observations', *Slavic Review*, 41/2 (1982), pp. 266–83

- *Publishing, Printing, and the Origins of Intellectual Life in Russia, 1700-1800* (Princeton, 1985)
- Marrese, Michelle Lamarche, “‘The Poetics of Everyday Behavior’ Revisited: Lotman, Gender, and the Evolution of Russian Noble Identity’, *Kritika: Explorations in Russian and Eurasian History*, 11/4 (2010), pp. 701–39
- Martin, David L., *Curious Visions of Modernity: Enchantment, Magic, and the Sacred* (Cambridge, MA and London, 2012)
- McClellan, James E., *Science reorganized : scientific societies in the eighteenth century* (New York, 1985)
- McDowell, Paula, ‘Of Grubs and Other Insects: Constructing the Categories of “Ephemera” and “Literature” in Eighteenth-Century British Writing’, *Book History*, 15/1 (2012), pp. 48–70
- Menshutkin, Boris N., *Russia’s Lomonosov: Chemist, Courtier, Physicist, Poet* (Princeton, 1952)
- Miller, David B., ‘The Orthodox Church’, in M. Perkins (ed.), *The Cambridge History of Russia. i: From Early Rus’ to 1689* (Cambridge, 2006), pp. 338–59
- Modzalevskii, L. B., ‘Lomonosov i ego uchenik Popovskii (O literaturnoi preemstvennosti)’, *XVIII vek*, 3 (1958), pp. 111–69
- Moiseeva, G. N., ‘Neizvestnaia povest’ pervoi poloviny XVIII v.’, *Trudy Otdela drevnerusskoi literatury*, 13 (1957), pp. 519–40
- *Russkie povesti pervoi treti XVIII veka* (Moscow and Leningrad, 1965)
- Mokyr, Joel, *The Gifts of Athena: Historical Origins of the Knowledge Economy* (Princeton and Oxford, 2002)
- Morozova, S. V., ‘Kalendari i mesiatseslovy Peterburgskoi akademii nauk kak prosvetitel’skii proekt’, *Istoriia Peterburga*, 1 (47) (2009), pp. 44–53
- Murav’eva, L. R., ‘Problema tak nazyvaemoi “deviatoi” satiry A.D. Kantemira’, *XVIII vek*, 5 (1962), pp. 153–78
- Nashchokin, Vasilii, ‘Zapiski’, in V. Naumov (ed.), *Imperiia posle Petra. 1725–1765* (Moscow, 1998), pp. 291–384
- Neustroev, A. N., *Istoricheskoe rozyskanie o russkikh povremennykh izdaniiax i sbornikakh za 1703–1802 gg.* (St Petersburg, 1875)
- Nevskaia, Nina Ivanovna, *Peterburgskaia astronomicheskaia shkola XVIII v.* (Leningrad, 1984)
- “‘Primechaniia na Vedomosti’ kak nauchnyi zhurnal’, in E.P. Karpeev (ed.), *Nauka i kultura Rossii XVIII v.* (Leningrad, 1984), pp. 5–37

- *Istochniki po istorii astronomii Rossii XVIII v.* (St Petersburg, 2000)
- and Iudif' Khaimovna Kopelevich (eds.), *Letopis' Rossiiskoi Akademii nauk. i: 1724–1802* (St Petersburg, 2000)
- Nicolaidis, Efthymios, Eudoxie Delli, Nikolaos Livanos, Kostas Tampakis and George Vlahakis, 'Science and Orthodox Christianity: An Overview', *Isis*, 107/3 (2016), pp. 542–66
- Nikolaev, S. I., 'O stilisticheskoi pozitsii russkikh perevodchikov petrovskoi epokhi (k postanovke voprosa)', *XVIII vek*, 15 (1986), pp. 109–22
- 'Materialy dlia bibliografii sochinenii A.D. Kantemira i literatury o nem (1966–2010)', *XVIII vek*, 26 (2011), pp. 540–64
- Nikolosi, Riccardo, 'Mikrokosm novogo: Kunstkamera, Peterburg i simvolicheskii poriadok Petrovskoi epokhi', trans. T. Lastovka,, in E.V. Anisimov (ed.), *Petr Velikii* (Moscow, 2007), pp. 156–74
- Novlianskaia, M. G., *Ivan Kirilovich Kirilov. Geograf XVIII veka* (Moscow and Leningrad, 1964)
- *Daniil Gotlib Messerschmidt i ego raboty po issledovaniuu Sibiri* (Leningrad, 1970)
- Obshchii gerbovnik dvorianskikh rodov Vserossiiskii Imperii, nachaty v 1797 godu*, iii (10 vols., [St Petersburg], 1803–40)
- Okenfuss, Max J, 'Technical Training in Russia under Peter the Great', *History of Education Quarterly*, 13/4 (1973), pp. 325–45
- Ong, Walter J., *Orality and Literacy: The Technologizing of the Word* (London, 2002)
- Ospovat, Kirill, 'Lomonosov i "Pis'mo o pol'ze stekla": Poeziia i nauka pri dvore Elizavety Petrovny', *Novoe Literaturnoe Obozrenie*, 87 (2007), pp. 148–83
- 'Estetika Sumarokova: K sotsial'nym izmereniiam literaturnoi refleksii', in R. Vroon (ed.), *Ody torzhestvennyia. Elegii liubovnyia* (Moscow, 2009), pp. 498–552
- 'Gosudarstvennaia slovesnost': Lomonosov, Sumarokov i literaturnaia politika I.I. Shuvalova v kontse 1750-kh gg.', in P. Pesonen, G. Obatnin and T. Huttunen (eds.), *Evropa v Rossii: Sbornik statei* (Moscow, 2010), pp. 6–65
- 'Mikhail Lomonosov Writes to his Patron: Professional Ethos, Literary Rhetoric and Social Ambition', *Jahrbücher für Geschichte Osteuropas*, 59/2 (2011), pp. 240–66
- Ostrovitianov, Konstantin, *Istoriia Akademii nauk SSSR* (Leningrad, 1958)
- Park, Katharine and Lorraine J. Daston, *Wonders and the Order of Nature, 1150–1750* (New York, 1998)

- ‘Introduction. The Age of the New’, in K. Park and L.J. Daston (eds.), *The Cambridge History of Science*, iii: *Early Modern Science* (Cambridge, 2006), pp. 1–17
- Pasquier, Du, Louis Gustave, *Léonard Euler et ses amis* (Paris, 1927)
- Pavlenko, N. I., *Petr II* (Moscow, 2006)
- Pekarskii, Petr Petrovich, *Nauka i literatura v Rossii pri Petre Velikom* (2 vols., St Petersburg, 1862–3)
- ‘Dopolnitel’nyia izvestiia dlia biografii Lomonosova’, *Zapiski Imperatorskoi Akademii nauk*, 8 (1865)
- *Istoriia Imperatorskoi akademii nauk v Peterburge* (2 vols., St Petersburg, 1870–3)
- Petrukhintsev, N. N., ‘Konsolidatsiia dvorianskogo sosloviia i problemy formirovaniia oformliaiushchei ego terminologii’, in N.N. Petrukhintsev and L. Erren (eds.), *Praviashchie elity i dvorianstvo Rossii vo vremia i posle petrovskikh reform* (Moscow, 2013), pp. 256–83
- Pis’ma russkikh pisatelei XVIII veka* (Leningrad, 1980)
- Pisarenko, Konstantin (ed.), ‘Iz semeinoi khroniki roda Stroganovykh. Pis’ma barona A.S. Stroganova otsu iz-za granitsy. 1752–1756 gg.’, *Rossiiskii arkhiv*, xiv (2005), pp. 9–70
- Pisarenko, Konstantin (ed.), ‘Pis’mo A.P. Bestuzheva-Riumina synu A.A. Bestuzhevu-Riuminu’, *Rossiiskii arkhiv*, xiv (2005), pp. 92–110
- Pissis, Nikolas, ‘Dimitrie Cantemir, the Monarchia Borealis and the Petrine Instauration’, *Working Paper des SFB 980 Episteme in Bewegung*, 4 (2015)
- Pis’ma i bumagi Imperatora Petra Velikago* (13 vols., St Petersburg and Moscow, 1887–2003)
- Pogosjan, Jelena, “Desekuliarizatsiia” ofitsial’nogo kalendaria v pravlenie Elizavety Petrovny’, in M.O. Chudakova (ed.), *Tynianovskii sbornik. Vypusk 13. Dvenadtsatye–Trinadtsatye–Chetyrnadtsatye Tynianovskie Chteniia. Issledovaniia. Materialy* (Moscow, 2009), pp. 11–28
- *Petr I – arkhitektor rossiiskoi istorii* (St Petersburg, 2001)
- Pol’skoi, Sergei V., ‘Dvor i “pridvornoe obshchestvo” v poslepetrovskoi Rossii’, in N.N. Petrukhintsev and L. Erren (eds.), *Praviashchie elity i dvorianstvo Rossii vo vremia i posle petrovskikh reform* (Moscow, 2013), pp. 320–67
- Polnoe sobranie russkikh letopisei, izdannoe po vysochaishemu povelenniu arkheograficheskoiu kommissiei. iii: IV. Novgorodskii letopisi* (St Petersburg, 1841)

- Polonskii, D. G., 'Pervyi russkii pechatnyi pis'movnik i ego rol' v formirovanii epistoliarnoi kul'tury Novogo vremeni', in *Starodruky i ridkisni vydannia v universytetskii bibliotetsi: Materialy II mizhnarodnykh knygoznavchykh chytan (Odesa, veresnia 2012 r.)* (Odessa, 2013), pp. 244–60
- Poroshin, Semen Andreevich, 'Zapiski, sluzhashchie k istorii velikogo kniazia Pavla Petrovicha', in A. Skorobogatov (ed.), *Russkii Gamlet* (Moscow, 2004)
- Principe, Lawrence M., 'The End of Alchemy? The Repudiation and Persistence of Chrysopoeia at the Académie Royale des Sciences in the Eighteenth Century', *Osiris*, 29/1 (2015), pp. 96–116
- Pumpianskii, L. V., 'Ocherki po literature pervoi poloviny XVIII veka', *XVIII vek*, 1 (1935), pp. 83–132
- Radovskii, M. I., *Antiokh Kantemir i peterbugskaia Akademiia nauk* (Moscow and Leningrad, 1959)
- Raeff, Marc, 'The Well-Ordered Police State and the Development of Modernity in Seventeenth-And Eighteenth-Century Europe: An Attempt at a Comparative Approach', *The American Historical Review*, 80/5 (1975), pp. 1221–43
- 'Seventeenth-Century Europe in Eighteenth-Century Russia? (Pour prendre congé du dix-tième siècle russe)', *Slavic Review*, 41 (1982), pp. 611–9
- *The Well-Ordered Police State: Social and Institutional Change Through Law in the Germanies and Russia, 1600–1800* (New Haven, 1983)
- Raikov, Boris E., *Ocherki po istorii geliotsentricheskogo mirovozzreniia v Rossii: iz proshlogo russkogo estestvoznaniia* (2nd ed., Moscow, 1947)
- Rieber, Alfred J., 'Politics and Technology in Eighteenth-Century Russia', *Science in Context*, 8/2 (1995), pp. 341–68
- Riskin, Jessica, 'The Lawyer and the Lightning Rod', *Science in Context*, 12/01 (1999), pp. 61–99
- Roberts, Lissa, 'Situating Science in Global History: Local Exchanges and Networks of Circulation', *Itinerario*, 33/1 (2009), pp. 9–30
- Rogov, Kirill, 'Tri epokhi russkogo barokko', in M.O. Chudakova (ed.), *Tynianovskii sbornik. Desiatye – Odinnadtsatye – Dvenadtsatye Tynianovskie chteniia. Issledovaniia. Materialy.* (Moscow, 2006), pp. 9–101
- Ruffin, J. Rixey, "'Urania's Dusky Vails': Heliocentrism in Colonial Almanacs, 1700-1735', *The New England Quarterly*, 70/2 (1997), pp. 306–13

- Ryan, William Francis, 'Astronomy in Church Slavonic: Linguistic aspects of cultural transmission', in *The Formation of the Slavonic Literary Languages*, 1985, pp. 53–60
- 'Scientific Instruments in Russia from the Middle Ages to Peter the Great', *Annals of Science*, 48/4 (1991), pp. 367–84
- *The Bathhouse at Midnight. An Historical Survey of Magic and Divination in Russia* (Stroud, 1999)
- Sashalmi, Endre, 'The Frontispiece of Peter the Great's *Simvoly i Emblemata* (1705): An Iconographical Analysis', *Canadian-American Slavic Studies*, 47/4 (2013), pp. 459–72
- Schaffer, Simon, 'The Show That Never Ends: Perpetual Motion in the Early Eighteenth Century', *The British Journal for the History of Science*, 28/2 (1995), pp. 157–89
- Schiffer, Michael Brian, *Draw the Lightning Down: Benjamin Franklin and Electrical Technology in the Age of Enlightenment* (Berkeley, CA, 2003)
- Schönle, Andreas and Andrei Zorin, 'Introduction', in A. Schönle, A. Zorin and A. Evstratov (eds.), *The Europeanized Elite in Russia, 1762–1825: Public Role and Subjective Self* (DeKalb, IL, 2016), pp. 1–22
- Schulze, Ludmilla, 'The Russification of the St. Petersburg Academy of Sciences and Arts in the Eighteenth Century', *British Journal for the History of Science*, 18/3 (1985), pp. 305–35
- Semevskii, M. I. (ed.), *Arkhiv kniazia F.A. Kurakina* (10 vols., St Petersburg, 1890–1902)
- Secord, James A., 'Knowledge in Transit', *Isis*, 95/4 (2004), pp. 654–72
- Serman, I. Z., 'Kantemir et le problem du contexte dans le mouvement littéraire russe du XVIII siècle', *Studies on Voltaire and the Eighteenth Century*, 193 (1980), pp. 1644–6
- 'Antiokh Kantemir i Franchesko Al'garotti', *XVIII vek*, 21 (1999)
- Shamrai, D. D., 'Tsenzurnyi nadzor nad tipografiei Sukhoputnogo shliakhetnogo kadetskogo korpusa', *XVIII vek*, 2 (1940), pp. 293–329
- Shank, J. B., 'Neither Natural Philosophy, Nor Science, Nor Literature. Gender, Writing, and the Pursuit of Nature in Fontenelle's *Entretiens sur la pluralité des mondes habités*', in J.P. Zinsser (ed.), *Men, Women, and the Birthing of Modern Science* (DeKalb, IL, 2005), pp. 86–109
- Shapin, Steven and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton, 2011)
- Shaw, Denis J. B., 'Russia's Geographical Environment', in M. Perkins (ed.), *The Cambridge History of Russia, i: From Early Rus' to 1689* (Cambridge, 2006), pp. 19–43

- ‘Towns and Commerce’, in M. Perkins (ed.), *The Cambridge History of Russia, i: From Early Rus’ to 1689* (Cambridge, 2006), pp. 298–316
- ‘Urban Developments’, in M. Perkins (ed.), *The Cambridge History of Russia, i: From Early Rus’ to 1689* (Cambridge, 2006), pp. 579–99
- ‘Utility in Natural History: Some Eighteenth-century Russian Perceptions of the Living Environment’, *Istoriko-biologicheskie issledovaniia*, 2/4 (2010), pp. 35–50
- Shevchenko, Ihor, ‘Remarks on the Diffusion of Byzantine Scientific and Pseudo-scientific Literature Among the Orthodox Slavs’, *The Slavonic and East European Review*, 59/3 (1981), pp. 321–45
- Shkliar, I. V., ‘Formirovanie mirovozzreniia Antiokha Kantemira’, *XVIII vek*, 5 (1962), pp. 129–52
- Simonov, R. A., ‘Rossiiskie pridvornye “matematiki” XVI–XVII vekov’, *Voprosy istorii*, 1 (1986), pp. 76–84
- Slezkine, Yuri, ‘Naturalists Versus Nations: Eighteenth-Century Russian Scholars Confront Ethnic Diversity’, *Representations*, 47 (1994), pp. 170–95
- Slovar’ russkogo iazyka XVIII veka* (21 vols., Leningrad/St Petersburg, 1984–2015)
- Smagina, Galina and Maiia Lavrinovich, ‘Uchilsia li imperator Petr II i chemu? “Raspolozhenie uchenii imperatora Petra II” v politicheskom i akademicheskom kontekstakh epokhi’, in I. Fedyukin and M. Lavrinovich (eds.), *‘Reguliarnaia akademiia uchrezhdена budet...’: Obrazovatel’nye proekty v Rossii v pervoi polovine XVIII veka* (Moscow, 2014), pp. 127–75
- Somov, V. A., ‘Krug chteniia peterburgskogo obshchestva v nachale 1760-kh godov. (Iz istorii biblioteki grafa A. S. Stroganova)’, *XVIII vek*, 22 (2002), pp. 200–34
- Speranskii, M. M. (ed.), *Polnoe sobranie zakonov Rossiiskoi Imperii s 1649 goda* (45 vols., St Petersburg, 1830)
- Staniukovich, T. N., *Kunstkamera Peterburgskoi Akademii nauk* (Moscow, 1953)
- Steller, Georg Wilhelm, *Steller’s History of Kamchatka: Collected Information Concerning the History of Kamchatka, Its Peoples, Their Manners, Names, Lifestyle, and Various Customary Practices*, ed. M.W. Falk (Fairbanks, AL, 2003)
- Stewart, Larry, ‘Other Centres of Calculation, Or, Where the Royal Society Didn’t count: commerce, coffee-houses and natural philosophy in early modern London’, *British Journal for the History of Science*, 32/2 (1999), pp. 133–54
- Struve, V. Ia., ‘O rukopisi astronoma Delilia, prinesennoi v dar Russkomu Geograficheskomu Obshchestvu, chlenom onago kniazem I. A. Dolgorukovym’, *Zapiski Russkago Geograficheskago Obshchestva*, 3 (1849), pp. 50–67

- Sukhomlinov, M. I. (ed.), *Materialy dlia istorii Imperatorskoi Akademii nauk* (10 vols., St Petersburg, 1885–1900)
- Sutton, Geoffrey V., *Science for a Polite Society: Gender, Culture, and the Demonstration of Enlightenment* (Boulder, CO and Oxford, 1995)
- Sviatskii, D. O., ‘Ocherki istorii astronomii v Drevnei Rusi. Chast’ III’, *Istoriko-
astronomicheskie issledovaniia*, 9 (1966), pp. 13–24
- Svodnyi katalog russkoi knigi grazhdanskoi pečati XVIII veka. 1725–1800* (6 vols., Moscow, 1962–75)
- Sysyn, Frank E., ‘Peter Mohyla and the Kiev Academy in Recent Western Works: Divergent Views on Seventeenth-Century Ukrainian Culture’, *Harvard Ukrainian Studies*, 8/1–2 (1984), pp. 155–87
- Tatishchev, Vasilii, *Razgovor o pol’ze nauk i uchilishch*, ed. N. Popov (Moscow, 1887)
- Thaden, Edward C., ‘V. N. Tatishchev, German Historians, and the St. Petersburg Academy of Sciences’, *Russian History*, 13/1 (1986), pp. 367–98
- Tiulichev, D. V., ‘Tsenzura izdaniia Akademii nauk v XVIII v.’, in A.A. Moiseeva, A.I. Kopanov and A.N. Stepanov (eds.), *Sbornik statei i materialov biblioteki AN SSSR po knigovedeniiu* (Leningrad, 1970), 71–114
- Tolstoi, D. A., *Akademicheskaiia gimnaziia v XVIII stoletii* (St Petersburg, 1885)
- Tonkova, R. M., ‘K istorii peterburgskikh teatrov. Pechatanie “tsettelei” (afish) v tipografii Akademii nauk s 1727 po 1771 god’, *XVIII vek*, 4 (1959), pp. 385–94
- Topham, Jonathan R., ‘Introduction’, *Isis*, 100/2 (2009), pp. 310–8
- Trediakovskii, Vasilii, *Sochineniia i perevody kak stikhami, tak i prozoiu*, ed. N.Iu. Alekseeva (Moscow, 2009)
- Trevor-Roper, Hugh, ‘Dimitrie Cantemir’s *Ottoman History* and its Reception in England’, in *History and the Enlightenment* (New Haven, 2010), pp. 54–70
- Troitskii, S. M., *Finansovaia politika russkogo absoliutizma v XVIII veke* (Moscow, 1956)
- Tsapina, Olga Aleksandrovna, ‘Voiny za Prosveshchenie? Moskovskii universitet i dukhovnaia tsenzura v kontse 50-kh - nachale 70-kh gg. XVIII v.’, in R. Bartlett and G. Lehmann-Carli (eds.), *Eighteenth-Century Russia: Society, Culture, Economy* (Berlin, 2007), pp. 157–71
- Turbin, S. I., ‘Artemii Petrovich Volynskii. Materialy dlia ego biografii (1711–1718).’, *Russkaia starina*, 3 (1872), pp. 934–51
- Usitalo, Steven A., *Invention of Mikhail Lomonosov: A Russian National Myth* (Boston, 2013)

- Uspenskii, Boris A. and Andrei Shishkin, 'Trediakovskii i iansenisty', *Simvol*, 23 (1990), pp. 105–261
- Utkina, Nina Fedorovna, *Estestvennonauchnyi materializm v Rossii XVIII veka* (Moscow, 1971)
- Valkova, Olga, 'Les avant-propos des journaux savants et littéraires russes au XVIIIe siècle: étude d'un genre', *Archives Internationales d'Histoire des Sciences*, 63/170–171 (2013), pp. 121–41
- Vucinich, Alexander S., *Science in Russian Culture: A History to 1860* (London, 1963)
- Wakefield, Andre, *The Disordered Police State: German Cameralism as Science and Practice* (Chicago, 2009)
- Walters, Alice N., 'Conversation Pieces: Science and Politeness in Eighteenth-Century England', *History of Science*, 35/108 (1997), pp. 121–54
- Weber, William, 'Handel's London – Social, Political and Intellectual Contexts', in D. Burrows (ed.), *The Cambridge Companion to Handel* (Cambridge, 1997), pp. 45–54
- Werrett, Simon, *Fireworks: Pyrotechnic Arts and Sciences in European History* (Chicago and London, 2010)
- 'The Schumacher Affair: Reconfiguring Academic Expertise across Dynasties in Eighteenth-Century Russia', *Osiris*, 25/1 (2010), pp. 104–26
- Whitaker, Katie, 'The Culture of Curiosity', in N. Jardine, J.A. Secord and E.C. Spary (eds.), *Cultures of Natural History* (Cambridge, 1996), pp. 75–90
- Wolff, Christian, *Briefe von Christian Wolff aus den Jahren 1719–1753 ein Beitrag zur Geschichte der Kaiserlichen Akademie der Wissenschaften zu St. Petersburg* (St Petersburg, 1860)
- Wrightson, Nick, "[Those with] Great Abilities Have Not Always the Best Information": How Franklin's Transatlantic Book-Trade and Scientific Networks Interacted, ca. 1730–1757', *Early American Studies: An Interdisciplinary Journal*, 8/1 (2009), pp. 94–119
- Wulf, Andrea, *Chasing Venus: The Race to Measure the Heavens* (London, 2013)
- Zamkova, V. V., 'Fizicheskaia terminologiiia v "Vol"fianskoi eksperimental'noi fizike' M.V. Lomonosova', in I.S. Sorokin (ed.), *Materialy i issledovaniia po leksike russkogo iazyka XVIII veka* (Moscow and Leningrad, 1965), pp. 87–115
- Zhivov, Viktor, 'Azbuchnaia reforma Petra I kak semioticheskoe preobrazovanie', in I. Lotman (ed.), *Semiotika prostranstva i prostranstvo semiotiki* (Tartu, 1986), pp. 54–67.
- *Iz tserkovnoi istorii vremen Petra Velikogo* (Moscow, 2004)
- *Language and Culture in Eighteenth-Century Russia*, trans. M.C. Levitt (Boston, 2009)

- ‘Vremia i ego sobstvennik v Rossii rannego Novogo vremeni (XVII–XVIII veka)’, in V. Zhivov (ed.), *Ocherki istoricheskoi semantiki russkogo iazyka rannego Novogo vremeni* (Moscow, 2009), pp. 27–100
- Zitser, Ernest A., *The Transfigured Kingdom: Sacred Parody and Charismatic Authority at the Court of Peter the Great* (Ithaca and London, 2004)
- ‘Post-Soviet Peter: New Histories of the Late Muscovite and Early Imperial Russian Court’, *Kritika: Explorations in Russian and Eurasian History*, 6/2 (2005), pp. 375–92
- ‘The Vita of Prince Boris Ivanovich “Korybut”-Kurakin: Personal Life-Writing and Aristocratic Self-Fashioning at the Court of Peter the Great’, *Jahrbücher für Geschichte Osteuropas*, 59/2 (2011), pp. 163–94
- and Robert Collis, ‘On the Cusp: Astrology, Politics, and Life-Writing in Early Imperial Russia’, *The American Historical Review*, 120/5 (2015), pp. 1619–52
- Zorin, Andrei, ‘The Emotional Culture of Moscow Rosicrucians: An Experiment in Alternative Europeanization’, in A. Schönle, A. Zorin and A. Evstratov (eds.), *The Europeanized Elite in Russia, 1762–1825: Public Role and Subjective Self* (DeKalb, IL, 2016), pp. 201–19
- Zuidervaat, Huib J., ‘Science for the Public: The Translation of Popular Texts on Experimental Philosophy Into the Dutch Language in Mid-Eighteenth Century’, in S. Stockhorst (ed.), *Cultural Transfer through Translation: The Circulation of Enlightened thought in Europe by Means of Translation* (Amsterdam and New York, 2010), pp. 231–62

ELECTRONIC RESOURCES

- Library of the Russian Academy of Sciences, *Annotirovannaia bibliografiia izdanii XVIII veka Sankt-Peterburgskoi Akademii nauk i Akademicheskoi tipografii* (St Petersburg, 2002). <http://www.ras.ru/e_resours/ran18/index.html> last accessed 9 March 2017
- Litvinov, V. and I. Pilshchikov (eds.), ‘Ukazatel’ slovoform v “Sobranii stikhotvorenii” A.D. Kantemira’, *Russkaia virtual’naia biblioteka* (2008). <http://rvb.ru/18vek/kantemir/word_index/toc_index.html> last accessed 9 March 2017
- NASA, ‘Lunar Eclipses: 1701 to 1800’, *Five Millenium Catalog of Lunar Eclipses*. <<https://eclipse.gsfc.nasa.gov/LEcat5/LE1701-1800.html>> last accessed 9 March 2017
- Russian National Library, *Knigi na inostrannykh iazykakh, izdannye v Rossii v 18 veke* (2001–2015). <<http://www.nlr.ru/rlin/ruslbr.php?database=RLININXVIII>> last accessed 9 March 2017

THESES

- Fedyukin, Igor, ‘Learning to Be Nobles: The Elite and Education in Post-Petrine Russia’, PhD dissertation, University of North Carolina at Chapel Hill, 2009

- Graber, Anna, 'Tsardom of Rock: State, Society, and Mineral Science in Enlightenment Russia', PhD dissertation, Yale University, 2016
- Griffin, Clare Louise, 'The Production and Consumption of Medical Knowledge in Seventeenth-Century Russia: The Apothecary Chancery', PhD thesis, University College London, 2012
- Koroloff, Rachel, 'The Beginnings of a Russian Natural History: The Life and Work of Stepan Petrovich Krasheninnikov (1711–1755)', MA thesis, Oregon State University, 2007
- 'Seeds of Exchange: Collecting for Russia's Apothecary and Botanical Gardens in the Seventeenth and Eighteenth Centuries', PhD dissertation, University of Illinois at Urbana-Champaign, 2014
- Pogosjan, Jelena, 'Vostorg russkoi ody i reshenie temy poeta v russkom panegirike 1730–1762 gg.', PhD dissertation, Tartu University, 1997
- Smeall, Cheryl Lynn, 'How to Become a Renowned Writer: Francesco Algarotti (1712–1764) and the Uses of Networking in Eighteenth-Century Europe', PhD thesis, McGill University, 2010
- Webster, Elizabeth E., 'American Science and the Pursuit of "Useful Knowledge" in the Polite Eighteenth Century, 1750–1806', PhD dissertation, University of Notre Dame, 2010
- Werrett, Simon, 'An Odd Sort of Exhibition: The St. Petersburg Academy of Sciences in Enlightened Russia', PhD dissertation, University of Cambridge, 2000