Gottfried Leibniz in his World: The Making of a Savant (1672-1679)

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Short abstract

This thesis examines Gottfried Wilhelm Leibniz's early career in its intellectual and social contexts, arguing that his thought must be understood not as the production of an isolated genius but as fundamentally conditioned by the contingencies of his existence as an aspiring scientist and courtier in Mainz (1670-72), Paris (1672-76, with a trip to London in 1673), and Hanover (1676-79). The analysis consists primarily in examining his and his peers' correspondence during those years and shedding light on how Leibniz sought to position himself at the intersection of the political and scientific realms in France and Germany, but also how his various political and scientific projects were perceived by his contemporaries. The thesis is divided into two parts focusing on his time in Paris and Hanover respectively.

Leibniz's five year sojourn in Paris, in particular, was a revelatory and formative experience for him. This part examines how he took advantage of the city's cultural life, moving in multiple intellectual and scientific circles, partaking in the intellectual debates of the time, gathering information, inventing the calculus and his calculating machine, advocating his scientific agenda at court, and promoting both scientific societies and various technological and commercial ventures in the hope—disappointed—of securing a position at the Académie des Sciences.

Leibniz's Parisian period acted as a catalyst through helping spawn a period of innovation upon his move to Hanover in 1677 in the service of Duke Johann Friedrich. The second part of the thesis focuses on how he sought to establish himself as the duke's commercial and technological advisor while pursuing his activities as a 'projector', seeking to implement his various technological, legal, and theological proposals. From Hanover also he used his extensive epistolary network as an instrument for acquiring and disseminating information.

Abstract

This thesis examines Gottfried Wilhelm Leibniz's early career in its intellectual and social contexts, arguing that his thought must be understood not as the production of an isolated genius but as fundamentally conditioned by the contingencies of his existence as an aspiring scientist and courtier in Mainz (1670-72), Paris (1672-76), and Hanover (1676-79). Drawing on Leibniz's and his peers' extensive correspondence in French, Latin, and German—an underutilized resource—I show not only how Leibniz tried (often unsuccessfully) to develop the political skills needed to secure himself a position at the intersection of the political and scientific realms, but also how his various political and scientific projects were perceived by his contemporaries.

Leibniz evolved in a rich historical context and tense political climate, which he sought to navigate as best as he could and turn to his advantage in order to promote his projects. Organized thematically and roughly chronologically, the thesis is divided into two parts. The first focuses on his time in Paris, where he spent much of his time acquiring knowledge in various disciplines, and the second on his early years in Hanover, where he sought to apply this knowledge in various ways.

Part I examines Leibniz's sojourn in Paris, at the time the most sophisticated and advanced centre of European culture. He arrived in Paris in early March 1672 on a diplomatic mission on behalf of his patron, Johann Christian von Boineburg, aiming with his infamous 'Egyptian plan' to divert Louis XIV from his plans for military expansion in Europe. Although ultimately unsuccessful, this mission allowed Leibniz to remain in Paris and take full advantage of the city's intellectual and scientific life. The individual sections in this part highlight the significant aspects of Leibniz's various intellectual and scientific encounters, especially with members of the court and the Académie des Sciences, such as Christiaan Huygens and Pierre-Daniel Huet. In Paris Leibniz also engaged with debates

concerning Cartesianism, the *Querelle des Ancients et Modernes*, and the articulation between science and political power. His attempts—via Jean Chapelain, Louis Ferrand, Pierre de Carcavy, and even Louis XIV's minister Jean-Baptiste Colbert—to secure a position at the Académie on the basis of his mathematical discoveries and calculating machine were ultimately unfruitful.

Although his aspirations were ultimately disappointed, Leibniz's Paris period acted as a catalyst, helping spawn a period of remarkable innovation upon his return to Germany in 1677, promoting technical and commercial ventures that he thought would benefit his employer and the public good—and always seeking practical applications from theoretical knowledge.

Part II examines how Leibniz, recruited by duke Johann Friedrich in Hanover, set out to implement his scientific and political reforms and projects and establish himself as the duke's omnicompetent and indispensable adviser (covering a wide array of topics from technology and science to politics and theology) while broadening his sphere of influence beyond the court as well. After studying Leibniz's relationship with the duke, the thesis proceeds to consider Leibniz's relationships with his fellow 'projectors', such as Johann Daniel Crafft and Joachim Becher, noting how he sought to distinguish himself from them, sometimes duplicitously.

In the years 1676-79 Leibniz expanded his epistolary network, gathering and disseminating information among correspondents such as Christophe Brosseau, Adolf Hansen, Christian Philipp, and Hermann Conring, who are considered in this part. For all its disappointments and unrealized ambitions, the early period examined in my thesis laid the foundation for his later thought and projects. Leibniz's correspondence in these years sheds light on his various coexisting identities and desire to cultivate an 'amphibious' existence simultaneously within and outside the court, combining scientific and philosophical with

political, legal, and diplomatic roles. Epistemological fluidity coincided with a degree of social fluidity, and while fashioning himself as a self-effacing and loyal courtier, Leibniz would often, as the thesis observes, behave in ways contradictory to this image, disregarding the social conventions of courtly hierarchy. Ultimately what Leibniz was promoting with his projects was himself. He was a man on a mission, often at odds with the rest of the court, but seeking—often unsuccesfully—to impose his will and vision within a competitive and mutually exploitative world.

ABBREVIATIONS

A	Leibniz, Gottfried Wilhelm (1923–). *Sämtliche Schriften und Briefe,* ed. Preussische [later Deutsche] Akademie der Wissenshaften, 68 vols. in 8 series to date, Darmstadt [later Berlin]: Reichl [later Akademie Verlag and De Gruyter]. [Cited by series, volume, and page number, e.g., A II, 1: 415. Series II, vol. 1, is cited from the revised 2nd ed., Berlin: Akademie Verlag, 2006.]
Misc. Berl.	Leibniz, Gottfried Wilhelm (1768 [1710]). 'Historia Inventionis Phosphori' [first published in *Miscellanea Berolinensia,* 1710], in *Opera omnia,* ed. Louis Dutens, II, 102–8, Geneva: Fratres de Tournes.

INTRODUCTION

While Leibniz scholarship has been increasing for the past thirty years, it has focused primarily on his philosophical thought, and relatively few attempts have been made to try to relate Leibniz to his time and social and intellectual milieus.[1] Recent scholarship has contributed to the mythologization of Leibniz as a 'great natural genius' who could apply himself with 'equal vivacity' to any field, as Bernard de Fontenelle put it in his *Eloge* of 1717. According to this type of narrative, the full breadth of Leibniz's work and heterogeneous activities can be read in light of an underlying 'unity'.[2] Other approaches have consisted in contrasting his public and private personae, or in interpreting him as esoteric,[3] opportunistic,[4] even Machiavellian.[5] These accounts, while often valid on their own terms, espouse reductive approaches to Leibniz that confine him to a vacuum of ideas without situating him in his social, cultural, or political contexts.

Leibniz is traditionally depicted as a radical rationalist and philosopher who was detached from worldly concerns and impervious to the lot of his fellow men. Although scholarly practice, notably in the history of science, has sought in the past fifty years to break away from such ahistorical interpretations, Leibniz has curiously remained largely immune from this trend. Yet we need to rediscover him within the context of the intellectual effervescence of late seventeenth- and early eighteenth-century European cultural debates, not least because many of the texts on which Leibniz's present reputation are based were not published until long after his death. In fact, in his lifetime and in particular during his

[1]Excellent examples of recent Leibniz scholarship includes Antognazza (2009), Brown (1999), Look (2010), and Nadler (2008).
[2] Antognazza (2009), p. 5.
[3] Russell (1900).
[4] Shepard (2006).
[5] Snyder (2009).

so-called ‘Paris sojourn’ (1672-1676), Leibniz was better known as a diplomat, a lawyer, a theologian, and above all a mathematician than as a philosopher.[6]

This thesis endeavours to rediscover Leibniz as a participant in the learned and courtly communities he frequented in the years 1672-1679—that is, the years of his Paris sojourn and the years immediately following (1676-1679), when he found employment back in Germany at the court of Duke Johann Friedrich of Hanover. Leibniz arrived in Paris in early March 1672 on a diplomatic mission on behalf of his patron, Johann Christian von Boineburg, aiming with his infamous ‘Egyptian plan’ to divert Louis XIV from his plans for military expansion in Europe, as will be examined in the first part of this thesis. Although ultimately unsuccessful, this mission allowed Leibniz to remain in Paris and take full advantage of its intellectual and scientific life at a time when—with the recent creation of several *académies* and the publication of such seminal works as Malebranche’s *De la Recherche de la Vérité* and Boileau’s *Art Poétique*—the city was the most sophisticated and advanced centre of European culture. I shall endeavour to clarify how his visit to Paris constituted an important moment in his development, and to what extent it provided him with a new impulse upon his return to Germany. More broadly, this thesis sets out to examine how those six years impacted him and his work, how they were formative years for him, and how he navigated the various worlds he encountered and with what success. I have chosen the years 1672 and 1679 because they demarcate, respectively, Leibniz’s departure for Paris from Mainz and the death of Duke Johann Friedrich, one of his more supportive patrons.

‘Internalist’ readings tend to isolate the evolution of science and portray its pursuit in terms of a disinterested quest for truth, divorced from mundane or petty concerns.[7] Such assessments tend to divorce the production of ideas from their historical contexts and to

[6] Garber (2009b), p. 281.
[7] See Shapin (1991).

occlude the forces that have helped shape them. In particular, they obscure the complex dynamics at play in the practice of 'normal science'[8] in Leibniz's time. Far from being a solitary activity, science and more broadly the pursuit of knowledge were fundamentally 'dialogical',[9] their progress lying in a constant stream of exchanges, collaboration, and cooperation between like-minded individuals labouring towards the common ideal of 'citizenship of the mind'.[10] In this manner, the constitution of knowledge was inextricably linked to power structures and established norms, both within and outside the Republic of Letters. Much of Leibniz scholarship has steered clear of delving into the social, cultural, and political circumstances that affected the constitution of knowledge. In early modern societies, one's credibility depended largely on one's social status. Although scholars and patrons alike liked to cultivate the image of pure scientific freedom and the unencumbered pursuit of knowledge, the ability to secure patronage and, increasingly from the 1670s onward, attachment to a research institution played a decisive role in scholars' ability to establish themselves on the intellectual map.[11] Even the most disinterested scholar needed to be a courtier to some extent and to adhere carefully to the norms and prescribed conduct of his intellectual community. Thus, far from being 'pure',[12] the pursuit of science and scholarship were heavily conditioned by the social structures in which they were conducted.

Leibniz was an ambiguous figure whose roles and personae, reflecting his various milieus, particular tasks, and personal aspirations, were far from static. His work cannot be read in isolation from those factors. Exploring how he sought to position himself and navigate the different intellectual, scientific, and courtly worlds, this thesis will reveal him

[8] Kuhn (1962).
[9] Blay and Halleux (1998), p. 26.
[10] Fumaroli (2015), p. 73.
[11] Stegeman (2005) examines the patronage of savants.
[12] See Shapin (2010).

to be a man of multiple identities. In particular, I hope to clarify how, in his early career, Leibniz articulated a niche for himself at the intersection of the socio-political and scientific realms. This analysis—based on a more extensive examination than has been attempted previously of his and his peers' correspondence (in French, German and Latin) during the relevant years—cultivates a sensitivity to the many contextually related dimensions that characterized his personality. My examination will be confined primarily to volumes I, 1; I, 2; II, 1; III, 1, and III, 2 of the ongoing standard *Akademie-Ausgabe* (1923–).

In this thesis I shall be attending in particular to the following questions. How did Leibniz establish himself as a young scholar? How was he perceived by his peers? Which social and professional identities did he endorse at the time? To what extent was he a 'projector' and perceived as such? How much flexibility—social, political, and epistemological—was he afforded within the Republic of Letters and the absolutist political realms he frequented? To what extent did his positions as scholar, courtier, and advisor overlap and to what extent did they diverge? How did these multiple roles and identities coexist? What kind of rationality did he propound, and did it bring him in conflict with competing intellectual or scholarly models? What was his own view of the Republic of Letters? How did he understand Colbert's enterprise? To what extent did his intellectual aims overlap with his professional duties? And what ultimately drove his various projects?

Considering the many ambiguities and layers at play, this thesis does not pretend to offer a comprehensive exposition of Leibniz's thought or life in the years 1672–1679, let alone of the Republic of Letters or of the different milieus in which his thought evolved. It does not purport to be exhaustive, but seeks rather to shed light on aspects of Leibniz's life, activities, and modi operandi that have received little or less attention. For this reason, I have excluded or touched only briefly on certain well-trodden topics, including Leibniz's mathematical peregrinations and his formulation of the calculus, his trip to London in 1673,

the details of the elaboration of his calculating machine, his encounter with Spinoza, his dispute with Newton, as well as his project towards theological reconciliation, all of which have been covered extensively by remarkable scholars.[13] Any substantial reiteration on my part would have been largely superfluous. For reasons of space, I have also passed over elements which feature minimally or not at all in the correspondence, such as the University of Paris, the various Parisian political factions operating at the time, and Leibniz's fledging relationship with Bossuet for instance. Crucially, too, the immensity of the *Nachlass*—which for this period alone spans thousands of pages—the time elapsed, and the frequent gaps in information owing to the number of missing letters, notably in Leibniz's Parisian period, rule out producing categorical statements and definitive conclusions. In this thesis, accordingly, I have sought to strike a balance between factual certainty and conjecture, and propose to offer specific observations and tentative conclusions which will, I hope, lay the foundations for future research.

Because the relationship between Leibniz and the Republic of Letters was a reciprocal one, I seek by examining Leibniz also to increase our understanding of the nature and workings of that community. The 'Republic of Letters' refers to a transnational community of scholars in the seventeenth and eighteenth centuries who shared the same passion and belief in the exchange and promotion of knowledge through the deployment of rational methods. Transcending local, national, and even confessional difference, this 'universal auditorium'[14] was governed by principles of reciprocity and obligation and by the ideals of sociability, equality, *politesse*, and *honnêteté*.[15] Each member, at least in theory, had the sense of belonging to a virtual, albeit very real, larger and unified society, especially

[13] This includes Mogens Laerke on Leibniz's relationship with Spinoza, Joseph E. Hofmann on Leibniz's mathematical work in Paris, Philip Beeley on his trip to London, Matthew L. Jones on his building of the calculating machine, and Maria Rosa Antognazza on his lifelong work on theological reconciliation.
[14] Blay and Halleux (1998), p. 25.
[15] See Borowski (2021c).

in times of political turmoil. Such, in any event, is the conventional view of the Republic of Letters, a view that reifies it by interpreting as a stable institution unified by a set of shared principles and values. But my research has affinities with more recent scholarship that resists the seductive appeal of this beautiful and static ideal. In fact, the Republic of Letters in the second half of the seventeenth century was a highly unstable institution—multifarious, conflicted, diversified and hierarchical—and it is important to rediscover its complexity and fluidity to understand better both the institution itself and Leibniz.[16]

This reassessment is all the more important considering Leibniz's increasingly central importance in the Republic of Letters. Even prior to arriving in Paris, Leibniz had established a network of correspondents throughout Europe, many of whom he remained in contact with for the rest of his life. In fact, according to Voltaire, writing decades later in his *Age of Louis XIV*, it was none other than Leibniz, 'perhaps a man of the most universal learning in Europe', who had set in motion the universal network of communication that underpinned this intellectual revolution: 'There was never a more universal correspondence kept between philosophers' than in Leibniz's time.[17] An 'homme de réseaux',[18] Leibniz was known to his peers predominantly through his journal articles and letter-writing. His first publication, in the *Journal des Sçavans* of 25 March 1675, was on the topic of the 'principe de justesse des horloges portatives de son invention'. Perhaps more than any of his contemporaries, Leibniz was a prolific correspondent, and it was above all in letters that he presented himself to his interlocutors.[19] In his letters, which range widely in length and geographical destination and were often circulated beyond their addressees, he presented his views and engaged in discussion on an impressive array of topics spanning the fields of

[16] Goldgar (1995), p. 116. See also Wacquet (1989); Wacquet and Bots (1997); and, on Bayle's attempt to model conduct in the Republic through his *Dictionnaire*, van der Lugt (2016).
[17] Voltaire (1761–81), IX, p. 392.
[18] Bertrand (1999), p. 80.
[19] Gädeke (2005), pp. 263-64, 297; Gädeke (2009), p. 85.

theology, jurisprudence, physics, mathematics, and philosophy. Leibniz's correspondence has rightly been described as an 'integral part of his work',[20] and he continued building his extensive network of correspondents throughout his life. Through this network he kept abreast of the learned world's *nova literaria* (including new publications, projects, and controversies) and other 'curious' topics, such as inventions and scientific discoveries, as well as information about European politics. This not only satisfied his personal need for information, but in being such an active and wiling correspondent, sharing information and assisting his fellow savants, Leibniz so to speak 'performed' his membership of the Republic of Letters.[21]

Crucially, in such an economy of information, letters contained—indeed, constituted—'goods' in themselves,[22] which Leibniz hoped to exchange where they were likely to be valued, and rewarded, the most. By setting up, as we shall see, an effective information network, Leibniz hoped to build his credit and acquire 'social capital' beyond that of his actual position.[23] Consequently, he tended to handle information selectively and strategically,[24] with a view to transcending his often limited official duties and leveraging his growing role within the Republic of Letters into a secure position at court or at the Académie des Sciences. With such an institutional base, combining scholarship with power, Leibniz discerned, he would be better positioned—and have more resources available—to implement his schemes than if he remained merely a savant.[25]

Leibniz is often portrayed as an arch-rationalist: while this is true, it is not the whole story. He inhabited a world in which the intellectual and scientific marketplaces were

[20] Utermöhlen (1977), p. 90.
[21] Gädeke (2020), p. 805.
[22] Troste (2006).
[23] Gädeke (2009), p 86; Gädeke (2005), p. 282.
[24] Gädeke (2005), pp. 292-93. Gädeke distinguishes between problem-, strategy-, and communication-oriented letters, but Leibniz's letters often have all three orientations.
[25] Gädeke (2020), p. 805.

increasingly saturated with 'curiosities', 'marvellous observations', and novel experiments, all which challenged the limits of orthodox rationality.[26] In addition to being a scholar and a courtier, Leibniz operated as a projector. Projectors were generally inventors or entrepreneurs who set out to gain the trust and backing of a powerful patron, such as a ruler or aristocratic investor, for what they claimed would be a prestigious and financially profitable original venture capable of yielding practical benefits.[27] These projects were often highly speculative in nature. As Pamela Smith has argued, this *homo novus* was a 'liminal individual' whose life embodied the 'fluid cultural moment when "science" had not yet achieved its preeminent modern position as the sole legitimator of truth, but instead had to compete with a number of other intellectual pursuits'.[28] Leibniz was keen to instrumentalize this state of pervasive doubt and uncertainty in order to explore the 'realm of possibilities', to reform knowledge, and to advance his own projects, from his 'Egyptian plan' to the production of phosphorus to his scheme outlined in his essay 'Funny Thought'. A more experimental and empirical approach to epistemology and reality seemed to prevail over any logical *a priorism* or static concept of 'truth', and consequently distinctions between rational and irrational thinking, between fact and fiction, could be far from clear-cut: whether a scheme would later be judged illusory or not was contingent upon whether it could be successfully reduced to practice. Only experience would establish whether the seemingly impossible was actually achievable.

Part of my task, then, consists in exploring how Leibniz presented himself within the scholarly and courtly circles he came to frequent in Paris and Hanover, and more generally, how he fashioned various socio-professional identities for himself according to his interlocutor. This exploration will expose the tensions and discrepancies between Leibniz's

[26] Keller (2015).
[27] See Borowski (2021b).
[28] Smith (1994), p. 10.

self-presentation (including possible contradictions among his different socio-professional identities) and his perception by others. What will come more clearly into view as a result will be Leibniz as he sought to advance his scientific, philosophical, and theological agendas, to influence intellectual and political debates in his early years—and as he was known to his contemporaries in his those years, rather than he as he came to be known by later generations (especially after the posthumous publication of some of his most important philosophical and theological writings).

By highlighting the fragmented and precarious nature of his existence in the years 1672–1679, full of false steps and setbacks and disappointments, this thesis seeks to challenge the common presentation of Leibniz as a towering genius. For such an understanding of him bears little resemblance to the complex ways in which he presented himself and his work to his contemporaries or to ways in which he was perceived during his lifetime—the latter being in fact very difficult to gauge. Leibniz did not operate in a vacuum but had to learn to navigate as well as he could a complex historical context and a tense political climate characterized simultaneously by intense plasticity and rigidity on many levels. His various projects were regularly interrupted or deferred, sometimes resumed, often abandoned altogether. His thought and career emerged through, not in isolation from, his social existence: the former could not have emerged as they did without the latter. This thesis therefore endeavours to rediscover Leibniz in the complexity, nuances, and contradictions of that social existence in some of his most formative years.

Following a broadly chronological as well as thematic structure, this thesis is divided into two sections. The first section (1672–1676) examines Leibniz's rapport with his patron Johann Christian Boineburg and his Egyptian plan, and offers an overview of his political and scientific activities in Paris and the various figures he interacted with there (including the French theologian Antoine Arnauld, the orientalist Louis Ferrand, and the Dutch savant

Christiaan Huygens), as well as of Leibniz's involvement in the intellectual and scientific debates of his time (such as Cartesianism, the *Querelle des anciens et des modernes*, and the vision of the Republic of Letters that he sought to promote). The second section (1677–1679) examines how, having failed to infiltrate Colbert's state Republic of Letters—either by funnelling books (such as the much coveted *Abulfeda*) to its highly placed members, or by promising new projects to Pierre de Carcavy, the minister's right-hand man—Leibniz found his way to the court of Johann Friedrich in Hanover, from which he set out, despite his relatively lowly official position, to carve out a sphere of influence for himself, not least as a commercial and technological advisor, intent on securing beneficial and profitable schemes—such as the production of phosphorus—for his employer. This effort was not without some interesting tensions, including with his fellow projectors Johann Daniel Crafft and Joachim Johann Becher, since Leibniz was himself a projector eager to promote his own schemes. As the thesis will show, even while Leibniz was busy creating one of most successful epistolary and information networks of the time, he still hoped to insinuate himself into the Parisian Académie des Sciences.

PART I

1. Leibniz with Boineburg: acquiring a new patron, negotiating contingency

Leibniz's situation was perhaps more precarious than most since, not being the son of a nobleman and lacking both private wealth and a fixed position, his influence was limited. This precariousness made him all the more dependent on his patrons, to whom he remained remarkably faithful, especially in his early years. Without the guidance and support of his patrons, especially in his younger days, Leibniz would probably never have become the towering figure he later became. Leibniz had limited personal resources—such as reputation, wealth, rank, family connections, or high office—but he possessed a wide array of skills to draw on, not least (from 1666) a doctorate in law and licence to practice law. He existed in a relationship of subordination and reciprocal exchange with his patrons, one that was marked by an informal and ongoing process of bargaining and negotiation and whereby, in exchange of material benefits and protection, he provided them with loyalty and service.[29]

It is difficult to overstate the importance of Leibniz's early years at the religiously tolerant court of Catholic Mainz. From 1668 to 1672 he was close to Baron Johann Christian von Boineburg (1622-1672), the former prime minister, who arguably became the most important person in the young man's life—a mentor and patron who, like Leibniz himself, moved between the political and scholarly realms.[30] One of Boineburg's strengths was precisely his ability to gather information and books, as well as to establish connections among scholars and between politicians and scholars, recruiting scholars for political purposes.[31] Eager to participate in the *respublica literaria*,[32] Boineburg cultivated a learned

[29] See Kettering (1986), p. 13.
[30] Paasch (2003) pp. 25-31.
[31] Paasch (2003), pp. 26-27.
[32] Paasch (2003), p. 26.

epistolary network which spanned 'all corners of learned Europe [*ex omnibus Europae doctae angulis*]',[33] helping to circulate the writings of scholars, making his books available to them, and eventually earning him the moniker of 'Employer [of Scholars]' for his patronage of scholars and their activities.[34]

From 1664 to early 1668 Boineburg had been estranged from the archbishop-elector of Mainz, and had even been imprisoned briefly on unsubstantiated charges arising from his sympathies with France.[35] Now reconciled with Johann Philipp von Schönborn, Boineburg was seeking scholars who would help him restore some of his former political dignity. He seems to have taken an instant liking to Leibniz, prizing him for his independence of thought and the novelty of his positions, considering him a 'happy mediator between old and new philosophy',[36] and aligned with many of his own positions. On account of Leibniz's considerable talents—he was a 'man of great Scholarship, accurate judgment and great manpower'[37]—Boineburg tasked him with numerous projects, including some of his 'old desires for which only the right pen was missing'.[38] Boineburg must have felt that he had found in Leibniz the perfect vehicle back into his various employers' good graces and the promotion of his own, especially ecumenical, designs.

Boineburg's assignments often concerned the relationship between religion and philosophy: these included the preparation of a new edition of the Italian humanist Mario Nizolio's A*ntibarbarus*, the composition of the magisterial *Demonstrationes Catholicae* dedicated to theological reconciliation, and Leibniz's defence of the mystery of the Trinity.

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[33] Quoted in Paasch (2003), p. 26.
[34] Quoted in Paasch (2003), p. 26.
[35] See Wiedeburg (1970), p. 96
[36] Boineburg to Conring, 22 April 1670, in Gruber (1745), pp. 1287-88.
[37] Boineburg to Conring, 26 April 1668, in Gruber (1745), pp. 1208-9.
[38] Ueberweg, Frischeisen-Köhler, and Moog (1924), p. 309. Cf. Leibniz to Johann Friedrich, 29 March/8 April 1679, A I, 2: 155: 'il [Boineburg] prenoit encor plaisir de me parler des affaires, et de me faire mettre par écrit quelques unes de ses pensées et de miennes'.

But Boineburg seems to have regarded Leibniz not merely as an employee but as a friend,[39] supporting and encouraging him and his projects as much as he could, including his attempts to secure from the imperial librarian, Peter Lambeck, a privilege for a planned semi-annual journal reviewing new publications, the *Nucleus Librarius Semestralis*.[40] Boineburg enlisted Leibniz's skills and talents not only for theological and scientific but also political and legal purposes, commissioning from him documents in support of the candidacy of Philipp Wilhelm von Neuburg to the Polish throne, and charging him with the legal representation of his family. He also entrusted Leibniz with drafting various diplomatic and political plans—often, it must be said, without the knowledge or approval of the elector. It was a mutually beneficial relationship in which both men's interests and goals often coincided and converged towards their dream of universal improvement.

From the beginning of their relationship, Boineburg—subject of course to the pursuit of his own interests and that of his own patrons—assiduously promoted his protégé to influential potential patrons in Mainz and beyond, and acted as an intermediary for him. Boineburg was ultimately responsible for Leibniz's trip to Paris on what was initially meant to be a diplomatic mission to persuade Louis XIV to adopt Leibniz's so-called 'Egyptian plan', which laid out how the French could wrest control of sea and commerce more easily from the Dutch by seizing Cairo and Constantinople than by attacking Holland (where French forces would threaten the bordering German states).[41] This project, which according to its deviser would also help unify Christians against the Turks, marked the culmination of several years of unsuccessful attempts to contain France's aggressive French foreign policy

[39] Boineburg, for instance, discussed his health problems, such as 'asthmatic attacks', with Leibniz, pressing the latter to 'inquire whether there is any method of helping those who are seized by the first stages of this aggravating and difficult disease' (Boineburg to Leibniz, 30 April 1672, A I, 1: 269).
[40] See Boineburg's letter to Lambeck of 18 November 1669, A I, 1: 28-33.
[41] On the Egyptian plan, see Youssef (1998).

under Louis XIV[42]—attempts that included a series of diplomatic negotiations and strategic alliances among European nations, such as the Triple Alliance between Holland, England, and Sweden, and an alliance between the duke of Lorraine and the archbishops of Mainz and Trier. Convinced that the Rhineland principalities' interests lay rather in cultivating good relations with France and strengthening their political and military ties with one another, Boineburg had Leibniz write in August 1670 a proposal for a 'Securitas publica' based on a consolidated German constitutional structure. The allied German states would serve as a neutral buffer zone between the two dominant Continental powers, France and Austria.[43] But that same month France invaded Lorraine, thus jeopardizing European peace only a few years after the end of the devastating Thirty Years' War—much to Schönborn's dismay.

Keen to promote his young protégé and the Egyptian plan, Boineburg had written to Louis XIV in the hope of placing Leibniz at the French court in the early days of 1672, for Leibniz's station was too low for him to petition the king directly.[44] Doubtless mindful of the small window of opportunity for relaying Leibniz's Egyptian plan, Boineburg drafted two versions of his letter to Louis XIV: each consists of a short paragraph (penned by Boineburg) introducing a lengthy proposal (penned by Leibniz). In both of them, Boineburg puts forward a project he characterizes variably as 'seeming rather flimsy at first', 'somewhat chimerical', and finally as appearing 'a tad extravagant', but which was brought to him by 'a man of considerable qualities', whose 'ability warrants much approval'.[45] In the final draft, presumably sent only once assurance of it receiving the king's attention had been provided,[46] Boineburg shares Leibniz's special project, which, he seeks to reassure

[42] See Badalo-Dulong (1956).
[43] Antognazza (2009), pp. 116-17; Beiderbeck (2014), pp. 665–65.
[44] Johann Christian von Boineburg to Louis XIV, 20 January 1672, A I, 1: 249-52.
[45] Boineburg to Louis XIV, 20 January 1672, A I, I: 249.
[46] We do not have the response to Boineburg's letter, if there was one.

Europe's most powerful ruler, 'could be executed without fail within a year', would 'ruin the Dutch' through economic warfare and command of the seas, help cement an alliance with Austria, and 'be in conformity with the wishes of the Germans, Italians, and the Portuguese'.[47] Crucially, it would confirm France's position as a European military, cultural, and civic power,[48] and Louis himself as a universal leader.[49]

With this proposal, Leibniz presented—one might say, 'projected'—himself as someone who could help channel the forces of contingency and historical uncertainty towards some kind of order. Had the Egyptian plan been implemented, he might well have been able to find more powerful patrons and secure a more favourable position, in the French court or elsewhere. As it was, all of Leibniz's principal correspondents seem to have been aware that they were contending, rather powerlessly, against forces far greater than themselves. And even though it was only rarely explicitly acknowledged, this constant and acute awareness forms a recurring theme throughout the correspondence and the mental backdrop against which all of them were writing. Leibniz and his peers inhabited a universe full of mysteries and uncertainty: the whereabouts of certain individuals remained unknown,[50] the postal services were unreliable, and various 'accidents at Court' resulted in letters being disposed of either because they were deemed unimportant or precisely because their content had already been divined.[51] 'Fortune' was always looming on the horizon and,

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[47] Boineburg to Louis XIV, 20 January 1672, A, I, I: 251.

[48] Ibid.: 'And will turn France into the military school of Europe, and the theatre, where the greatest and most illustrious geniuses of the century in all kinds of professions and civil and military arts can and will want to play their character.'

[49] Ibid.: 'And will give him by an unmistakable consequence the universal direction of affairs and the arbitration between all the princes and all the republics and will attach the famous families everywhere to his interests.' The Franco-Dutch War would begin in April 1672 and last until September 1678.

[50] Leibniz to Christian Habbeus, January 1676, A I, 1: 442: 'I have been Emperor looking for you in the gazettes: for letters from my friends have never taught me anything reliable concerning you; some say that you are in Brunswick, while others in Bavaria: and for my oart I believed you in Vienna, or at least I wished you there.'

[51] Boineburg to Louis XIV, 20 January 1672, A I, 1: 250: 'He adds that he feared the accidents to which the letters are exposed both at the post office and at the Court… and that some with the slightest whiff will be able to close the[ir] path in a moment.'

by its fickle nature, was ready to close an opportunity or favourable historical juncture at any time. Difficulties could arise unexpectedly at any moment and take on any shape.

Novel ideas or projects were of course hardly immune from the vagaries of fortune. Indeed, Boineburg closed his letter by urging the king not to dismiss this 'novelty' and risk 'giving up this auspicious looking juncture',[52] but instead to seize this opportunity. This passage anticipates comments made by Leibniz in his correspondence with Duke Johann Friedrich later in spring 1679.[53] Both passages emphasize that a new idea's possible adoption was predicated less on its content than on the conditions and circumstances of its initial reception. Novelties, even when advantageous and at no cost to a ruler's subjects, as Leibniz was careful to point out, were generally treated with suspicion in a context of prevalent fraud, projection, and intellectual hustling.[54] In fact, irrespective of their validity, new projects, even 'good and enforceable' ones, were often discarded for their failure to make a first good impression or because of unfavourable initial circumstances.[55] 'The grace of novelty' having then worn off, beneficial novelties, and especially the truths they contained, ended up never being placed in the service of the public good.[56] To initiate,

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[52] Ibid.

[53] Leibniz to Johann Friedrich, spring 1679, A I, 2: 79-85.

[54] Leibniz to Johann Friedrich, spring 1679, A I, 2: 80: 'For I know that all new proposals are naturally suspect, and that we usually have a poor opinion of those who venture to make some regarding matters of state, especially nowadays when adventurers and know-it-alls abound whose only aim is to catch something, oblivious to the success of their ventures once they have reached their goal, and never lacking excuses or pretexts to blame someone else when they fail.'

[55] Boineburg to Louis XIV, 20 January 1672, A I, 1: 249: 'but as he was apprehensive of an unfavourable reception of the grace of novelty, and of perhaps losing the hope of success forever at the first unhappy meeting, and because it is tiresome to hear of a thing again after it has already been rejected or neglected because of some initially unfavorable conjunctures—he wanted to use it in this way, and having explained in the attached note the expected results of this enterprise, which he claims to demonstrate, he thought it more appropriate to reveal the particular means once he had obtained a serious reflection on these preliminary positions.'

[56] Leibniz to Johann Friedrich, spring 1679, A I, 2: 80: 'Now it is a truly damaging thing to the public, to make good proposals unnecessarily and inappropriately, not only because we prostitute ourselves, but also because those who are rejected lose the desire for good, and mainly because a proposal, once it has been rejected, passes for bad and useless; and out of a very strong prejudice one does not want to hear any more about it. Hence many good things are decried on account of the recklessness or the misfortune of those who propose them, and the public is deprived of them for ever. Consequently, those who love the public good

complete, or salvage projects that at first glance seemed 'chimerical' or 'extravagant', it was necessary to identify the optimal historical moment in which to propose them.[57]

This pervasive sentiment of precariousness was compounded by regular reminders throughout the correspondence that time was running out. Like historical contingency, time emerged as an omnipotent force in itself, and in particular as a fleeting and precious commodity that should not be wasted, especially since the window of opportunity was a narrow one and that fruitful opportunities were rare and unlikely to return any time soon. Leibniz thus cautioned Louis XIV through Boineburg that 'the first year [was] the best and that [they had] all the reasons in the world to fear, that in delaying things a little too much, [they would] lose the best opportunity without being able to retain anything from it, except the regretful memory of what [they] could have done achieved'.[58] While circumstances could not be fully brought under control, they could be harnessed to an extent in an attempt to gain some mastery or triumph over 'manifest cases of injustice'.[59] 'Bring[ing] into play the springs of auspicious dispositions' could help ensure 'a happy outcome'.[60]

Keeping the Egyptian plan secret in a highly politicized and cutthroat world of rumour and intrigue was absolutely vital for its successful implementation,[61] at least until the outcome was no longer 'uncertain, or something of outstanding importance [had been] achieved', by which point it would be 'welcome to everyone, and as though sent from heaven'. In this context too, secrecy appeared, perhaps rather paradoxically, as an instrument that could afford some degree of protection and, as Leibniz went to great length to

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will take care not to reveal the truth, so as to not receive an affront and be disappointed unworthily... Besides that, truth is often received only because of its novelty, and once it has lost or needlessly exhausted that claim, it has lost all its grace and won't be attended to anymore.'

[57] Johann Christian von Boineburg to the King of France, 20 January 1672, A I, 1: 249.

[58] Boineburg to Louis XIV, 20 January 1672, A I, 1: 252.

[59] The conceptual analogy here with Machiavelli and his understanding of *fortuna* seems patent, yet I have found no explicit reference to Machiavelli's works by Leibniz. Finster et al. (1988) records only one instance of Leibniz's own use of the word *fortuna*, in reference to Cicero's *De divinatione*.

[60] Boineburg to Louis XIV, 20 January 1672, A I, 1: 252.

[61] Leibniz to Boineburg, January 1672, A I, 1: 247: 'We can go securely, if we can go secretly'.

demonstrate, could effect change and help impose order on contingency. When drafting his proposal for Louis XIV, Leibniz elaborated on the latent power of secrecy, which he described as 'being the soul of [the current] project', capable of being turned into a formidable weapon. Not only would secrecy safeguard designs from being 'sniffed out' and thus imperilled,[62] it would also provide a cloak behind which to retreat and save face 'should everything go up in smoke'.[63] A secret project that would 'unexpectedly break out'—Leibniz uses the word *éclater* twice in the same passage—would take everyone by surprise and inspire admiration by confounding expectations.[64] Most importantly, perhaps, the potency of secrecy would reveal itself fully in the opportunity it afforded to convey the impression of the predetermination and inevitable successful realization of certain designs,[65] even the impression of omnipotence.[66] Leibniz's decision to pair secrecy with the miraculous[67] is especially revealing here because his use of the word *miracle* is deliberately double-edged, maintaining a degree of confusion between the pragmatic and the supernatural, and in the process establishing an interesting nexus between the two: secrecy is miraculous in its efficiency because it enables one to help gain command over events and historical contingency. This, in turn, helps convey the impression of a—supernatural—control over circumstances. In fact, as Leibniz takes care to specify, the execution of secret plans should 'break out in a bolt of lightning'.[68] Simply put, wielding the tool of secrecy would enable the king to appear god-like.

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[62] Boineburg to Louis XIV, 20 January 1672, A I, 1: 250.
[63] Boineburg to Louis XIV, 20 January 1672, A I, 1: 252.
[64] Ibid.
[65] Boineburg to Louis XIV, 20 January 1672, A I, 1: 251.
[66] Boineburg too seems to delight in the potentialities that could be leveraged through it: 'Wondrous gossip is divulged here. Nobody knows even the slightest about you, where you are, or what you are doing. Nor is there need to know. Your efficacy shall be [a] God[send]!'
[67] Boineburg to Louis XIV, 20 January 1672, A I, 1: 252: 'It will confirm the judgment of those who… are right to characterize His Majesty's opinion as the miracle of secret'.
[68] Ibid.

Fortune, as Leibniz pointed out regularly over the course of his correspondence, in a move conflating flattery with genuine sincerity, favours the powerful and the king of France in particular. Certain great designs had been conceived in the past but had since fallen into oblivion; Louis XIV, as Leibniz emphasized in his proposal to the king, had been earmarked by fate to help realize great projects for mankind and advance its happiness:[69]

> Your Majesty alone has sufficient strength to undertake this project which Providence (in regard to past times, when others have thought of it but were unable to realize it) seems to have reserved in its entirety to Him. I leave the decision up to Him, knowing that Your Majesty, if He wills it, will find it easy to succeed in it, notwithstanding the present circumstances, of which after God He is the master.[70]

Not only would Leibniz's proposal to the King of France help confirm the latter's mastery over the elements, it would help perpetuate the 'Glory of his invincible rule' and inscribe him in the Pantheon of mankind for the rest of eternity.[71] More generally, one's good name or 'renown' acted as a powerful antidote against the 'reversals of fortune'[72] as had, for instance, befallen Boineburg. [73]

An interesting tension between precariousness, unpredictability, and fluidity on the one hand, and attempts to master forces greater than oneself on the other, thus animates this early correspondence. Leibniz's plan, as transmitted by Boineburg, offers an interestingly self-reflexive dimension particularly of Leibniz's early years: as we shall see, the young savant set out to secure his own position and impose his will and vision on the world by promising to hold the key to his prospective patrons' own conquest of contingency and pursuit of prosperity. Boineburg's pitch was successful in the first instance: on 12 February,

[69] Boineburg to Louis XIV, 20 January 1672, A I, 1: 249.
[70] Boineburg to Louis XIV, 20 January 1672, A I, 1: 250.
[71] Boineburg to Louis XIV, 20 January 1672, A I, 1: 252.
[72] Leibniz to unknown recipient, beginning of September 1673, A I, 1: 365.
[73] Leibniz to Johann Friedrich Schutz von Holtzhausen, 22 December 1672, A, I, 1: 305.

the minister Arnaud de Pomponne replied that the king would gladly hear his 'overtures'. Leibniz would head to Paris a few weeks later.

2. Encountering Paris

Leibniz reached Paris in the spring of 1672, at the age of twenty-six, after having obtained a leave of absence from the court of Mainz for a short journey, which the Prince archbishop approved on the assumption that it served scientific purposes alone. From his lodgings on the rue Garancière in the Saint-Germain neighbourhood on the Left Bank,[74] just behind the church of Saint-Sulpice, a short walk to the Quartier Latin of university faculties and *collèges* and not far from the French administrative and diplomatic heart on the Île de la Cité and at the Louvre, Leibniz was determined to take advantage of all that Paris had to offer.[75] The wide ranging nature of Leibniz's contacts attests to the breadth of his activities in Paris. While we possess little information as to Leibniz's daily comings and goings during his sojourn, information about his activities broadly can be gleaned from letters, notes, and later reminiscences.

Prior to coming to Paris, Leibniz had many correspondents both at court and in the scientific realm. Once on location, he was determined to meet with a number of them, including some of the period's greatest luminaries—people who could be useful to him and his designs, people from whom he was likely to learn. Of particular importance were the savants of the Académie des Sciences at the royal library, Colbert's state Republic of Letters,

[74] Leibniz to Huet, 10 May 1673, A II, 1: 369; Leibniz to Johann Friedrich on 21 January 1675, A I, 1: 493.
[75] Davillé (1920), pp. 148–49.

whose meetings Leibniz attended[76] and was clearly impressed by.[77] These included the abbé Gallois, Colbert's 'servant and intimate'[78] who had been made secretary of the Académie and who may have brought Leibniz to the Académie, which convened twice weekly in the royal library. There he met the great mathematician, physicist, and astronomer Christiaan Huygens, with whom he would develop a life-long relationship; the famous physicist Denis Papin, whose 'outstanding inventions and ideas have been known to [him] for many years already' and whom he had met 'when he resided in Hugenius' house, at which time he published elegant observations on some particulars of Guericke's vacuum Machine'; the Danish astronomer—and tutor to the dauphin—Ole Roehmer, true inventor of the epicycloidal cogs, with whom Leibniz would discuss mathematics and mechanics; the Italian astronomer Giovanni Domenico Cassini; and the doctor and architect Claude Perrault. Finally and perhaps most crucially, Leibniz corresponded with and met Pierre de Carcavy,[79] to whom he had been recommended by Boineburg.[80] Another major figure was Henri Justel, an advisor to the king, canonist, and medievalist (but not a member of the Académie des Sciences) from whose extensive library Leibniz would regularly borrow books[81] and to whom he had been warmly recommended by Boineburg as 'a most skilled and erudite man in all the sciences'—Leibniz would in fact send Justel an anonymous letter in which he praised his own qualities and expressed 'wonder that he knew so much at such an early age'.[82]

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[76] Aside from two mentions in the session reports relating to his calculating machine and a clockwork on 9 January 1675 and 24 April 1675 respectively, there are few traces of Leibniz at the Académie. This dearth of information is mainly on account of the society's secrecy in its first thirty years of operation, as well as the loss of the minutes: see Solomon-Bayet (1978).

[77] Leibniz to Johann Philipp von Schönborn, 20 December 1672, A I, 1: 297-98: 'The fellows of the Academy are people extremely learned in various fields who could compose an Encyclopaedia of arts and sciences'.

[78] Klopp (1864–84), IV, p. 380.

[79] Leibniz to Spitzel, 7 April 1671, A I, 1: 133.

[80] Klopp (1864-84), II, p. 141.

[81] Haag (1845-59), p. 115.

[82] Anonymous to Justel, April 1672, in Klopp (1864-84), II, p. 133.

In Paris Leibniz would attend Justel's weekly meetings at his salon, where erudite matters and new books were discussed. Justel at the time was a well-connected savant who cultivated close relations with the Royal Society, notably through its secretary (and Leibniz promoter) Henry Oldenburg, whose communications Justel helped disseminate from his Parisian home.[83] Justel and Leibniz would remain in epistolary contact long after the former's flight to London and latter's departure for Hanover. Among the less prominent savants he befriended in Paris were Pascal's nephew Louis Périer and sister Gilberte Périer, whom Leibniz considered most 'erudite and spiritual';[84] the scholar Gilles Filleau Des Billettes, who like Antoine Arnaud resided on rue Saint-Jacques; the duc de Roannez, who was a 'great friend' of Des Billettes and Pascal;[85] and later the skilled mathematician and fellow countryman Walther Ehrenfried von Tschirnhaus and the Danish mathematician Georg Mohr.[86]

In Paris Leibniz was also in contact with other scholars, such as André Morell, a royal advisor and secretary to whom he had been recommended by Boineburg regarding the resolution of his financial affairs,[87] and otherwise a numismatist of great distinction; the abbé de la Rocque, editor of the *Journal des Sçavans* since 1675; the numismatist and antiquarian Nicolas Thoynard; the travel writer Melchisedech Thévenot; and Pierre-Daniel Huet, a student of the eminent philologist Bochart and sub-preceptor of the dauphin, with whom Leibniz discussed various questions, especially literary ones, in a fairly familiar manner.[88] Other scholars and men of letters who attracted his attention were Colbert's son-in-law, the duc de Chevreuse; the bookseller Claude Clerselier, whose collection of

[83] See Brown (1933).
[84] Leibniz to Seckendorf, l1 June 1683, A II, 1: 840.
[85] Leibniz to Seckendorf, l1 June 1683, A II, 1: 840.
[86] Leibniz to Oldenburg, 12 May 1676, A III, 2: 22.
[87] See Boineburg's 'Memoriale' for Leibniz, 18 March 1672, A I, 1: 262.
[88] Leibniz to Seckendorf, l1 June 1683, A II, 1: 840.

Descartes manuscripts Leibniz studied; the abbé Eusèbe Renaudot, future editor of the *Gazette de Paris*;[89] and the Hellenist Jean-Baptiste Cotelier,[90] who with Charles du Fresne du Cange compiled the catalogue of Greek manuscripts in the royal library and produced erudite works that met with Leibniz's appreciation.[91] Other *érudits* and philosophers with whom Leibniz came into contact and sparred intellectually included the Port-Royal Jansenists Antoine Arnauld and Pierre Nicole; the Oratorian Nicole Malebranche; Simon Foucher, one-time canon of Dijon, a philosopher and physicist with whom Leibniz discussed ancient philosophy and physics;[92] Jesuits such as the Père Gamans, the Père Gervais (recommended by Thoynard), and the Père Bertet, whom Leibniz entertained on 'several occasions of mathematics';[93] and other clergymen, including an Armenian Dominican priest with whom he conversed about an artificial language derived from Latin and used 'in the commerce of the Mediterranean'.[94] Leibniz also made the acquaintance of an eclectic array of provincials and foreigners who happened to be passing through Paris, including René Oudard, canon of Tours, with whom Leibniz discussed music;[95] the Swede Anke Rolamb, a senator in charge of the Swedish police and finances, whom Leibniz had the 'pleasure … to meet in Paris and admire' and whose 'almost universal … curiosity' particularly concerned mathematics and history.[96]

On one occasion, Leibniz recounts, 'When I was in Paris, all the people of this great city ... were convinced that Madame the Duchess of Tuscany had children abducted from the streets, to have them killed to bathe in their warm blood, in order to be cured of a certain

[89] Leibniz to Landgrave Ernst, 13/23 July 1691, A I, 6: 234.
[90] Davillé (1921), p. 75.
[91] Leibniz to Boeckler, May 1672, A I, 1: 271.
[92] 'I used to debate this point, in person and in writing, with the late Abbé Foucher, Canon of Dijon, a learned and subtle man, but a little too obstinate among the Academicians' (*Nouveaux essais sur l'entendement humain*, A VI, 6: 374).
[93] Leibniz to Landgrave Ernst, 1680, quoted in Davillé (1921), p. 76.
[94] *Nouveaux essais sur l'entendement humain*, A VI, 6: 279.
[95] Leibniz to Nicaise, 1/11 October 1694, A II, 2: 858.
[96] Klopp (1864-84), III, p. 81.

disease she was supposed to have contracted. And when I laughed at that tale, I thought those good people were mad at me.'[97] He frequented salons, mixing in various circles such as that of the Prince de Condé,[98] attended plays by Corneille and Molière,[99] and took French lessons—by the end of his stay, Leibniz boasted that he could 'speak in Parisian'.[100]

Leibniz confessed that one of his greatest faults was his dislike and avoidance of 'capricious' court politics and the 'constant worries' deriving from them.[101] He also admitted to another fault that 'passe[d] for particularly grave in the world', namely 'failing to abide by social norms'—and he recognized his failure to make a good first impression.[102] The fact that he did not 'offer too positive opinion of himself at first sight', which he ascribed to such physical infirmities as short-sightedness, an arched back, and difficulty pronouncing words,[103] is a theme that crops up occasionally throughout his correspondence. The fact, too, that he had a limited knowledge of the French language and French customs may, in his opinion, have contributed to making him sound slow and awkward,[104] thus increasing his embarrassment.[105] Furthermore, as he confided to Habbeus, he did not 'drink to show off' and was 'inconvenienced by a great defect, namely often failing to respect rituals'; for he 'did not like to indulge himself in the ordinary entertainments' of young people. Instead he preferred 'to content the spirit by producing something real and useful for the public'.[106] Boineburg recommended him to the French secretary of state as an 'an inexhaustible treasure trove of all the beautiful sciences that a solid mind has ever been capable of'.[107] His mind

[97] Leibniz to Ernst August, quoted in Davillé (1923), p. 69.
[98] Klopp (1864-84), III, p. 126.
[99] Davillé (1923), p. 51.
[100] Leibniz to Melchior von Schönborn, early January 1676, A I, 1: 397.
[101] Leibniz to Habbeus, 5 May 1673, A I, 1: 416.
[102] Ibid.
[103] Davillé (1920), p. 142.
[104] Leibniz to Malebranche, first half of 1676, A II, 1: 403.
[105] Leibniz to Boinebourg, February 1672, A I, 1: 257.
[106] Leibniz to Habbeus, 5 May 1673, A I, 1: 416–17.
[107] Boinebourg to Pomponne, 5 September and 9 November 1672, in Klopp (1864–84), II, pp. 138, 139–40.

was not only prodigious but free.[108] Perhaps surprisingly, however, Leibniz was also prone to joking: 'When I was in Paris, I used to say to gentlemen of the Royal Academy of Sciences that if the souls who have returned to heaven pass through the stars, it is necessary to give the globe of Jupiter to Galilei and to Mons. Cassini, but that it was necessary to leave Saturn to M. Huygens.'[109]

A German publicist and agent in Paris

Leibniz's initial engagement with France had been primarily of a political nature,[110] yet his plan was made redundant as soon as he set foot in Paris on account of France's declaration of war against the Dutch Republic. Boineburg had furnished Leibniz with a letter of introduction to the minister for foreign affairs, Simon Arnauld de Pomponne, describing the bearer as 'a man, who despite appearances, w[ould] be able to do what he promises'.[111] Antoine Arnauld also recommended Leibniz to Pomponne, his nephew, in a letter of 12 September: 'The person who brings you this proposal is a German gentleman with an exceedingly impressive mind, and who is very skilled in all kinds of science.'[112] Despite his initial interest in the 'Egyptian Plan', Pomponne soon dismissed the whole idea as ridiculous and anachronistic, especially at a time when French policy inclined towards a strategic alliance with Turkey against the Holy Roman Emperor; as early as June 1672, Pomponne declared that 'holy wars . . . ha[d] been out of fashion since Saint Louis'.[113] By September 1672, six months after arriving in Paris, Leibniz had still not been able to see Pomponne to discuss his 'Egyptian plan', towards which the minister might be swayed, if the Great

[108] Letter from Schuller to Spinoza, 14 November 1675, quoted in Davillé (1921), p. 144.
[109] Journal, April 1696, quoted in Davillé (1921), p. 143.
[110] Davillé (1922), p. 16.
[111] Quoted in Antognazza (2009), p. 124. See A I, 1 no. 175; A I, 1 no. 255; and Klopp (1864–84), II, p. 125.
[112] Arnauld to Arnauld de Pomponne, 12 September 1672, in Klopp (1864–84), II, p. 139.
[113] Feuquières to Pomponne, 4 June 1672, and Pomponne's response, 21 June 1672, in Foucher de Careil (1859–75), V, pp. 354-57, 359.

Arnauld could be convinced to lend his support to Leibniz's project of union of churches. In fact it seems unlikely that Leibniz ever met Pomponne, and ultimately nothing came of the project.

Yet Boineburg also had more prosaic reasons for sending Leibniz to Paris. These included the recovery of an outstanding pension owed to him by the French king and the transfer of income from a property in the Ardennes.[114] Boineburg had cultivated privileged connections with Parisian learned and political circles[115]—to which he eagerly promoted his protégé—he advised that Leibniz mention him in his correspondence, or 'write letters in [Boineburg's] name'[116] by way of introduction in order to 'snatch favours'.[117] Boineburg's discussion of the Rhetellesian law is fascinating and particularly instructive for the light it sheds on the extensive network that he thought he could mobilize and the special relationships he hoped to instrumentalize—including with the French finance officer Morell;[118] with the envoy to Mainz, Du Fresnes;[119] and even with Colbert[120]—in order to obtain a prompt resolution of the matter. But none of these connections was to prove efficacious. As with the promotion of the Egyptian mission, the recovery of the French rent and pension was a slow and arduous process, for access to the French court was limited and Leibniz ultimately remained at the mercy of circumstances and the bureaucratic machine.[121]

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[114] Antognazza (2009), p.124.

[115] Paasch (2003), p. 16.

[116] Boineburg to Leibniz, 7 November 1672, A I, 1: 285: 'You can write letters to [Arnauld] in my name as you like. I admire his power in disputes, and his precision of expounding everything to the tiniest speck of dust for the sake of the truth. I wish that his third tome about the Holy Communion appears soon. I wish to see a register of his works. I ask you to help me if you can.'

[117] Boineburg to Leibniz, November 1671, A I, 1: 245: 'If you want to write something to [*sc.* Antoine] Arnauld, do it so that I can send it tomorrow per post. I will enclose your letter with mine to DuFresnay. It is necessary that some references to me be made in it, snatching favours; since I myself, absent, do not write, I am going to cut my way by your letters, with Frenius as mediator.'

[118] Boineburg to Leibniz, 7 November 1672, A I, 1: 285.

[119] Davillé (1921), p. 68.

[120] Boineburg to Leibniz, 7 November 1672, A I, 1: 283: 'If Colbertus deems it worthy to consider me, I will write to Him then, if it will be necessary. He may go about the Favour as described above.' See also Boineburg to Leibniz, 30 April 1672, A I, 1: 268.

[121] Antognazza (2009), p. 145.

In November 1672 Boineburg additionally entrusted Leibniz with supervising his son's education. Boineburg requested that Leibniz draw up a programme to which the child should apply himself rigorously.[122] Wilhelm Boineburg came accompanied by Melchior Friedrich von Schönborn, who had been sent to present a new plan to Louis XIV, suggesting that a peace conference to end the hostilities in the Low Countries and northern Germany be convened in Cologne—a plan for which Leibniz's writing skills were once again enlisted.[123] This presented a new opportunity for Leibniz to play a conciliatory role by helping to establish peace with the Netherlands, even if he was not directly involved in the negotiations and the statement he had prepared was never read. Still, even though this attempt was unsuccessful, Leibniz, who had long wanted to visit the Royal Society in London, was later permitted to accompany the delegation there to obtain a hearing at the court of Charles II.[124]

During his stay in Paris, Leibniz continued the activities as a publicist that he had begun in Mainz, seeking to contribute to the political and diplomatic affairs of his country from afar.[125] He wrote political writings addressing practical issues, such as a pamphlet on behalf of the Duke of Mecklenburg, arguing for the nullity of the duke's second marriage as a Catholic and the validity of his first as a Protestant. Judging that this issue might be of broader interest among German princes and wishing to act as a good 'patriot',[126] Leibniz set out to prove that 'the marriages of the Protestants of Germany contracted *in gradu prohibito* without dispensation from the Pope are valid according to the Catholic Church'. Drawing

[122] Boineburg to Leibniz, 7 November 1672, A I, 1: 285 'please stipulate for my son what, before all, he has to observe in his studies with his own diligence, so that something worthy of my expectation becomes of it. Before all, take care everywhere and make an effort that he grows accustomed to discipline, and that he also attends to his health in the college.'
[123] Antognazza (2009), p. 146. See also Beiderbeck (2014) and Badalo-Dulong (1956).
[124] Antognazza (2009), p. 148.
[125] Davillé (1921), p. 19.
[126] Klopp (1864-84), III, pp. 127-129, quoted in Davillé (1921), p. 20.

on French law and history,[127] the essay was immediately taken up by the Jean de Lauravy in a book on royal power in marriage.[128]

Leibniz followed contemporary political and military events closely,[129] composing in 1674 a treatise 'Des affaires de Suède'[130], in 1673 a Latin poem on the naval victory of the Dutch over the united fleets of France and England,[131] and in August 1674 the 'Relation du combat de Seneff donn. contre les confederes par Monseigneur le Prince de Conde',[132] as well as transcribing a report on political affairs in 1674.[133] In Paris, too, Leibniz made a copy of a piece of writing 'composed at the Hague by the Baron d'Isola in 1672 during the march of the German troops toward the Rhine and which had been intercepted'.[134] Particularly concerned with political events affecting his homeland,[135] Leibniz regularly requested news from Paris about the situation in Germany from a number of his correspondents, including from Marshal Schönborn, Morell, and Huet, and even questioning the soldiers of Turenne who had just made an expedition on the Lower Rhine in 1672.[136] He also sought and provided information on the general political state and 'the peace of the North'[137] from the courts of Mainz and Vienna.[138]

Leibniz seized on one particular incident to seek to position himself, by means of his legal acumen, as a major player on the German and European political scene. On 16 February 1674, Wilhelm Egon von Fürstenberg, the bishop of Strasbourg who was also an

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[127] Leibniz, *De matrimoniorum Principum Germaniae Protestantium, in gradibus solo canonico jure prohibito contractorum validate Leibnitii dissertatio*, in Klopp (1864), III, pp. 113-208. See also Davillé (1909), pp. 21-23.
[128] Davillé (1921), p. 20.
[129] Davillé (1921), p. 21.
[130] Klopp (1864-84), III, pp. 80-84.
[131] Bodemann (1895),p. 137.
[132] Bodemann (1895), p. 179.
[133] Bodemann (1895), p. 180.
[134] Quoted in Davillé (1922), p. 21.
[135] Davillé (1922), p. 21.
[136] Davillé (1922), p. 21.
[137] Leibniz to Melchior von Schönborn, early January 1676, A I, 1: 397.
[138] Leibniz to Lincker, 27 July 1673, A I, 1: 357-59.

agent in the service of France in the ongoing struggle with the Empire, was abducted by an imperial regiment and taken prisoner to Vienna. Considering this a violation of the rights of nations, Louis XIV, ended the peace conference that had begun in Cologne the year before. Leibniz, however, saw this as an opportunity to play a broader role in helping broker the peace between the Dutch, the Empire, and France,[139] and promptly drew up a report on peace[140] as well as a pamphlet in which he both rebuked Fürstenberg's betrayal of the Empire and condemned the emperor's actions,[141] and stated that Louis would enter negotiations only upon the release of Fürstenberg.[142] Possibly eyeing a role as a plenipotentiary in Vienna[143]—and evidently viewing different political commitments not as incompatible but as part of a strategy to diversify his activities as much as possible—Leibniz was eager to be included in the peace congress that followed, and was even invited in the spring of 1676 by the abbé de Gravel, France's extraordinary envoy to the court of Mainz, to accompany him. Leibniz's hopes for a genuine diplomatic role were dashed, however, when Duke Johann Friedrich, by then his employer, denied him permission to attend.[144]

Around January 1676 Leibniz drafted notes on the terms that the elector of Mainz had demanded of Emperor Leopold 'to provide some satisfaction to the two crowns which had unsuccessfully opposed his election', namely those of France and Sweden, by strengthening it with 'a confederation of a few princes of the Empire supported by the two kingdoms which had been called the Rhine Alliance'.[145] 'Believing that no one could provide a better political interpretation of it than the elector', and himself having 'been for some time familiar with those who were responsible for writing it', Leibniz produced 'a

[139] Davillé (1922), p. 22.
[140] Klopp (1864-84), III, pp. 105-11 (1674; recipient unspecified).
[141] Klopp (1864-84), III, p. 84.
[142] Klopp (1864-84), III**,** pp. 101-104.
[143] Klopp (1864-84), III, p. xxxii.
[144] Leibniz to Johann Friedrich, mid-February 1676, Klopp (1864–84), III, 293-94.
[145] Klopp (1864-84), I, p. XIX.

small specimen of political interpretation of certain points'.[146] Otherwise his legal work during his Parisian sojourn was confined to the drafting of a project for a commission of justice,[147] probably on behalf of a German prince.[148] Thus although he was determined to play a political role, Leibniz's political activity and influence remained very limited,[149] confined to the role of mediator or messenger,[150] not least on account of his status as a commoner.[151] Most of his political writings, produced for specific occasions, had little effect on the broader diplomatic field. His Egyptian plan must have appeared amateurish and transparent, betraying an inability to break free from a scientific-philosophical way of thinking,[152] and only served to convey his failure to grasp the French foreign policy of the time—one that consisted in strengthening the alliance with the Ottoman Empire rather than overthrowing it to embark on an adventure with unforeseeable consequences.[153] To be sure, Leibniz's political misadventures can be traced back, at least in some measure, to Boineburg, who, his own position having been compromised, likely overestimated his influence and unwittingly hampered Leibniz—who after all was not acting in an official capacity for his prince—from gaining access to relevant Parisian dignitaries.

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[146] Ibid, p. 394.
[147] Leibniz to Johann Friedrich, 'Vorschlag wegen Aufrichtung eines Commission-Gerichts, 3/13 December 1676, A I, II: 5-7.
[148] Davillé (1923), p. 52.
[149] As Scheel (1983), p. 282, notes, 'German scholars of international renown on the political stage in the age of absolutism hardly had the opportunity to distinguish themselves as acting statesmen, even when they made an effort. They resigned themselves to the fact that the political decisions were made by the prince himself and a few confidants, and that they were, as it were, in the second part of their solid knowledge and their expert judgment, because of their sound knowledge and their expert judgment, they were gladly consulted at all courts as historical-political advisers. What applies to Conring in Wolfenbuttel also applies to Leibniz' official work in Hanover.'
[150] Haase (1966), p. 196, characterizes Leibniz's political activity as a 'chain of failures in comparison to scientific work'.
[151] As Haase (1966), p. 197, observes, only the princes and their mostly aristocratic ministers had the opportunity to be politically active.
[152] Haase (1966), p. 199.
[153] Haase (1966).

In another respect, however, Leibniz's Parisian sojourn was successful. For he found many 'wonderful opportunities' to acquire books.[154] These included books on 'curiosities', the sciences, and history.[155] A bibliophile from the age of six,[156] Leibniz visited Paris's many booksellers, including Jean Cusson, publisher of the *Journal des Sçavans* and scientific pamphlets,[157] and one on the rue Saint-Jacques.[158] He purchased many small *curieux* books and brought back from his brief stint in London the '*fleur des livres d'Angleterre'*.[159] Together with the volumes he had acquired during his formative years in Germany, these French and English books would form the nucleus of his private library. But the encounter with 'an infinity of curious French books in the arts and sciences as well as in matters of state' also prompted him to conceive an ideal library—one that did not stock 'books of little use' but rather either those 'containing inventions, demonstrations, [and] experiments' or 'records of state memories, histories, especially of our time, and descriptions of countries'. Such a library, unlike those that pass as 'beautiful and curious', would cost little and provide infinite illumination.[160]

Leibniz's scientific activity was manifold, extending to philosophy and historical research, and he found in Parisian libraries a treasure trove of accessible manuscripts and other documents. Reminiscing at the end of his life about his time in Paris, he wrote, 'Having come to France in the year 1672 … I brought from our Universities all other knowledge than that of deep geometry. Law and History were my subjects.... In Paris I burrowed myself in the great Libraries; and I was looking for rare pieces, especially in history.'[161] He scoured

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[154] Davillé (1909), p. 23.
[155] Davillé (1923), p. 50.
[156] Antognazza (2009), p. 45.
[157] Leibniz to Kortholt, 9 January 1711, Dutens (1768), V, p. 315.
[158] Davillé (1923), p. 50.
[159] Leibniz to Christian Habbeus, 5 May 1673, A I, 1: 417, quoted in Palumbo (2014), p. 610. On the books he collected see 'Observata philosophica in itinere Anglicano sub initium anni 1673 March 1678', A VIII, 1: 3-21.
[160] Letter from Leibniz to the Christian Habbeus, 5 May 1673, A, I, I: 417.
[161] Leibniz to the Countess of Kilmansegg, 13 April 1716, quoted in Davillé (1922), p. 139.

the principal libraries assiduously for manuscripts and unpublished historical or clerical documents that would assist his composition of various treatises and essays.[162] At the royal library in particular he studied documents relating to the reigns of the French kings, memoirs recounting the relations of France with the Ottoman Empire,[163] ambassadorial accounts of the rivalry between Austria and France, and documents relating to neighbouring European nations.[164] He also immersed himself in the political and ecclesiastical history of modern France as well as in documents relating to the Church from Saint Louis to Louis XIII and the debates at the Council of Trent; consulted Greek, Hebrew, and even Arabic manuscripts,[165] including those acquired by the Orientalist Vansleben and translated by de Cordemoy;[166] took an interest in cartography;[167] and examined various ancient artefacts.[168]

Political economy had preoccupied Leibniz since at least 1669.[169] Paris at the time was not only the most intellectually remarkable but the wealthiest European capital, and Leibniz set out to understand the reasons behind its prosperity, recording his observations and collecting as much data as he could, eventually identifying Colbert's measures to develop France's 'navigation, manufactures and commerce' as a crucial factor.[170] Under the impulse of Jean-Baptiste Colbert's 1664 memorandum and resulting state-driven policy,[171] Paris had successfully attracted talented artisans and craftsmen 'from all around', and by 'spar[ing] nothing to draw from them their secrets and inventions'[172] and granting them

[162] Davillé (1922), p. 139.
[163] Davillé (1909), pp. 22-23.
[164] Davillé (1909), pp. 22-23.
[165] Klopp (1864-84), II, p. 148.
[166] Leibniz to Landgrave Ernst, end December 1691, A I, 7: 229.
[167] Leibniz to Fontenelle, 12 July 1702, A II, 4: 64.
[168] Leibniz to Bignon, 4 May 1710, A I, 26: 138: 'The late Carcavy once showed me a medal on which there was inscribed KPHTHΣ AOPΛOY and no one knew what this meant. This was in the King's Cabinet which, like His Majesty's library, had been entrusted to him.'
[169] Davillé (1909), p. 592.
[170] Davillé (1922), p. 25.
[171] Bertucci (2017), pp. 30-33.
[172] Leibniz to Habbeus, 5 May 1673, A I, I: 417.

privileges, had blossomed into a hub of creativity—where Leibniz himself would encounter many artisans in connection with the construction of his arithmetical machine.[173] Leibniz singled out France as a nation in which 'manufacture, for the most part, [was] in the most flourishing state that could be wished for',[174] and he ascribed this success in part to the 'ingenuity of the nation', in part to 'the particular care of the king, who ha[d] funnelled all the best artisans from everywhere, and managed to extract from them their secrets and their inventions'.[175] This *métropolitaine de la galanterie* now vaunted the most remarkable and versatile array of craftsmen and artisans: 'they are marvellous in the art of varnishing in the Chinese style … the art of moulding or casting every kind of material in sand-forms is in its greatest perfection, as is the casting of medals.... They work well in iron, and they have people with the secret of casting iron into forms, and of filing it in ways not commonly possible. In sum, there is an infinity of curiosities, in gold-making, enamelling, glassmaking, clock making, leather working, pewter cups.'[176]

Deeply impressed with Colbert's 'grand design of commerce and policy', Leibniz sought to collect as much information as possible on it from researching in books to collecting relevant ordinances and policies[177] to finding artisans and 'pinching their secrets': 'It will be important', he stated candidly, 'to poach from workers here the tricks and refinements of their secrets, which one can do sometimes with a bit of shrewdness combined with a little liberality.' A little cash and skill could go a long way in earning the trust of artisans and getting them to reveal their trade secrets, any one of which might be put to great use and reap great benefits under the correct guidance. Gaining insights into the latest

[173] Leibniz to Habbeus, 5 May 1673, A, I, I: 417: 'Wanting to have my arithmetical machine made', Leibniz explained in 1673, he came 'to enter into knowledge' of the artisans of Paris as the 'metropolis of *galanterie*'.
[174] Leibniz to Habbeus, 5 May 1673, A I, I: 417.
[175] Ibid.
[176] Leibniz to Habbeus, 5 May 1673, A I, I: 417.
[177] Leibniz to Habbeus, 5 May 1673, A I, I: 417.

technological developments and artisanal skills behind the most marvellous objects and 'curiosities' would be well worth the cost and the effort. Leibniz was a devoted practitioner of what he preached, both in his own interest and that of his employers, as he succinctly explained to the Swedish resident in Mainz Christian Habbeus:

> As for me, I have had the opportunity not only to come into contact with a large number of good workmen, but also to draw something from them, and had I been willing to spend a little, I would have learned much more. For wanting to have my Arithmetic Machine made, with which the four operations can be done without any effort of the mind - and whose model was made long ago and demonstrated in France and England, to general applause, and is about to be completed - I had to get to know these people. And this will be all the more so should my design be approved. We are indeed glad to collect this kind of knowledge, which can only be profitable to the country.[178]

Of particular interest to Leibniz was practical or luxury manufacture like ironwork, the moulding and melting of metals, the production of silks and dyeing of fabrics, porcelains and their varnishes, and 'an infinity of curiosities such as silverware, enamelling, watchmaking, glassmaking, leather factories, pewter pottery, which most foreigners do not pay attention to, and yet only one brought home would pay their expenses'. Ultimately, his encounter with France's manufacturing miracle would make him all the more determined to extract artisans' secrets in order to send them to Germany,[179] and more generally to use the knowledge he acquired of French economic practices for the sake of the German states' improvement.[180]

In his 'Mala Franciae' (c. 1672), however, Leibniz painted the rather different picture of a France whose provinces were miserable and exhausted,[181] impoverished by taxes and constant warfare, by usury and the high cost of merchandise.[182] While 'Paris flourishe[d]',

[178] Leibniz to Habbeus, 5 May 1673, A I, I: 417.
[179] Leibniz to Johann Friedrich, 26 March 1673, A I, 1: 488; Leibniz to Johann Friedrich, 21 January 1675, A I, 1: 493.
[180] Davillé (1922), p. 27.
[181] 'Mala Franciae', A IV, 1: 516-17 (no. 38). The intended recipient is unknown.
[182] Davillé (1922), p. 25.

the provinces were ‘depleted’ and everything that was ‘appealing in appearance’, was in reality ‘ugly and contorted’. Aside from the king, his nobles and bankers, the rest of the country had been left to be ‘consumed by a slow fire’ and die of hunger.[183] Even as he celebrated Parisian prosperity and intellectual and scientific success, Leibniz’s ambivalence about France would only increase over time with Louis’s growing bellicosity—an ambivalence culminating most famously, perhaps, with his *Mars Christianissimus* (1683).

3. Learning in Paris

Even though England’s declaration of war on Holland made it quickly redundant, the Egyptian plan helped secure Leibniz’s passage to the intellectual capital of Europe, where he would remain until late 1676. Leibniz was keenly aware of, and determined to seize, the opportunity for intellectual development that Paris represented.[184] As he would confide to Duke Johann Friedrich in January 1675, Paris was a ‘place where one can achieve distinction only with difficulty. One finds there, in all branches of knowledge, the most knowledgeable men of the age, and one needs much work and a little determination to establish a reputation there.’[185] Prior to his arrival in Paris, Leibniz had been keeping abreast of French intellectual life, notably through his friend Louis Ferrand, who informed him of the latest theological and scientific controversies and publications. The pietist J. H. Horb had provided Leibniz with names of the directors of the Parisian libraries and information[186] about books, such as the grammarian and historian Gilles Ménage’s works on the origins of French and Italian as

[183] A IV, 1: 517.
[184] Barber (1995), p. 4.
[185] Leibniz to Johann Friedrich, 21 January 1675, A I, 1: 491-92: ‘Paris est un lieu, ou il est difficile de se distinguer: on y trouve les plus habiles hommes du temps, en toutes sortes de science, et il faut beaucoup de travail, et un peu de solidité, pour y établir sa réputation.’
[186] Johann Heinrich Horb to Leibniz, 1 July 1670, A I, 1: 95.

well as a satire on French savants, and the German theologian Johann Leyser had reported to him about some of the royal academy's activities.[187]

Leibniz's Parisian stay, especially his first and last years, proved conducive to his metaphysical reflections.[188] He was committed to the continuation of his project of a philosophical refutation of atheism and of the reconciliation of mechanical philosophy with revealed religion, thereby continuing the work he had initiated with his *Demonstrationes Catholicae* a few years earlier. In the *Demonstrationes* he undertook to defend Christian mysteries against the charges of incoherence and inconsistency. These writings reflect Leibniz's enduring preoccupation with the practical applications to be derived from his theoretical insights and placement of knowledge in the service of the public good. Like the rest of Leibniz's philosophical works of that period, they would remain unpublished during his lifetime.[189] In it, he broached a different number of philosophical and theological topics, including divine justice, divine and human freedom, and the compatibility of the latter with the principle of sufficient reason.[190] Evil was ultimately explained as inevitably required by the maximum of positive 'compossibilities' that made up the best possible world.[191] During the autumn and winter of 1672-1673 he composed the *Confessio philosophi*,[192] and from December 1675 to April 1676 a series of metaphysical papers generally referred to as *De summa rerum*, which are often construed as his first major attempt at presenting his metaphysical ideas in a systematic form.[193] In them, he sketched out many elements of his mature philosophy, including the principle of harmony that he would come to define in a

[187] Johann Leyser to Leibniz, 13 July 1671, A I, 1: 158-159.
[188] Antognazza (2009), p. 144.
[189] Ibid.
[190] Mercer (1999).
[191] Antognazza (2009), p. 145.
[192] *Confessio Philosophi*, autumn 1672-winter 1672/73, A VI, 3: 115-149.
[193] Parkinson (1999), pp. 199-222.

1671 letter to Arnauld as 'similitude in variety, or diversity compensated by identity'.[194] According to this principle, everything is connected with everything else in the universe, and the universe displays the greatest perfection and metaphysical goodness. Another key metaphysical principle found in the *De summa rerum* is the idea that every mind perceives and expresses the universe, albeit in a confused manner.[195] He also made strides in logic, particularly in relation to his so-called 'universal characteristic', which he conceived as a logical method of discovery and outlined in a letter written to Oldenburg at the end of 1675. This 'combinatory characteristic' would help perfect the mind,[196] providing it with a *filum meditandi* that would render thinking mechanical by making all knowledge accessible[197] and thus serve as the basis for an all-encompassing encyclopedia of sciences aimed at promoting human improvement.[198]

It was in natural philosophy, however, that Leibniz made his greatest strides. Nowhere, Leibniz believed, in a city 'paved with so many learned people,' could one better perfect the sciences than in France.[199] When he was not visiting friends, conducting his correspondence, or attending to his official duties,[200] Leibniz was left with a little time to 'use for the research into Nature and Mathematical reflections'.[201] He took full advantage of what Paris had to offer in matters of science, attending, for example, an experiment on the movement of water conducted by Foucher 'in the house of M. Delance in the presence of

[194] Moll (1999), pp. 65-78.
[195] Antognazza (1999), p. 163.
[196] Leibniz to Oldenburg, 28 December 1675, A II, 1: 393.
[197] Leibniz to Oldenburg, 1673-1676, A II, 1: 378-79.
[198] Antognazza (2009), p. 172.
[199] Leibniz to Johann Friedrich, September 1671, Klopp (1864–84), II, p. 9. Leibniz to Ferramd, May 1672, A I, 1: 452.
[200] On one occasion, at least Leibniz, complains, 'I owe you two Letters, and I ask you not make anything of my silence. For I am usually interrupted a number of times and take care of these endevours in intervals' (Leibniz to Oldenburg, 28 December 1675, A II, 1: 393). See also Leibniz to Perier, 30 August 1676, A III, 1: 588: 'The great number of distractions… do not let me dispose completely of my time.'
[201] Leibniz to Oldenburg, 15 July 1675, A III, 1: 119.

M. de Mariotte'.[202] Leibniz extended his geometrical method to problems of optics,[203] and broached astronomical topics with certain members of the Academy, including Huygens, Cassini,[204] and probably Roemer,[205] as well as some English savants.[206] He also pursued his work on mechanics,[207] in particular relating to laws of movement and the collision of elastic bodies.[208]

Whereas he had concentrated on philosophy and jurisprudence before travelling to France,[209] once in Paris Leibniz dedicated himself intensively to the study of mathematics, of which he had had hitherto a superficial grasp.[210] Leibniz was particularly keen to improve his mathematical knowledge and for this purpose sought out mathematicians, many of whom were Jesuits.[211] These included two teachers at the Collège de Clermont, Chalais[212] and the Père Pardies, the author of a theory on logarithms;[213] Deschales, whose algebra, Leibniz thought, left a bit to be desired; and Jean Prestet (like Arnauld an Oratorian priest), whose algebra and *Eléments de mathématiques* for its part impressed him.[214] Leibniz also discussed

[202] Letter to Foucher, 23 May 1687, A II, 2: 207.
[203] Davillé (1921), p. 165 and n. 2.
[204] Davillé (1920), p. 143 n. 8.
[205] Davillé (1921), p. 70.
[206] 'Excerpta ex Hookio contra Hevelium' (1674): Bodemann (1895), p. 316.
[207] Leibniz to Vincent Placcius, 10 May 1676, A II, 1: 407: 'I have added to the science of the mathematical science [*sic*] with a bit of a greater effort, and have achieved this beyond expectations, so that I am deemed—in Paris, among such a great number of scholars—as someone who should not altogether be despised. For some of my inventions in numbers and geometry, and in the field of mechanics have also been received with praise. Thus if I have achieved certainly this, if nothing else, that I have learnt true analysis and genuine arts of proof from eminent examples, and will make if not many, then certainly better contributions in the science of law.'
[208] Hannequin (1908), pp. 210-20.
[209] See also Klopp (1864–84), III, pp. 272-73: 'I am attending here neither to jurisprudence, nor to belles lettres, nor to controversies (things that principally occupied me in Germany), and instead I have begun basic studies to understand mathematics, in which I have had the good fortune to discover thoroughly unfamiliar truths, as letters from the most skilled mathematicians of our time will attest.'
[210] Goethe, Beeley, and Rabouin (2015), pp. 57-58.
[211] Davillé (1921), p. 71.
[212] Leibniz to Gerhard Meier, 15 December 1691, quoted in Davillé (1921), p. 71: 'I once knew Chalesius … the author of a course in Mathematics, intimately in Paris, where he taught in Collège Clairemont. He was a good and learned man, and although he was not going to be greatly outstanding through his own merits, he was yet able to explain the received ideas of other clearly and methodically.'
[213] On the Jesuit mathematicians see Dainville (1978) and Feingold (2002).
[214] Bodemann (1895), p. 314.

algebraic curves with Jacques Ozanam, a self-taught geometer who was preparing an edition of Diophantus;[215] consulted Jacques Sauveur, a private tutor, regularly on matters of analysis and geometry;[216] and had discussions with Claude Hardy, an 'excellent geometer and orientalist' who had edited a volume on Euclid;[217] with the mathematician, astronomer and Hellenist Ismaël Bouillau;[218] with the royal counsellor and distinguished geometer Frénicle de Bessy; and of course with the Abbé Mariotte.

During his short trip to England in early 1673,[219] Leibniz attended the meetings of the Royal Society, where he gave a demonstration of his still imperfect arithmetical machine. This visit was successful overall (aside from a mishap with the mathematician John Pell, who had been irked by Leibniz's inaccurate assertion that he was the first to interpolate numerical series),[220] providing him with precious contacts in the English scientific world, including Robert Boyle, John Wallis, John Collins, and Robert Hooke. The Secretary of the Royal Society, Henry Oldenburg, who was keen to encourage new talent in conformity with his pan-European vision of knowledge and to promote scientific activity in his native Germany,[221] had been a tireless promoter of Leibniz's work even before the latter's arrival in London, helping publish and disseminate his 1671 *Hypothesis physica nova* and *Theoria motus abstracti*; and Oldenburg played a crucial role in assisting Leibniz to establish a reputation in the English and even Parisian intellectual scenes as a promising young scholar.[222] Ironically, perhaps, Leibniz's visit to London and reception within English scholarly circles proved decisive for the remainder of his Parisian sojourn and served as a

[215] Davillé (1921), p. 72.
[216] Leibniz to Jean Bernouilli, 29 January 1697, A III, 7: 293.
[217] *Nouveaux essais sur l'entendement humain*, A VI, 6: 408 (bk. 4, ch. 7, no. 4).
[218] *Nouveaux essais*, A VI, 6: 489 (bk. 4, ch. 17, no. 13). On Bouillau's correspondence see Hatch (1998).
[219] On which see Hall (1978) and Beeley (2004).
[220] Hoffman (1974), p. 299. Oldenburg reported to Huygens on 19 February 1673, 'Monsieur Leibnitz a gagné beaucoup d'estime icy, comme il le mérite assurement': Huygens (1888–1955), VII, 256.
[221] Beeley (2004).
[222] Ibid.

major impulse behind some of his discoveries.[223] Even though he was elected to the Royal Society in April 1673, Leibniz was made painfully aware of the limitations of his mathematical knowledge there, and sought to remedy this situation immediately upon his return to France, where the Dutch physicist Christiaan Huygens (1629-1695) took him under his wing after receiving a glowing recommendation of the young scholar from Oldenburg.[224]

Under Huygens's benevolent mentorship, Leibniz would develop into a highly able mathematician who, by the end of his time in Paris had invented the calculus, even though this discovery would not be disseminated for several years.[225] By 1660, Huygens had achieved a position of considerable renown and influence in the Republic of Letters, especially within Parisian scientific circles.[226] So it is not surprising that France's all-powerful Controller-General of Finances, who had already consulted the omnicompetent and practically minded Huygens[227] on a number of technical projects,[228] entrusted him with the organization and direction of the new Académie des Sciences in 1666.[229] Inspired by the Royal Society's strong experimental and observational bent, Huygens set out to shape the new programmes of research at the Académie along experimental lines, placing the pursuit of a non-Cartesian 'useful' science at the heart of its activities—in contrast to the excessively rhetorical cast that had plagued and ultimately doomed the private Parisian societies such as the Académie de Montmor in the 1660s.[230] His influence within the Académie, however, would remain limited in a number of ways by the intellectual dominance of some of its members.[231]

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[223] Hofmann (1974), pp. 23-35; Bos (1978).
[224] Salomon-Bayet (1978), p. 164.
[225] See Hofmann (1974) on this remarkable transformation.
[226] See Taton (1981a) and more particulary Mesnard (1981), p. 39.
[227] See Hahn (1980), p. 62.
[228] Roger (1981), p. 44: 'Monsieur Colbert refers most inventors to me to know if they can contribute anything substantial, which is very rare.'
[229] On the foundation of the Académie, see Taton (1966) and Hahn (1971).
[230] Taton (1981b).
[231] Roberval in mathematics, Auzout in astronomy, and Mariotte in physics: see Hahn (1980).

The first meeting between Leibniz and Huygens probably took place in autumn 1672 and concerned the topic of the summation of series. Huygens posed Leibniz the problem of the sum of the reciprocal triangular numbers, which the latter had succeeded in solving, thereby gaining the former's praise.[232] Huygens recognized Leibniz's talent and potential, but also discerned the numerous lacunas in his mathematical knowledge. While possessing extraordinary natural talent, Leibniz had come late to mathematics,[233] and Huygens would act as a mentor to him especially upon his return from London,[234] introducing him to key mathematical literature (including the work of Pascal, Gregory of St Vincent, Descartes, Sluse, Cavalieri, Guldin, Torricelli, Wallis, and others) and suggesting problems. Huygens seems not only to have played a decisive influence on Leibniz, but to have taken a genuine interest in his student's work and research interests. The two met regularly,[235] Huygens stimulating Leibniz's mathematical interest through discussions,[236] teaching him analytical geometry and supplying him with the tools with which Leibniz would later attack Cartesian motion, and set him a standard of careful mathematical work.[237] In general, Huygens seems to have sought to steer Leibniz in the right direction, helping him overcome his imperfections, without dampening his eagerness and enthusiasm.[238]

Both Leibniz and Huygens were bound by a strong and mutually shared relation of respect and admiration.[239] Leibniz consulted Huygens on various matters and welcomed his criticism, and it was through the latter that the former quickly gained a solid reputation as a mathematician. With time Leibniz became more autonomous, taking the initiative rather

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[232] Hofmann (1974), p. 44.
[233] Hofmann (1974), p. 1.
[234] Hofmann (1974), pp. 47-50; also Bos (1978).
[235] See Leibniz to Jacob Bernouilli, April 1703, A III, 9: 187 (Vorausedition).
[236] Bos (1978), pp. 65-66.
[237] Bos (1978), p. 65.
[238] Hofmann (1974), pp. 47-50; see also Heinekamp (1981), p. 202, on Huygens as a 'stimulator and model' for Leibniz.
[239] Huygens to Leibniz, end of 1676, A III, 1: 429.

than waiting for Huygens to pose a problem, and their divergent styles and research interests became more pronounced, with Leibniz developing special interests in algebra and number theory and while Huygens's interests remained strongly geometrical and problem-oriented.[240] Over the next few months Leibniz's determination to perfect Cartesian analysis and develop a new algebraic method of calculus led him to various discoveries, including a method for summing infinite series, his 'transmutation theorem' whereby a 'characteristic triangle' is deployed to deduce the transformations of quadratures, his 'quadrature of the circle' (which Huygens passed on the Académie),[241] and finally in October 1675 his infinitesimal calculus (which allowed the mathematical treatment of all kinds of known curves). To be sure, Huygens accepted the advantages of the calculus only reluctantly, but Leibniz's great discovery was communicated to various figures, including Oldenburg.[242] Even before arriving physically in Paris, in fact, Leibniz had sought to leverage his mathematical discoveries to gain entry to the Parisian mathematical community, dedicating his 1671 *Theoria motus abstracti* to the Académie,[243] communicating his various advances to Jean Gallois (himself a mathematician of note), and trying to have his article 'Accessio ad arithmeticam infinitorum' (in which he set out to reinterpret the infinite in terms of an infinite progression within finite limits) published in the *Journal des Scavans.*[244] Having entrusted, when he departed for Hanover, a manuscript on the quadrature to the mathematician Soudry for publication in Paris, Leibniz now hoped that his calculus would help him secure a position at the Académie.[245]

[240] Bos (1978), p. 67.
[241] Davillé (1921), p. 33.
[242] See Leibniz to Oldenburg, 28 Deember 1675, A III, 331.
[243] Leibniz to Carcavy, 22 June 1671, A II, 1: 209.
[244] Leibniz to Gallois, end of 1672, A III, 1: 2–20; Antognazza (2009), p. 170.
[245] Introduction, A III, 1: lxiv–v; Hofmann (1965), pp. 290–305.

More generally, Leibniz conceived his algebraic discoveries as part and parcel of a more general universal language, a *characteristica universalis*. The prospect of being able to make 'highly assured and important propositions in metaphysics and morals', and more broadly of achieving perfect reasoning so as to be able to 'weigh the advantages or disadvantages when deliberating' or 'estimate their degrees of probability just as for the angles of a triangle', hinged on the creation of a 'rational language whose least effect would be its universality and the communication between different nations'. The main usage of this artificial language would reside in its ability to 'paint not speech, as advanced by Mr de Brebeuf, but thoughts, and to speak to reason rather than to eyesight.'[246] The identification of primitive concepts and their combination according to predetermined rules would thus help pave the way to a type of logical calculus in which each concept would be assigned an appropriate 'sign' or 'symbol' to represent it.

In the same letter of 19 December 1678 to Gallois in which he mentioned his *analysis situs,*[247] Leibniz reiterated that his conception of the *characteristica* marked a considerable advance on previous attempts to create an artificial universal language for the purpose of universal communication. This was owing to the algebraic and arithmetic models on which the *characteristica* drew and which, with its use of characters, made it possible 'to fix our vague and fleeting thoughts,'[248] and hence to 'assist discovery and judgment'. This method, by providing *a filum Ariadnes* to 'guide the mind like geometrical lines', would 'divide our thoughts' in a manner that would help 'illuminate' the thought process instead of confusing it[249] and be instrumental in avoiding disputes and controversies.

[246] Leibniz to Gallois, September 1677, A II, 1: 569 and n. The editors note that Leibniz refers to G. de Brébeuf's translation (1654) of Lucan's *Pharsalia*, bk. 3, ll. 220–24.
[247] Antognazza (2009), p. 246.
[248] Leibniz to Gallois, September 1677, A II, 1: 569.
[249] Leibniz to Gallois, 19 December 1678, A I, 1: 242.

4. **Engaging with Cartesianism**

Leibniz fully immersed himself in the controversies of his time, cultivating relationships with philosophers of various stripes. The years 1672 to 1679 correspond to the height of some of the debates surrounding Cartesianism and scepticism. Leibniz's Parisian life provided the ideal environment in which to apprise himself of contemporary intellectual currents while maintaining relatively detached, sounding out various hypotheses and ideas for the benefit of his own intellectual and philosophical development.[250] Some of Leibniz's close friendships acted as a propaedeutic to his own thinking, providing the backdrop against which he could clarify his own views; and they turned out to be instrumental in shaping many of his most important writings, not least through the discussion of objections.[251] Leibniz thrived on the intellectual stimulation to seek answers, and he displayed a predilection for 'ingenious badinage'[252] with the aim of 'perfecting' and refining his own philosophical positions.[253]

In Paris, Leibniz engaged more thoroughly than before with Cartesian philosophy,[254] with the aim of identifying its weaknesses and errors.[255] His criticism of Cartesian doctrines had begun early,[256] and doubtless emboldened by his successes in mathematics—which he believed exposed the superiority of infinitesimal calculus over Cartesian analysis—Leibniz

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[250] Popkin (1966).

[251] Popkin's investigation into Leibniz's relationships with apparently contrary types of philosophers led him to acknowledge that Leibniz, after all, was not as far from the sceptics as is commonly supposed: 'And while Leibniz was certainly no sceptic, nor a man who was particularly concerned with *la crise pyrrhonienne* of the seventeenth century, he was regarded as a closer friend intellectually by the sceptics of his age than any of the other metaphysicians of the period' (1966, p. 229). Leibniz's affinity with scepticism can be understood in the context of his rejection of dogmatism.

[252] Desmaizeaux (1740), I, p. xxvii.

[253] See Davillé (1909), pp. 625-28.

[254] Leibniz to Foucher, 1675, A II, 1: 388-89: 'I admit that I have not yet been able to read his writings with all the care that I have undertaken to take .... However, what I do know of the metaphysical and physical meditations of Mons. des Cartes I have gleaned from reading more familiar texts which report on his opinions.'

[255] Letter to Malebranche, 27 December 1694, A II, 3: 4. See also the Introduction to A I, 2.

[256] See the Introduction to A II, 1: xxxv-vi, lii; and Leibniz to Foucher, 1675, A II, 1: 388–89.

would develop this criticism in his exchanges with the Parisian learned community. To this end he borrowed manuscripts across Paris, including those of Pascal and Descartes, consulting those available at the home of Clerselier,[257] making extracts not only on mathematical and philosophical topics but anatomical and medical topics as well.[258] While conceding Cartesianism to be 'the antechamber' of the truth,[259] he took issue with most Cartesian doctrines and set out to refute some of Descartes's key tenets. Leibniz judged Descartes's mechanics 'full of errors', his geometry 'limited', his physics 'too hasty', and his metaphysics 'all of these traits at once'.[260] In particular he objected to Descartes's conception of motion, which banished final causes, and he sought instead to relocate the final reasons underlying mechanism and the laws of movement in metaphysical substances,[261] in which connection he later immersed himself in Plato's works.[262]

'Le grand Arnauld'

A particularly decisive and important relationship that Leibniz forged in Paris was with Antoine Arnauld (1612-1694), the Jansenist theologian and philosopher who would later prove to be one of the most penetrating contemporary critics of Leibniz's developing system in the 1680s.[263] Arnauld had acquired a reputation for logical acuity and intellectual rigour,

[257] Leibniz to Jean Bernouilli, 29 January 1697, A III, 7: 292.
[258] Bodemann (1895), p. 44.
[259] Leibniz to Christian Philipp, early December 1679, A II, 1: 767; Leibniz to Malebranche, 13/23 January 1679, A II, 1: 678: '[Descartes] has only provided nice openings, without getting to the bottom of things: it seems to me that he is still far removed from true analysis and from the art of invention in general.'
[260] Leibniz to Malebranche, 13/23 January 1679, A II, 1: 455.
[261] Davillé (1923), p. 57.
[262] Ibid., and see Leibniz's extracts from the *Pheado* and *Theaetetus*, March–April 1676 (?), in A VI, 3: 283–310.
[263] Leibniz (1871 [1695]), p. 209: 'It is now some years since I conceived this system, and entered into communication about it with several learned men, and in particular with one of the greatest theologians and philosophers of our time'. On completion of the *Discourse on Metaphysics*, Leibniz wrote from the Harz

choosing to tackle complex philosophical problems, and corresponded at great length with the leading scientists and thinkers of his time, including Malebranche, whose three-volume treatise *De la recherche de la vérité* Arnauld later attacked. In 1669, taking advantage of the lull in hostilities between the crown and the Jansenists, Arnauld had published with Pierre Nicole the first volume of his *La Perpétuité de la Foi catholique touchant L'Eucharistie* in which he defended the Catholic faith against the Calvinists. This volume had found its way to the court of Mainz, where Leibniz's employer, Johann Christian von Boineburg, a convert to Catholicism who shared Leibniz's irenicism, suggested that Leibniz write to Arnauld on the basis of his previous work on religious reconciliation. Leibniz, of course, knew about Arnauld and his writings on transubstantiation and the Roman Church,[264] mentioning to his nephew, Simon Löffler, Arnauld's indictment of Jesuit morality and the controversy that had ensued in the wake of Antoine and Isaac Lemaître de Sacy's 1667 translation of the New Testament into French.[265]

Leibniz had also been deeply impressed by Arnauld's *Logique* and *Nouveaux éléments de géométrie* (1667), and was keen to enter in contact with the most outstanding philosophical and theological controversialist of the time, one whose approval 'would carry a great weight', as Boineburg observed to Leibniz.[266] Arnauld had been hailed as '*le plus grand homme du Royaume'*, whose 'golden quill', in the words of Boileau, excelled in

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mountains to Landgrave Ernst von Hessen-Rheinfels on 11 February 1686, A I, 4: 399: 'Being a place where for some days I had nothing to do, I have composed a small discourse on metaphysics, about which I would be very pleased to have the opinion of M. Arnauld. For the questions of grace, the concourse of God and creatures, the nature of miracles, the cause of sin and the origin of evil, the immortality of the soul, ideas, etc. , are touched upon in a manner that seems to open up new possibilities for elucidation of very great difficulties. I have enclosed the summary of the articles it contains, for I have not yet been able to have a fair copy made. I therefore beg your supreme highness to have this summary sent to him and that he be requested to give it a little consideration and to state his opinion.'

[264] Horb to Leibniz, 1 July 1670, A I, 1: 96 and 2/12 Mars 1671, A I, 1: 128; Spener to Leibniz, 10/20 January, A I, 1: 112, 16/26 February, A I, 1: 122 and 8 March 1671, A I, 1: 131; Ferrand to Leibniz, 13 February 1671, A I, 1: 119-121.

[265] Leibniz to Simon Löffler, 20/30 April 1669, A I, 1: 75.

[266] As Leibniz later reported to Duke Johann Friedrich, autumn 1679, A II, 1: 751.

various domains.[267] He was seen as a moral leader of the Church of France, like the king himself. Leibniz's friend Louis Ferrand had also provided Leibniz with journals and works pertaining to Arnauld,[268] and Leibniz had developed a special affinity for Port-Royal writings,[269] discussing them with his pietist friends Horb and Spener. These seemed to resonate particularly with his own intellectual preoccupations and ethos, namely an attachment to the purity of internal inspiration and the linking of apologetics to an ideal of mathematical rigor which specified the formal rules of the art of thinking.[270]

By the time Leibniz made contact with Arnauld, the latter had thus already lived a full life with its lot of struggles, controversies, and polemics, not least the affair of *fréquente communion* in 1643. His subsequent refusal to submit to papal authority and accept Jansen's text as heretical had resulted in his removal from the faculty of the Sorbonne in 1656[271] and the 'crisis of the Formulaire' in 1661, which had opposed Jesuits to Jansenists over the orthodoxy of Jansen's propositions, eventually forced him into hiding.

Now rehabilitated after the so-called 'Peace of the Church', which had helped consecrate him as an illustrious representative of French thought—his family's fame would be hailed in the *Journal des Scavans* of September 1675—Arnauld was at the height of his fame as a philosopher and a theologian when Leibniz, encouraged by Boineburg to present his ideas for theological reconciliation,[272] first wrote to him in early November 1671, intent on securing his approval in metaphysical matters.

Beyond the project of reunification of the churches, Leibniz discerned a more urgent threat to Christianity in Cartesianism:[273] he took particular issue with the Cartesian dogma

[267] Quotations from Orcibal (1978), p. 15.
[268] Ibid.
[269] Rodis-Lewis (1952), p. 3.
[270] Rodis-Lewis (1952), p. 4.
[271] Sleigh (1990), pp. 27-28.
[272] Boineburg to Leibniz, November 1671, A I, 1: 245.
[273] See Goldenbaum (1999).

that extension constituted the essence of matter, which, according to him, imperilled the doctrine of the Eucharist by declaring it impossible for one substance to assume the physical characteristics and extension of another and yet retain its identity, as the Catholic doctrine of transubstantiation held.[274] Already in his *Catholic Demonstrations*, Leibniz had set out to establish the possibility of mysteries, and in particular that of transubstantiation, which had recently become the subject of a controversy when Arnauld upheld the Real Presence in his *La perpetuite de la Foi de l'Eglise Catholique touchant sur l'Eucharistie* (1669) against the Calvinist minister Jean Claude.[275]

In his letter Leibniz claimed to have found a solution to what had turned into a highly explosive issue for the Cartesian Jansenists in France, after the contradiction between the Cartesian philosophy and the Trentine doctrine of transubstantiation had led Descartes's works being put on the Index in 1663.[276] This solution would be compatible with mechanical principles while maintaining the mysterious nature of the sacrament and the indestructibility of the mind.[277] Leibniz drew here on his work on motion, which he conceived as inextricably connected to his broader philosophical and theological meditations.[278] In his *Theoria motus abstracti* and his *Confessio Naturae* Leibniz had redefined matter as motion, the mind as *conatus*,[279] its moving principle,[280] and the body as a *mens momentanea*, that is, a momentary mind: thus 'that the substance of one and the same body can be in many different

[274] Leibniz to Arnauld, early November 1671, A II, 1: 277.
[275] Leibniz to Johann Friedrich, October 1671, A I, 2: 163.
[276] See Goldenbaum (1999).
[277] Leibniz to Arnauld, early November 1671, A II, 1: 277.
[278] Nadler (2010), pp. 91-92.
[279] In a letter of 5 May 1671 to Lambert van Velthuysen, Leibniz expressed himself in this way: 'Just as the physical through spaces and movements, so I believe I can explain the spiritual through points and strivings [*punctis et conatibus*]' (A II, 1: 164).
[280] Leibniz to Arnauld, early November 1671, A II, 1: 277 (and repeated in his letter to Johann Friedrich, 21 May 1671, A II, 1: 108). Although Leibniz appropriated Hobbes's term *conatus*, he firmly rejected the latter's denial of minds. This concept of a moving mind provided the foundation on which which Leibniz would later develop his theory of substance as self-standing and self-acting.

distant places, or, what is the same, amongst numerous external appearances'.[281] From the 'philosophy of movement' to 'the science of the mind' there was only 'one step'.[282] Leibniz therefore bypassed the difficulties posed by transubstantiation and established the possibility of the physical Presence of Christ.[283] This approach also allowed him to challenge the Calvinist refusal to accept the Real Presence and justify his own support for the Catholic doctrine of transubstantiation, with its proximity to the Lutheran doctrine of consubstantiation.[284]

Arnauld was one among several high-profile thinkers, alongside Hobbes and Spinoza,[285] to whom Leibniz wrote in his bid to ingratiate himself with renowned figures in the learned world and to gain access to elite intellectual circles.[286] By writing to Arnauld, Leibniz was seeking the approval of an established thinker—perhaps the most established philosopher and theologian in France—in the hope of gaining support for his programme of religious reconciliation. Arnauld, however, seems to have been reluctant to enter into conversation with Leibniz, and left the letter unanswered. Leibniz presumably had great expectations of Arnauld because the latter had engineered a first attempt at reconciliation in 1668 with his *Treatise on the Perpetuity of the Faith*, and thus would likely be instrumental in a broader reconciliation of the churches. Arnauld's non-response notwithstanding, Leibniz would eventually meet him 'three or four times'[287] during his first six months in Paris. As he

[281] Leibniz to Arnauld, early November 1671, A II, 1: 277.
[282] Leibniz to Arnauld, early November 1671, A II, 1: 277: 'Je considérais la géométrie ou philosophie du lieu comme un pas vers la philosophie du mouvement ou du corps et la philosophie du mouvement comme un pas vers la science de l'esprit.'
[283] Merely demonstrating the possibility of the mystery would be sufficient, Leibniz explained to Arnauld, early November 1671, A II, 1: 277: 'As the geometrician has to examine, that a possibility has thus been proven or that it explains a certain possible way and means and that the possibility was proven, if he applied them either to other exercises, which have already been resolved or to exercises which do not have to be solved, which means that he has reduced them to postulations which relate to the exercises, as axioms do to theorems.'
[284] Goldenbaum (1999).
[285] Nadler (2010), p. 70.
[286] Ibid.
[287] Antoine Arnauld to Arnaud de Pomponne, 12 September 1672, Klopp (1864–84), II, p. 139.

confided on 26 March 1673 to Johann Friedrich— his last remaining German supporter after both Boinebourg and Schönborn had died—Leibniz was deeply impressed with Arnauld, whom he held to be one of the few theologians capable of helping engineer a religious rapprochement:

> The famous Arnauld is a man of the most profound and wide-ranging thought that a true philosopher can have; his aim is not only to illuminate hearts with the clarity of religion, but, further, to revive the flame of reason, eclipsed by human passions; not only to convert heretics, but, further, those who are today in the greatest heresy—the atheists and libertines; not only to vanquish his opponents, but, further, to improve those of his persuasion. His thoughts, then, come to seeking how, so far as it is possible, a reform of abuses, frankly widespread among dissidents [*Dissidenten*, probably Jesuits] would overcome the cause of the division. In this design, on several points of importance, he has made the first step and, as a prudent man, he goes by degrees. I am distressed that we have lost von Boineburg just when I have struck up an acquaintance with Arnauld; for I had hoped to bring these two minds, so similar in their honest soundness, on the road to a closer agreement, The Church, as well as the Fatherland, has sustained a loss with this man.[288]

We do not know with certainty what was discussed during those meetings, but it seems highly probable, on the basis of his first letter to the great theologian, that Leibniz would have attempted to steer the conversation towards religious matters, and in particular to broach the subject of a potential religious rapprochement. In Paris, Leibniz was still very much preoccupied with theological problems which he conceived as inextricable from his scientific pursuits.[289]

Arnauld, it seems, entertained other ideas—of a more scientific order. He himself later reported to Landgrave Ernst that Leibniz would come to 'see him regularly' when in Paris.[290] Arnauld lauded the young man's abilities, notably in mathematics,[291] and even set him a problem on triangulation in December 1675.[292] Arnauld was a mathematician of

[288] Leibniz to Johann Friedrich, 26 March 1673, A I, 1: 487-488.
[289] Leibniz to Johann Friedrich, autumn 1679, A II, 1: 761: 'my meditations were primarily on theology'.
[290] Arnauld to Ernst von Hessen-Rheinfels, 10 May 1683, in Arnauld (1775–83), II, p. 255.
[291] Ibid.: 'He has a very fine mind and one that is very knowledgeable in mathematics. I wonder whether if he managed to build those two wonderful machines that he claimed would be of unrivalled exactness.'
[292] Leibniz to Arnauld, 12 December 1675, A III, 1: 311.

repute in his own right, publishing the *Nouveaux éléments de géométrie* (1667), inspired by Euclid's *Elements* and intended as a new method of teaching geometry, as well as a *Traité des proportions* (1683).

During those meetings held at Arnauld's house, Leibniz was introduced to Arnauld's friend and collaborator Pierre Nicole (1625-1695), to the mathematicians Jacques Buot and Ignace Gaston Pardies, and to Carcavy.[293] The exchanges between Leibniz and Arnauld seem indeed concerned primarily scientific matters,[294] especially at a time when Leibniz was taking a keen interest in the work of the Blaise Pascal and his arithmetic triangle and working towards his own mathematical and physical discoveries, including the calculus and a new mechanical theory. Leibniz acquired the reputation of a 'mathematician by trade',[295] and in this domain Arnauld was more forthcoming. Looking back on his time in Paris, Leibniz confided his respect and admiration for Arnauld, adding that he often 'conversed with M. Arnauld on the matter of sciences, as he was no less a geometer than a theologian. He meditated then something rather beautiful on reasons and proportions'[296]—a recollection that Arnauld would later qualify in 1686 when he claimed, 'I have applied myself to these matters only occasionally and during wasted hours and it has been over twenty years since I have seen any of these books.'[297]

As to whether Leibniz's embellished the extent of his conversations with Arnauld,[298] we do not know; but it is likely that Arnauld sought in later years to minimize his earlier association with Leibniz. Leibniz, nonetheless, cautiously persisted in his attempts to engage

[293] Antognazza (2009), p. 141. It is interesting in this regard that Leibniz mixed equally with Jesuits and Jansenists.
[294] Sleigh (1990), pp. 15–16.
[295] Leibniz to Johann Friedrich, autumn 1679, A II, 1: 761.
[296] Leibniz to Langrave Ernst, 27 April/7 May 1683, A I, 3: 286.
[297] Arnauld to Leibniz, 28 September 1686, A II, 2: 98.
[298] In a letter to Malebranche of 27 December 1694, A II, 3: 4, Leibniz would also claim to have conversed about free will with Arnauld, which the latter allegedly found 'quite impressive'.

Arnauld theologically.[299] In or around 1673 he sent Arnauld a copy of the *Confessio Philosophi*, but to no avail: despite Leibniz's best efforts not to shock him, Arnauld seems to have avoided being engaged on theological topics; and Boineburg's death may have further impeded Leibniz's overtures. Arnauld's caution is understandable, for Leibniz had come to Paris on the eve of a fresh wave of persecution against Jansenists—in 1679 the pope and Louis XIV would mend their relationship formally, thus ending the 'Peace of the Church'. This persecution would eventually result in the destruction of the Port-Royal monastery, the dispersal of its members, and the exile of its leaders, including Arnauld.

In a letter dated 26 March 1673, Leibniz conceded to Johann Friedrich that he had not engaged with Arnauld on religious matters or controversies: 'As I was proceeding with all possible circumspection, so as to not put myself at a disadvantage, Boineburg's death struck ... [removing the possibility] of explaining myself to Mr. Arnauld.'[300] He confirmed this in another letter of 4/14 March 1685, when he wrote about Pierre Nicole's anonymous anti-Calvinist tract *Les Prétendus réformés convaincus de schism* (1684): 'I had the honour of talking to Mr. Nicole sometimes at Mr. Arnauld's house, but we did not get to religious matters, nor did Mr. Arnauld'.[301] Arnauld trod cautiously with Leibniz, no doubt discerning the latter's aim of seeking to enlist him to his cause: he would not have wanted to enter into religious controversy again and risk jeopardizing the Peace of the Church by allying himself to a Lutheran.[302] Nonetheless, despite what Huguette Courtès calls their 'impossible dialogue',[303] Leibniz and Arnauld seem to have had a mutual respect; and Arnauld remained deeply impressed with the young German, writing in 1676 to a Capuchin in Hanover that he

[299] In a letter of 22 June 1679, A II, 1: 477, Leibniz referred Malebranche to a dialogue on free will that he had written and shown to Arnauld.
[300] Leibniz to Johann Friedrich, 26 March 1673, A II, 1: 359.
[301] Leibniz to Ernst von Hessen-Rheinfels, 4/14 March 1685, A I, 4: 352.
[302] Courtès (1998).
[303] Ibid.

'lacked only the true religion to be one of the greatest men of his age'.[304] On his side, Leibniz's esteem for Arnauld continued unabated after his departure from Paris: he mentioned the French thinker regularly in his correspondence with third parties, was keen to probe Arnauld for his reflections, and even sought his co-operation with a philosophico-religious reflection that Leibniz would then ideally have published.[305]

Leibniz's departure from Paris marked a break in their correspondence, which would resume only in 1686 through the intermediary of Landgrave Ernst on the occasion of Leibniz's composition of an outline of his philosophical views leading up to his *Discourse on Metaphysics*, which he had asked the landgrave to forward to Arnauld for comment. Arnauld was not, at first, favourably impressed with Leibniz's essay, discerning some theological dangers in his ideas and finding 'so many things that frighten me and that almost all men, if I am not mistaken, will find so shocking, that I do not see what use such a work can be, which will clearly be rejected by everybody'.[306] Particularly objectionable to him was proposition 13,[307] which seemed to him to imply a complete fatalism: 'once God decided to create Adam, everything that has happened since and will ever happen to the human race was and is obliged to happen with a more than fatal necessity'.[308] Despite Leibniz's best attempts to keep it going—and he was the more active correspondent, writing eight of the twelve letters exchanged between them—the correspondence eventually fizzled out, Arnauld deeming that Leibniz's 'metaphysical speculations could not be of any use to him or others'.[309]

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[304] Quoted in Müller, Schepers, and Totok (1978), p. 20.
[305] Leibniz considered having his correspondence with Arnauld published twice: in 1695, the year after Arnauld's death and then a bit later in 1708, first within the framework of the reconciliation of the churches and then his writings against Bayle.
[306] Arnauld to Ernst von Hessen-Rheinfels, 13 March 1686, A II, 2: 9.
[307] Leibniz, 'Discours de metaphysique' (early 1686), A VI, 4: 1546: 'The individual notion of each person includes once and for all everything that will ever happen to him', so that 'one sees in [that notion] *a priori* proofs of the truth of each event, that is, why one [event] has occurred rather than another.'
[308] Arnauld to Ernst von Hessen-Rheinfels, 13 March 1686, A II, 2: 9.
[309] Ibid.

Leibniz pursued his refutation of matter as mere extension in his brief exchange with Nicholas Malebranche,[310] whose *Recherche de la verité* he had read (albeit hastily, as he admitted to Malebranche)[311] and whose doctrine of occasionalism had affinities with Leibniz's own doctrine of pre-established harmony. Although they did meet, and both sought to harmonize philosophy—in Malebranche's case, Cartesianism—with theology,[312] their philosophical dialogue remained limited. Still, butterflying from one intellectual niche to another as was his wont, Leibniz frequented anti-Cartesians and Cartesians alike, discussing the master's ideas with them. He was, for instance, particularly receptive to the architect and anatomist Claude Perrault's rejection of Cartesian mechanism with regard to the impenetrability of bodies and causes of physical phenomena.[313] Like Leibniz, Perrault[314] disputed a strictly mechanistic character of life: while mechanism provided a tentative explanatory model, it could not account for the nature of life itself,[315] which Perrault understood in terms of an omnipresent inorganic soul that regulated all movement.[316] While Leibniz eventually preferred his theory of pre-established harmony to Perrault's animism,[317]

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[310] A II, 1, 254-57.

[311] Leibniz to Malebranche, 13 January 1679, A II, 1: 455: 'J'ay veu vos *conversations Chrestiennes* . . . J'y ay mieux compris vostre sentiment que je n'avois fait du temps passé en lisant *la recherche de la verité* parce que je n'avois pas eu alors asses de loisir.'

[312] Hirsch (2000), pp. 70–72.

[313] See Azouvi (1982).

[314] For more on Perrault, see Borowski (2021a).

[315] Perrault (1727a), p. 514: 'One cannot say that we are as assured of knowing how the organs of an animal act, in the way that it is certain that one knows how a counterweight or a spring make a watch run; we do not know what causes a dog who has lost its master to stop eating, even though we are quite sure that it is not chagrin that stops a watch from running.'

[316] Perrault (1727b), p. 329: 'By *animal* I mean a being that has feeling and is capable of exercising the functions of life by a principle called the soul; that the soul makes use of the organs of the body, which are true machines . . . and that although the disposition that the pieces in the machine have with respect to each other does nothing differently by means of the soul than it does in pure machines, still the entire machine needs to be being moved and driven by the soul.' In a note dating from the end of 1675 or the beginning of 1676, Leibniz reported that it was the 'l'opinion de Mons. Perrault… que l'ame est egalement par tout le corps, et que le sentiment se fait in ipso sensorio dans les yeux, dans les pieds' (Bodemann (1895), pp. 118-119).

[317] Wright (1991); Azouvi (1982).

both thinkers once again engaged in a common reflection, Perrault's conception of 'neglected and confused thoughts' and Leibniz's 'little perceptions'.[318]

Foucher

In a predominantly Cartesian decade, when sceptical thinkers were being denounced as a grave threat to the very foundations of rational thought, overthrowing all certainty in natural and revealed knowledge, Leibniz found much inspiration in his interactions with the former.[319] Among the many philosophers he came to know particularly well during his stay in Paris, and whose critique of Malebranche would give him food for thought, was Simon Foucher (1644-1696).[320] The canon of the cathedral of Dijon, Foucher had come in contact with Cartesianism when he attended a series of weekly lectures on physics given by Jacques Rohault, and these had prompted his interest in experimental physics and led him to publish a little pamphlet called *Nouvelle façon d'hygrometres* in 1672.[321] Still, his deeper interests lay in philosophy, and he devoted much of his life to the revival of Academic scepticism, the philosophy of Plato's Academy in its later years, which he perceived as a more rigorous methodology for searching after the truth, one devoid of dogmatic prejudices. He sought to steer a middle course between dogmatism and extreme Pyrrhonism and to provide the new scientific spirit of the time with a suitable philosophical and metaphysical underpinning.[322] By seeking to revive Academicism, Foucher sought to offer a method that would avoid the

[318] Herrmann (1973). Bertrand (1904), p. 188, even believes that Perrault's ideas on the subject 'font pressentir Leibniz'.
[319] Popkin (1966), p. 238.
[320] A few years later Leibniz would give a short account of a chance encounter between himself and Foucher when, looking for Foucher's *Critique de la recherché de la vérité* (1675) in a Parisian bookshop, he was ridiculed for referring to it as a work of metaphysics. Foucher had appeared at just that moment, praising Leibniz and prompting the bookseller to change his attitude. See Antognazza (2009), p. 170; and Bodemann (1895), p. 339: 'I have never before noticed so clearly', Leibniz later recollected, 'the power that prejudice and appearance have over human beings.' For more on Foucher, see Watson and Grene (1995).
[321] Garber (2009a), p. 272.
[322] See Popkin (1966).

pitfalls of Cartesian dogmatism while also acting as a useful and important propaedeutic for Christian belief.[323] He rehabilitated the method of Academicians, with their moderate exercise of doubt, to arrive at a certain number of useful and indubitable truths, namely the 'evident truths' (*veritez evidentes*) and 'certain knowledge' (*connoissances certaines*) that led to new knowledge. From incontestable first principles such as mathematical and conceptual truths, we could then seek out further knowledge concerning the soul, God, and the existence of the world.[324] For Foucher, Academicism was the only philosophy capable of overcoming the dead ends of Cartesian dualism in terms of its epistemological implications,[325] and he emerged as one of the most vocal critics of the new Cartesian dogmatism.

In his *Critique de la Recherche de la verité. Où l'on examine en méme-tems une une* [*sic*] *partie des principes de Mr Descartes* (1675), his response to Malebranche's *De la recherche de la verité*, Foucher began what was to be a polemic of many years between himself and the Cartesians, including Malebranche and Dom Robert Desgabets (who rallied to Malebranche's defence). The *Critique* conducted a detailed critical investigation into the principles and claims of Cartesianism (even if Foucher incorrectly assumed that the published volume of Malebranche's *Recherche* was the whole work),[326] and set forth a series of interesting arguments in response to Malebranche which helped spur on Leibniz's own philosophical development. Foucher criticized Cartesian principles of knowledge, principles on which Malebranche had 'wholly grounded himself', taking particular issue with presumptions of the Cartesian position regarding what was known. He challenged our ability

[323] Schmaltz (2002).
[324] Ibid.
[325] Charles (2013).
[326] Foucher published his refutation of Malebranche before the latter had published the concluding portions of his book (only the first volume had been published), leading Malebranche to enjoin readers to read books in their entirety before refuting them in the preface to the second volume.

to have any knowledge of an external world of external bodies especially considering that the first principles on which all knowledge rested remained unknown and 'encumbered with nearly insurmountable difficulties'. All ideas, ultimately, were states of mind, 'only modes of our soul' and granted us no access to the external world 'because these objects have nothing in themselves *like* what they produce in us, for matter cannot have modes that are *like* those of which the soul is capable'.[327]

Leibniz met Foucher in Paris probably through Jean-Baptiste Lantin, *érudit* and councillor to the Dijon parliament.[328] Lantin was familiar with Leibniz's early writings on physics and was, as Leibniz acknowledged, one of the first to encourage him to apply his 'dynamical meditations' to metaphysics.[329] By 1676, Leibniz considered that he had already known Foucher 'for a long time',[330] and was consistent in giving his ideas a careful and detailed examination.[331] Though not a philosophical sceptic himself, Leibniz shared Foucher's concern about the insufficient demonstration of the first principles in philosophical reasoning.[332] Both agreed on a whole raft of philosophical issues and objections to Descartes—so much so that Stuart Brown speaks of a 'philosophical alliance' between the two of them.[333] This included their common rejection of the distinction between primary and secondary qualities, of the Cartesian doctrine of the essence of matter as extension, of the contradictions incurred by the mind-body dualism, and of Descartes's arguments for the existence of God, and they shared the more general conclusion that the doctrine of clear and distinct ideas was inadequate to discover the truth. Both, too, were committed to the revival of the dialogic style of ancient philosophy—Leibniz had produced

[327] Quoted in Garber (2009a), p. 270.
[328] For more on Leibniz's relationship with Foucher, see Popkin (1966), Brown (1983), Olazo (1987), Mendonça (2010), and Pelletier (2012).
[329] The term 'dynamics' itself ('dynamica') doesn't get introduced into his vocabulary until the late 1680s.
[330] Quoted in Müller (1969), p. 41.
[331] Popkin (1966).
[332] Garber (2009a), p. 163.
[333] Brown (1983).

abridgements of Latin translations of the *Phaedo* and the *Theaetetus* while in Paris and had high hopes that Foucher would make available selections in French translation from Plato and the Academicians—in particular, texts relating to Academic scepticism as a philosophical methodology.

It was probably through reading Foucher's critique of Malebranche in 1675, and discussing those issues with him in Paris, that Leibniz began to consider more seriously the question of how we can know the existence of the external world beyond phenomenal appearances. In his first letter to the author of the *Critique de la recherche de la verité*, Leibniz discussed Foucher's pamphlet in some detail, delving further into the question of the possibility of knowledge of the external world, and in particular of 'hypothetical propositions' which affirmed 'that there is something outside of us,'[334] something that does 'not depend on us'[335]—a concern both philosophers shared. Leibniz starts by agreeing with Foucher—and Descartes—'that it is important once and for all to examine all our presuppositions in order to establish something sound'.[336] Before turning to the discussion of this matter, Leibniz then postulates what he considers two incontestable truths that form the cornerstone of rational thinking, namely 'that we think' and 'that there is a great variety in our thoughts', from which it follows 'that we exist' and 'that there is something else besides us, that is, something else besides that which thinks, something which is the cause of the variety of our appearances'.[337] Leibniz judges Descartes's metaphysical achievements remarkable, if incomplete,[338] in helping demonstrate the existence of an external world that is responsible for 'appearances', beyond ourselves and our ability to think. The 'variety of our thoughts', Leibniz explains, cannot be ascribed to that 'which thinks, since a single thing

[334] Leibniz to Simon Foucher, 1675, A II, 1: 387.
[335] Ibid.
[336] Leibniz to Simon Foucher, 1675, A II, 1: 387.
[337] Leibniz to Simon Foucher, 1675, A II, 1: 387.
[338] Leibniz to Simon Foucher, 1675, A II, 1: 388.

by itself cannot be the cause of the changes in itself': 'For everything would remain in the state in which it is, if there is nothing that changes it; and since in itself it is indeterminate with respect to having these changes rather than others, one cannot begin to attribute any variety to it without saying something which, we must admit, has no reason—which is absurd.'[339] There must be, on the contrary, 'some cause outside of us for the variety of our thoughts' and 'subordinate causes for this variety, causes which themselves still need causes'. Harking back to the criticisms of the 'Ancient Academy', Leibniz presents the quandary facing us: senses only provide us with appearances, not direct access to the external world. Appearances in themselves did not 'prove the existence of matter or bodies', only that 'there was something which presented us with continuous appearances', and this 'connection must have a constant cause'. It does not 'follow from all this that matter or bodies exist, but only that there is something that presents well-sequenced appearances to us'. In this manner an 'invisible power' could, for instance, 'take pleasure in presenting us with continuous and well-accorded dreams' in such a way that we would be unable to distinguish them from reality. Conjuring up Descartes's *genius malignus* from the *Meditations*, Leibniz goes beyond Foucher's line of inquiry asking 'what prevents the course of our life from being a long well-ordered dream, a dream from which we could be wakened in a moment?'[340]

Our belief that appearances amount to actual existence, Leibniz tells us, is grounded in a moral supposition rather than a real ability to back up any chain of causality to the source and the origin of the world: only in this manner would the reality of existence be demonstrated once and for all. Reaching such a 'beatific vision'[341] would however be very difficult at this stage, especially considering 'how confused the knowledge which we

[339] Ibid.
[340] Leibniz to Simon Foucher, 1675, A II, 1: 390.
[341] Leibniz to Simon Foucher, 1675, A II, 1: 391.

commonly have of the body and matter must be' and our inability to establish that they exist for certain. On a more positive note and, praising Descartes once again, Leibniz reasserts man's certainty 'of the existence of that which thinks' and ultimately 'our power to undeceive ourselves about many things, at least about the most important ones', a point on which he and Foucher would later come to disagree.[342]

That Leibniz was mainly hypothesizing the existence of an external world of bodies and playing with ideas seems to be borne out in an essay of 15 April 1676, written shortly after his exchange with Foucher. In it Leibniz explores a more radical position, seemingly dispensing with the necessity for an external reality altogether:

> Since what we can judge about the existence of material things is no more than the consistency of our senses, one has a sufficient basis for judging that we can ascribe nothing to matter apart from being sensed in accordance with some certain laws, the reason for which (I admit) remains to be sought.... On due consideration, only this is certain: that we sense, and that we sense in a consistent way, and that some rule is observed by us in our sensing. For something to be sensed in a consistent way is for it to be sensed in such a way that a reason can be given for everything and everything can be predicted. This is what existence consists in—namely, in sensation that involves some certain laws; for otherwise, everything would be like dreams. Further, it consists in the fact that several people sense the same, and sense what is coherent; and different minds sense themselves and their own effects.... Therefore there is no reason why we should ask whether there exist certain bodies outside us, or whether space exists, and other things of this sort; for we do not explain adequately the terms that are involved here. Unless, that is, we say that we call a 'body' whatever is perceived in a consistent way, and say that 'space' is that which brings it about that several perceptions cohere with each other at the same time.... As this is so, it does not follow that there exists anything but sensation, and the cause of this sensation and of its consistency....

In this manner, by reframing our understanding of an extended reality that he now ties to the consistency of our perceptual world, Leibniz formulates a way out of the epistemological quandary of inferring physical reality independently of the mind. In fact, Leibniz explores the possibility that that there may be nothing more to bodies than coherent appearances,[343] thus suggesting that all there is to the world of body is the sensations we have:

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[342] Ibid.

[343] Garber (2009a), p. 280.

> For he who can finally make predictions with success must be said to have become sufficiently proficient in nature. And so the objections the Skeptics make against observations are inane. Certainly, they may doubt the truth of things, and if it pleases them to call the things that occur to us dreams, it suffices for these dreams to be in agreement with each other, and to obey certain laws, and accordingly to leave room for human prudence and predictions. And granting this, it is only a question of names. For apparitions of this kind we call *true*, and I do not see how they could be either rendered or chosen truer.[344]

The correspondence with Foucher seems to have resumed only in the 1690s, when Foucher helped Leibniz refine his theory of pre-established harmony and his new metaphysics for the *Nouveau système* (1695). Leibniz thus perceived Foucher and scepticism not as destructive threats but as an intellectual platform with which he held much in agreement, especially as to how little demonstratively established knowledge we can have and how restricted our knowledge of the world of experience is. While refusing to entertain a scepticism with regard to reason itself and remaining largely immune to the *crise pyrrhonienne*, Leibniz thrived on the 'dialectical interplay' of ideas to forge his own original position.[345]

5. Defending a particular conception of the Republic of Letters: Leibniz on the *Querelle des anciens et des modernes* and the Republic of Letters

While this thesis aims to shed light on Leibniz's role and activities in the Republic of Letters, it also takes an interest in how he viewed and understood that intellectual citizenship. Indeed, Leibniz was one of the most active and prolific members of the Republic of Letters of his time,[346] mobilizing his network of correspondents to collect and dispense information or advice, obtain books or journals, engage in philosophical and theological and scientific

[344] A VI, 4: 1398.

[345] Popkin (1966), p. 246.

[346] The phrase *République des Lettres* appears several times in Leibniz's correspondence, as for instance in a letter Louis Ferrand to Leibniz, 23 March 1677, A I, 2 : 260: 'The news within the Republic of Letters is that Mr. Baluze has given us his Capitulaires in 2 volumes... It is undoubtedly one of the most beautiful collections that one can make.'

debate, help publicize discoveries—in short, disseminating knowledge among a community of savants. Similarly, he often inquired after new inventions and curiosities in his attempt to sift between the true and the false and contribute to the advancement of knowledge through the collective endeavour of his correspondents. As he established one of the most extensive philosophical and scientific epistolary networks in Europe,[347] Leibniz at times paused to reflect on this particular intellectual institution and what it represented. For Leibniz, as for the overwhelmingly majority of his peers, the Republic of Letters was characterized by the free exchange of ideas between equals and by the goal of perfecting the human spirit and improving the human condition. In several of his writings and letters, in fact, Leibniz shared his understanding of the Republic, describing it in a 1670 letter to Hermann Conring, as the supra-legislative 'respublica optima',[348] characterized by the union of intellect, power, and wisdom.[349] Later, in the *Relatio Codicis Juris Gentium Diplomatici* of August 1693, Leibniz commented that the aim of this 'university of minds' lay in the 'highest and eternal felicity'.[350]

The relation between Pierre-Daniel Huet (1630-1721) and Leibniz has hitherto remained largely unexplored. An Orientalist, poet, physician, prolific writer, and arguably the novel's first theorist,[351] Huet has often been portrayed as a reactionary figure by a historiography of philosophy eager to reconstruct the seventeenth century as an overwhelmingly and unambiguously Cartesian.[352] Huet was no stranger to the Parisian intellectual scene and its salons. There he had befriended the likes of Pierre Gassendi,

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[347] See Hotson (2014). Between 1672 to 1679 Leibniz had more than a hundred correspondents.
[348] Leibniz to Conring, A II, 1: 46. For more on this subject, see Marras (2011).
[349] 'Grundriß eines Bedenkens von Aufrichtung einer Societät', 1671, A IV, 1: 531; see also 'De S. Pufendorfii libro cui titulus est: Jus Feciale Divinum, 1695', A IV, 6: 321.
[350] A IV, 5: 83.
[351] Leibniz and Conring discussed Huet's theory of the novel and work on Origen: see Leibniz to Conring, 19 March 1678, A II, 1: 598.
[352] For more on Huet, who has remained nonetheless remains a largely overlooked figure of the later part of the seventeenth century, see Lux (1989), Huet (1993), Guellouz (1994), Volphilhac-Auger (2000), Shelford (2007), Lennon (2008) and Laerke (2015).

Gabriel Naudé, Gilles Ménage, and Jean Chapelain, the last acting as one of his patrons in Paris and assisting with Huet's receipt of a royal pension in 1663.[353] His critical edition of Origen's biblical commentaries had met with considerable success and helped secure him a respected position in the Republic of Letters after his many years as a promising young scholar.[354] Huet's contacts with Parisian learned circles from the 1650s onwards had also brought him into closer contact with the court, where he caught the attention of the duc de Montausier, governor of Caen, and it was in Caen that Huet co-founded an Académie de Physique in 1662.[355] The duke, employed at the time as the dauphin's governor, continued acting as an attentive protector of Huet, eventually getting him promoted to the position of tutor to the dauphin in 1670. Leibniz had heard of this great figure even prior to his arrival in Paris, when he had had the opportunity to read Huet's article expounding a new method of desalinating water.[356] He gradually took the measure of Huet's immense erudition and the wide-ranging nature of his work, aspects of which, from philology to the natural sciences, he discussed with a number of his correspondents, including Hermann Conring, Johann Georg Graevius, Ludwig Veit von Seckendorff, Gabriel Wagner, Thomas Burnet, and Henri Basnage de Beauval. Leibniz's first reference to Huet dates from a June 1671 letter to Johann Georg Graevius in which he deplored the loss, as a result of the war, of an Origen manuscript that later turned up among the possessions of Queen Christina of Sweden and was used by Huet for his edition.[357] In August of that same year, Johann van Deimerbroeck reported to Leibniz the publication of Madame de la Fayette's novel, 'the famous Zaide' set in medieval Spain, which was preceded by Huet's *Traité de l'origine des*

[353] See Maber (1985).
[354] Shelford (2007).
[355] See Lux (1989).
[356] Cf. [Huet] (1670).
[357] Leibniz to Johann Georg Graevius, 7 June 1671, A I, 1: 157. See Lux (1989), pp. 14–15, on Huet's use of the manuscript.

romans.[358] As his letters indicate, Leibniz met Huet relatively early during his stay in Paris, and in all likelihood at Henri Justel's salon.[359] By November 1672, certainly, Leibniz had made personal contact with him, as is attested by one of his letters to his patron, Melchior Friedrich von Schönborn, in which he relayed 'credible information shared with him by the Dauphin's preceptor Mr Huet concerning a Dutchman recently conducted to the Bastille'.[360]

Leibniz seems to have grasped quickly Huet's importance in the Republic of Letters and courtly circles alike, and to have been determined to place himself at Huet's service by demonstrating his commitment to him from the inception of their correspondence. Shortly before his departure for England in early 1673, for instance, Leibniz transmitted to Oldenburg Huet's request to inquire after manuscripts of the second-century astrologer Vettius Valens in the Bodleian Library,[361] and Oldenburg in turn forwarded the request to John Wallis, the Savilian Professor of Geometry, to compare the manuscript with the transcript Huet had made of the *Codex Hamburgensis*.[362] In return, Leibniz hoped that Huet would facilitate his access to Louis XIV in his bid to present the political project that he, as the Court of Mainz's diplomatic envoy, had been sent to Paris to promote—the famous *Consilium Aegyptiacum*. Writing to Boineburg on 25 November 1672, Leibniz 'supposed also that it would come to the Dauphin's own knowledge, on account of that custom which I have with Huet and with the other distinguished men here'.[363]

Huet's appointment as tutor to the dauphin had earmarked him as one of the most eminent intellectual figures of the kingdom and as the natural academic director, so to speak,

[358] Johann van Diemerbroeck to Leibniz, 18 August 1671, A I, 1: 167.
[359] Huet (1993), 131: 'Every day his house was filled with savants conversing about erudite matters.' See also Vernière (1954), p. 106.
[360] Leibniz to Melchior Friedrich von Schonborn, 15 April 1673, A I, 1: 340.
[361] Beeley (2004).
[362] See Huet to Leibniz, 20 March 1673, A II, 1: 357; and Beeley (2004), p. 63 n. 33. There is a Vettius manuscript among the Selden papers (Bodleian MS Arch. Selden B.19).
[363] Leibniz to Boineburg, 25 November 1672, A I, 1: 289.

of Montausier's design to produce a large annotated digest of Latin literature for the use of the dauphin in the first instance.[364] In a letter from the spring of 1673, Leibniz sent a more detailed description of Huet and this project to the secretary of the Royal Society, Henry Oldenburg:

> Perhaps you are not unaware that Huet has been moved to the Dauphin's studies; you know that the director is the Duke of Montausier in whom a courtier's prudence does battle with profoundness of learning; the principal head of his studies is Bossuet, next after this, is Huet. By the order of Montausier, and under the guidance of Huet, this programme has commenced, [which will be] very useful for improving education, and for recalling, so to speak, the vanishing erudition of antiquity. For men of proven learning have been given the task, that they should arrange the old Latin authors who are called classical in manner different to that hitherto employed - with a brief and lucid paraphrase added when necessary, so that the texts of the ancients may be easily imparted to a young man.[365]

From 1674 to 1691, a series of volumes would thus be published, with the intent of imparting major works of the Latin antiquity to the prince, and by extension to the cultured public. In addition to the original Latin text itself, each of these works included an introduction of a generally political or historical nature, a paraphrase (*interpretatio*), and notes (*notae*)—all in Latin—designed to facilitate comprehension of the work. The collection's emphasis was decisively pedagogical rather than scholarly and intended for the *honnête* homme rather than the erudite savant. It set out to initiate a renaissance in the study of classical works and provide the dauphin, but also the broader public at large, with models of instruction, eventually serving as the impulsion behind such seminal works as Jacques Bénigne Bossuet's *Discours sur l'histoire universelle* (1681) and Huet's own *Demonstratio Evangelica* (1679). To this end Huet recruited a wide range of collaborators, including first-rate humanists such as André and Anne Dacier, as well as the classicist Jean Hardouin and the philologist Jean-Baptiste Suchay, to whom he gave a precise set of instructions. By spreading the taste of classical letters among the educated public, this edition would act as

[364] For the conception and realization of *Ad Usum Delphini*, see Volphilhac-Auger (2000).
[365] Leibniz to Oldenburg, 26 April 1673, A I, 2: 84.

bulwark against the forces of barbarity: 'Never have the Roman language and antiquity received such solid aid, and such a strong preservative against ignorance and barbarism.'[366] Emmanuel Bury has analysed Huet as a 'man belonging to another generation closer in his formation to a Guez de Balzac',[367] having 'lagged behind in the history of ideas, by attacking Cartesianism at a moment when it seemed to triumph'.[368] Huet belonged to a generation that favoured learning as it had been preserved in books rather than as it was challenged by 'new critics' such as Joseph Scaliger, whom he accused of 'disfiguring ancient authors'. At a time when the ancients had come under attack, it appeared more necessary than ever to uphold the centrality of memory and erudition, and the immutable truths they had preserved over time. It was with this aim that Huet undertook this humanistic project of memorialization against those new philosophies which threatened man with the prospect of a *tabula rasa* and amnesia. By positioning himself as a staunch defender of those classics which had recently fallen in discredit and had been 'banished from the polite world' and 'relegated to the dust and darkness of a few cabinets',[369] Huet countered Cartesianism's claim to certainty and its faith in the strength of human reason by upholding the equal validity of memory and history.[370] Only memory could provide an antidote to the natural weakness of the human mind.[371]

Like Huet, Leibniz feared that the Republic of Letters would dissolve into a state of barbarity and he thus greeted the project and Huet's position more broadly, with considerable and genuine enthusiasm. It was incumbent, he wrote, in 'these times of contempt' to 'recall Letters in disarray, to revive the nearly extinguished light of an almost

[366] Quoted in Lopez (1994), p. 223. See also Bury (1994).
[367] See Bury (1994).
[368] Ibid.
[369] Leibniz to Huet, 15 April 1673, A I, 1: 363.
[370] Ibid.
[371] Bury (1994), p. 207. For the general context in which Huet is working, you must mention Verhaart (2020).

moribund Antiquity, and to give a third life to the best authors', those precisely whose 'eyes had begun to close as tired of living.'[372] In his letter of April 1673, Leibniz praised Huet's effort to safeguard the texts of ancient thought while inveighing against Cartesianism. Some people, he continued, had misused the greats to destroy ancient wisdom:

> Indeed, I see some [of our contemporaries] taking advantage of the opinions and complaints of great men, Bacon, Galileo, and Descartes, to put to death ancient wisdom and conceal their own ignorance, to the point of seeming rightly to despise a knowledge unworthy of being known. They deprive themselves, and insofar as they wield power, they deprive the world by making all the help and effort of so many centuries disappear. I admit, some words along the same lines have escaped the very serious authors whose disciples they claim to be, as if one needed a great revolution, if we are to believe Bacon, or to wipe the slate clean, if we are to believe Descartes, to judge soundly; but it would have been necessary unhesitantly to make a sacrifice [i.e., concession] to those who engage in attacks against their time, who look backward, and the cowardly idolatry of received dogmas; and who produce from their own resources no small examples, similar to the discoveries of the ancients. One should not complain [of] those who make their own experiments, although in general they judge other disciplines unfairly, they who work for mankind and whose audience will never be too large.[373]

Leibniz proceeded to describe the new sectarianism which had taken hold and even come to threaten holy doctrine: 'Certain little disciples, just as sectarian as before, since they have only changed their master, proclaim with violence against all the dogmas of antiquity… that they consider a rather philosophical man, sufficiently erudite, preferable to Aristotle himself, who can doubt it? to explain the visible phenomena of nature only by the subtle matter and the swirls spread everywhere, all this clearly leads to the ruin of the holy doctrine.' 'Young people', in particular, had fallen under the spell of this new 'ignorance'. Confining ourselves only to the 'experiences and productions of the language of our time' imperilled religion whose truths had been confirmed in antiquity. To 'this sickness of the century which [had] insinuated itself so perniciously', Huet had 'opposed a remedy which [would] be effective for the second or third generation, for if you imbue a prince with such great hope, destined

[372] Leibniz to Huet, 15 April 1673, A I, 1: 363.
[373] Leibniz to Huet, 15 April 1673, A II, 1: 363.

for such great things, with mysteries that touch the heart of doctrine,' as Huet had done, 'you will have worked for posterity for many centuries.' 'How much power the encouragement of a single prince wielded, the world had grasped from the example of Francois I, whose effects continued to this day', and 'the fate of letters [was] linked to his will, which direct[ed] the flow of valuable spirits'. The nobility, too, could contribute to this undertaking, especially once Huet had 'smoothed the way and made it possible for everyone, by the power of reading alone, without the tedious step of going to beg for help elsewhere, to penetrate into the sanctuaries that the great minds of old have made accessible to them though painful labours.'[374]

While Leibniz's political proposal was ultimately unsuccessful, Huet recognized in Leibniz an erudite scholar and enlisted him in this monumental undertaking.[375] Significantly, with Graevius, Leibniz was the only foreign scholar enlisted in the project.[376] Both Graevius and Leibniz were recruited in 1673 with the explicit ambition, as stated in the privilege,[377] to search for letters 'inside the kingdom and outside it' (*intra and extra regni fines*). Crucially, these savants would help disseminate the collection abroad and help lend it a scientific imprimatur: Leibniz was a universal scholar whose skill in *belles-lettres* Huet recognized,[378] and Graevius one of the best Latinists of the time. In his 15 April 1673 letter, Leibniz commented on the great honour that had been bestowed upon him in being invited to partake in the project:

> That eminent men have been chosen to contribute to the building that is yours, no one of those who know you has any doubt. I am all the more amazed at the

[374] Ibid. Leibniz anti-dogmatism assumed that different intellectual traditions could be reconciled. See Knecht (1981), pp. 27-30.
[375] Robinet (1994) has noted that Huet had co-opted Leibniz's translations of Plato in his plans for educational reform.
[376] In his *Mémoires* Huet mentions Graevius 'whose name was famous in the lettres I partculay because of his editions of classical authors' and cosndeired it 'a great honour' to enter in an epistolary relationship with him (1993, p. 114). Curiously, Huet does not mention Leibniz in his *Memoires*.
[377] Huet (1993), p. 118.
[378] Leibniz to Huet, 19 April 1673, A II, 1: 366.

> benevolence of your judgment, you who thought recently that a man like me could be of any use. I have first attributed this idea to your natural benevolence, which is felt by all good people, who are like imbued with the greatest humanity toward others; but when I saw you remain firm, you whose judgment is so penetrating that I could not doubt, after reflection, I found a way to reconcile my scruples with your wishes. I confess indeed, although I claim neither the spirit nor the knowledge, that I have nonetheless sought to gain the praise of impartial arbiters (through my zeal): and could one really expect anything else from a German, born of a nation to whom one has left as gifts of the spirit only the perseverance?[379]

Initially commissioned with drafting a new edition of Vitruvius, Leibniz finally offered to translate Martianus Capella's philosophical allegory *De nuptiis Philologiae et Mercurii* instead, judging the first work too technical, especially upon hearing of Perrault's forthcoming translation.[380] Nothing came further came of this, however, owing to the slow progress of the enterprise and the pressure of other demands on Leibniz's time.[381]

Placing Erudition and History in defence of Religion

The correspondence between Leibniz and Huet resumed only in 1679 after the latter's publication of his *Demonstratio Evangelica.* In his introduction, Huet clearly laid out the work's aim: 'This book is intended to attack impiety, which is making new progress day by day, and to prove that common sense should make it a duty to believe in the Christian religion, that so many people have the unreason to give up.'[382] Although he began to compose the *Demonstratio* in the 1670s, Huet had already conceived of it in the early 1650s in Amsterdam when, debating with Menasseh Ben Israel, he claimed that he would prove the fulfilment of the Old Testament prophecies in the New Testament with as much certainty as in a Euclidean geometric proof.[383] While the demonstrability of Christian truth was not

[379] Leibniz to Huet, 15 April 1673, A I, 1: 365.
[380] Leibniz to Oldenburg, 26 April 1673, A III, 1: 84-85.
[381] See Volpilhac-Auger (2000), pp. 115–18. Leibniz did send Huet a sample of commentary on Martianus on 10 May 1673, but hinted that the work was preventing him from attending to his scientific studies: see A II, 1: 369 and, for the sample, A VI, 3: 189–202.
[382] Huet (1679), pp. 1–2.
[383] Shelford (2007), p. 153.

by any means a new idea, Huet's choice to couch this ancient apologetic argument in terms of a 'geometrical' method, was, as he himself recognized: 'The argument offered in this book is not new; but the way of presenting it is novel.' Huet defined his geometrical method in the following manner in the opening passages of his volume: 'Geometers usually begin by explaining and defining an object with a definition. Then, they ask that we concede certain points to them which are generally agreed upon by all, and which cannot be denied without causing harm; then they establish their statements as something manifest and accepted by everyone. This is also what I am going to do so that our proof can proceed in orderly fashion, and that we can conclude scientifically.'[384]

By organizing his argumentation according to the *mos geometricus* and thus structuring his *Demonstratio* as a geometric proof, which at the time, represented the archetype of demonstrative knowledge, especially in Cartesian circles,[385] Huet hoped to contest the Cartesian monopoly over what constituted the criteria for truth and to achieve a similar level of evidence to that 'achieved by any geometrical demonstration' for the sake of moral and religious certainty.[386] By adopting this format, Huet 'forced humanist erudition in an Euclidian mould and reworked Christian apologetics to make them conform with geometric form'.[387] He hoped to erase what he perceived as an artificial divide between humanist erudition and Cartesian geometry[388] by deploying the geometrical method to establish the authenticity and historical accuracy of scripture.[389] In his *Demonstratio Evangelica,* Huet thus set out to show how, according to historical data, most Old Testament prophecies had indeed been fulfilled. By having recourse to the geometrical method, Huet

[384] Huet (1679), p. 6.
[385] See Laerke (2015).
[386] Huet (1679), pp. 2-3.
[387] Shelford (2002), p. 601.
[388] Laerke (2015), p. 110.
[389] Shelford (2002), p. 601.

hoped to establish the Christian faith on knowledge obtained by reason, and in particular on knowledge of a historical order,[390] at a time when faith was coming under increasing pressure to provide rational foundations for itself. He envisaged his *Demonstratio* mainly as a response to the growing tide of anti-erudition and biblical criticism, explicitly presenting it as a contribution to the pan-European controversy over the biblical lexicon, drawing on his knowledge of ancient languages and civilizations as well as his skill in biblical exegesis[391] to combat impiety, 'which every day makes new progress, and to prove that common sense dictates that we believe in the Christian religion, which so many people have the unreason to abandon'.[392]

It seems that, during his stay in Paris, Leibniz may even have sought to guide Huet's pen in the *Demonstratio*,[393] which promised to offer a refutation of Spinoza's *Tractatus theologico-politicus* (1670).[394] Indeed, having failed to enlist the Orientalist Gottlieb Spitzel, Leibniz had turned to Huet to refute the Dutch's philosopher's 'abominable' work, which had denied the Mosaic authorship of the text and undermined the authority of the Old Testament.[395] By advancing a novel type of biblical exegesis that seemed to deny the divinity of scripture, Spinoza's treatise had produced a scandal of unprecedented magnitude in the Republic of Letters. Unlike Richard Simon, who also challenged the Mosaic authorship of

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[390] Quintan (1994b).
[391] See Shelford (2007).
[392] Huet (1679), p. 2.
[393] In his *Memoires* Huet recounted the various discussions he had with friends during the composition of his book: 'While I was working at on my Demonstratio Evangelica, I would sometimes discuss it with my friends; I entrusted them with ardour its plan, method and proof' (1993, p. 176). Leibniz confirmed to Huet, March 1769, A II, 1: 695 : 'I often reminded you, sir, when I was in France, and enjoyed your learned conversations, with what eagerness I awaited the publication of the beautiful work whose prospectus you had kindly shown me.'
[394] Some scholars, such as Vernière (1954), even assert that it was Leibniz who brought the arguments of Spinoza's *Tractatus* to Huet's attention. Laerke (2015), p. 119: 'The evangelical demonstration [would contribute] to the controversy over the principles of the biblical exege triggered by the works of Lodewijk Meyer and Spinoza in the Netherlands, which shortly after the publication of the demonstratio, will continue in France with the quarrel around the critical story of Richard Simon's Old Testament.' See also Shelford (2006), pp. 161-181.
[395] Huet (1679), pp. 140–44, attacks Spinoza's *Tractatus* as 'impious' and aligns it with Hobbes's *Leviathan*.

the Pentateuch in *L'histoire critique du Vieux Testament* (1678), Spinoza however was no biblical expert and his audacity, in Leibniz's view, had not been matched by the requisite erudition. Despite reading the *Tractatus* twice in 1670 and in 1675, the second time closely at the instigation of his friend Tschirnhaus, Leibniz never felt he quite possessed the necessary philosophical and linguistic skills to take this work on and write a critique of the Spinozian exegesis, undertaking instead a search for a 'man equal to Spinoza' who would be capable of carrying out an effective refutation of the perilous work.[396] In Huet, Leibniz believed he had found a thinker who was equal to the task.[397]

Refuting Spinoza was but one aspect of the *Demonstratio Evangelica*, however, and Huet did not make it the focus of his work, despite subsequent scholars' interpretation of it. He intended it primarily as a rebuttal of Jansenist Cartesianism, in particular its claim that only geometrical proofs could yield certain knowledge, a claim that he felt had led to a devaluing of faith and historical knowledge as sources of reliable knowledge.[398] Huet set out to condemn the 'absolute intellectualism' of Descartes by seeking to emphasize the limits of human reason[399]—and deny it the ability to obtain, in any field whatsoever, any evidence proper.[400] Nonetheless, this did not stop Huet from using the geometrical approach himself.

In response to the *Demonstratio Evangelica*, Leibniz wrote Huet in 1678 and 1679 two remarkable and still largely unexplored letters in which he extolled the virtues of erudition and history in relation to the defence of religion. In his first letter, despite voicing

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[396] Leibniz to Gottlieb Spitzel, 10/20 February 1670, A I, 1: 85: 'In order that the victory might be perfect and that the mouths of the impious be forever shut, I never tire of wishing that one day there arise a learned man… in all kinds of erudition, who will clearly establish the harmony and beauty of the Christian religion, and unequivocally dispel the innumerable objections levelled against its dogmas, its text and its history.'
[397] Laerke (2006).
[398] See Shelford (2002), pp. 599-601.
[399] Niderst (1994).
[400] Laerke (2006).

certain misgivings about Huet's methodology and argumentation, Leibniz expressed his 'immense satisfaction that [Huet's] great and immortal work on the truth of our religion had finally appeared' noting that 'there are few subjects that deserve more than that considerable erudition which has kept you up so many nights'.[401]

Erudition, memory, and history were not only worthy fields of enquiry in themselves, but they could be put to theological use by helping to authenticate the claims of scripture. For Leibniz, as for Huet, who in his *Demonstratio Evangelica* had himself explicitly placed erudition in the service of God and history, historical scholarship allowed us to restore the authenticity of the Bible as it had been foretold 'centuries before his birth',[402] and help ensure that it had been passed down uncorrupted and unadulterated,[403] thereby refuting recent libertine attacks denouncing scripture as imposture.[404] Therein lay the 'greatest advantage that [could] be expected from history and erudition'.[405] 'The study of antiquity', Leibniz stated, 'seems to me almost to have no other use than to put ourselves in a position to observe and preserve faithfully the ancient titles of our happiness, and if I may so express myself, our nobility, which we must, after our regeneration by baptism, trace back to Jesus Christ.'[406]

Huet and Leibniz thus agreed on the usefulness of history and the recourse to historical criticism in biblical exegesis.[407] This, however, required meticulous historical work, which took the shape of compiling 'inventories': 'But it cannot be proven that all these things happened as they are told, without having solidly established all universal

[401] Leibniz to Huet, 18/28 October 1678, A II, 1: 641.
[402] Ibid.
[403] Ibid.
[404] Ibid.
[405] Ibid.
[406] Leibniz to Huet, 18/28 October 1678, A II, 1: 641.
[406] Ibid.
[407] Laerke (2006).

history, sacred and profane; and to be able to establish it firmly, we need collections of manuscripts, medals, inscriptions, and all the other elements which compose the trove of the savants. For it is from this that history derives its credentials.'[408] This task required a particular type of scholar who would be 'willing to work hard to compile, as it were, the most accurate inventory possible of all those precious remains of antiquity which we still possess'.[409] While the German classical scholar Marquard Gudius on the one hand promised an account of inscriptions, and Ezechiel Spannheim on the other hand, along with Carcavy, one of medals,[410] Leibniz still hoped for a 'history of manuscripts, containing an enumeration of the best ones still preserved today throughout Europe, especially those according to which the editions of the authors have been made, and which are unique or at least rare'.[411]

The chief purpose of the 'whole study of antiquity' consisted in 'the elucidation and the confirmation of sacred history',[412] one which could only be undertaken by a scholar who applied 'the principles of criticism to the fullest … the properties of languages, the genius of centuries, and the passage of time'.[413] For this task, Huet stood out as the natural candidate, for 'such a work was easy only for [him] alone, perhaps because [he] alone in our century, possess[es] the vast foundation of erudition and philosophy which it demands.'[414] In fact, 'who ever deserved better than this glorious title [of scholar] in the sense that we are going to define it' than Huet? Still, as Leibniz further specified, 'when it comes to demonstrating the truth of the Christian religion, much more material and research is needed. For it comes to the fall and the repair of the human race, the differences of the nations, the

[408] Leibniz to Huet, 18/28 October 1678, A II, 1: 642.
[409] Ibid.
[410] Ibid.
[411] Leibniz to Huet, 18/28 October 1678, A II, 1: 642.
[412] Ibid.
[413] Ibid. Leibniz was intent on reconciling ancient and modern thought.
[414] Leibniz to Huet, March 1679, A II, 1: 696.

oldest writings, and this analysis requires not only a philosopher, but also a scholar, and even one… who is the one and the other in the most eminent degree.'[415] A true scholar was

> a man who possesses and has combined in his head the most important events which have occurred in the known world, whose memory has been preserved among men; and to enter into a greater detail, I mean a man who is acquainted with the principal phenomena of heaven and earth, the history of nature and the arts, the emigrations of peoples, the revolutions of languages and empires, the present state of the universe, in a word, who possesses all knowledge which is not purely from genius, and which is acquired only through the very inspection of things and the accounts of men; and that is what makes the difference between philosophy and erudition; the first is to the second what a question of reason or law is to a question of fact.[416]

Erudition, for Leibniz, consisted in the exploration of the truths of fact, of that which had actually happened, the *historiae rerum gestarum*, rather than the exploration of the underlying principles behind the phenomena in the world.[417] It should serve towards the contemplation of man's perfection and the *scientiam felicitatis*[418] through the deep study of universal history and the immersion in texts of great men.[419] While history alone 'was very useful for providing posterity with beautiful models, to excite men also to undertake actions which immortalize their memory, to fix the limits of empires, to bring an end to the differences of sovereigns',[420] it should, according to Leibniz, necessarily be paired with criticism:

> One of the essential uses of history and criticism is to establish the truth of religion. For I have no doubt that if the art of criticism perished once and for all, the human instruments of the divine faith would perish at the same time, and that we would have nothing solid to show to a Chinese, to a Jew or to a Mahometan, in order to prove the truth of our religion.[421]

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[415] Leibniz to Huet, March 1679, A II, 1: 696.
[416] Ibid.
[417] Laerke (2006).
[418] Ibid.
[419] Laerke (2015), p. 107.
[420] Leibniz to Huet, March 1679, A II, 1: 697.
[421] Leibniz to Huet, March 1679, A II, 1: 697.

It was necessary to exercise an 'art of criticism' in order 'to distinguish the imagined from the true, and fable from history':[422] 'if we were to bring back these famous times only through the accounts of the mythologists… there would be no more certainty regarding the facts; and far from being able to prove that scriptures are of divine origin, it would not be possible to establish that they are of such a time and such authors.'[423]

This art of criticism, and in general the study of antiquity, which helped establish the truth in matters of fact, had been 'flourishing' at the beginning of the century, but more recently had 'degenerated into open warfare' and entered a period of decline. This inspired 'sorrow' in Leibniz who deplored that 'this class of scholars, whom we call critics, and which, in the Republic of Letters is prepossessed to the safeguard of monuments, diminish every day, to the point of giving to fear that it will disappear altogether in a little while'.[424] This shift had been compounded by the 'revolution' that had occurred in scholarship,[425] which had further challenged the 'old' Republic of Letters and its intellectual methods, projects, and ethos.[426] Leibniz explicitly aligned himself with Huet in his attempt to rescue a Republic of Letters that had become beholden to 'contempt for erudition', laziness, the glorification of scholarly ignorance,[427] thus endangering its enlightened ethos.[428]

In this, Leibniz singled out the new philosophers and the sectarian admiration for Descartes—in particular those who had been egregious in their ignorance of history,

[422] A VI, 4: 953.
[423] Leibniz to Huet, March 1679, A II, 1: 697. Leibniz disputed Huet's claim that all certainties carried the same weight: while moral certainty derived from experience, mathematical certainty derived from logic. See Leibniz to Thomas Burnet, 1 February 1687 in Foucher de Careil (1875-90), III, p. 191: 'This is the certainty to which we can aspire when we address the truth and antiquity of facts, the genuineness and divinity of our sacred books.'
[424] Leibniz to Huet, March 1679, A II, 1: 698.
[425] Ibid.
[426] Shelford (2007).
[427] Laerke (2013).
[428] Ibid.

antiquity, and metaphysical matters,[429] confining themselves instead to natural philosophy and mathematics.[430] He rejected the Cartesians' abusive deployment of hyberbolic doubt to denigrate even solidly established knowledge in favour of often frivolous opinions.[431] More generally, Leibniz inveighed against those who claimed to overturn the past, and he emphasized the necessity of incorporating new discoveries while preserving the achievements of the past writing: 'combining the two philosophies, and starting the new one where the old one end[ed].'[432] This is crucial to his philosophical undertaking: Leibniz believed that truth could be attained not by opposing but drawing on both ancient and modern knowledge, Leibniz believed. Accordingly, he explained, 'whenever I discuss matters with the Cartesians, certainly, I extol Aristotle where he deserves it and undertake a defence of the ancient philosophy, because I see that many Cartesians read their one master only, ignoring what is held in high esteem by others, and thus unwisely impose limits on their own ability'.[433] Ever conciliatory, and against Conring's claim that nothing substantially new in doctrine seemed to have been established by experimental philosophy,[434] Leibniz emphasized that the new empiricism, for all its faults, should be embraced and should be celebrated in the spirit of 'favour[ing] the ingenious minds of all ages' and 'especially… [those of] our own century'.[435] Rather than presenting the Republic of Letters as a state of knowledge, as he would later do in his *Guiliemi Pacidii plus ultra, praefatio* (1686), Leibniz in his early days focused on its 'intellectual ethos',[436] one that placed concern for the public good and glory of God above everything else.

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[429] Leibniz to Philipp, end of January 1680, A II, 1: 790; A II, 1: 775; Leibniz to Malebranche, 22 June 1679, A I, 2: 718-19.
[430] Leibniz, 'Contemplatio de historia literaria', early 1682 (?), A VI, 4: 462.
[431] Leibniz to Malebranche, 22 June 1679, A II, 1: 718-19.
[432] Leibniz to Conring, 19 March 1678, A II, 1: 606.
[433] Ibid.
[434] Conring to Leibniz, 16/26 February 1671, A II, 1: 141.
[435] Leibniz to Conring, early May 1671, A II, 1: 154.
[436] Laerke (2015), p. 106.

6. The struggle for the heart of the Republic of Letters: science and the state

Leibniz lived at a transitional moment when the 'old' Republic of Letters was being challenged.[437] In his view it had recently become plagued by 'audacity' and the 'disdain for genuine erudition',[438] which had been prompted by an 'excessive liberty to philosophize' and 'the arrogance of men'.[439] The quest for personal fame and glory, rather than the public good, had proved particularly nefarious to the Republic of Letters, prompting Leibniz to recommend to the Emperor Leopold that intellectuals should be placed 'under administration,' since 'most scholars do not care about augmenting human knowledge,' but are like mercenaries who 'work for money or out of vanity for their own glory and not with good intentions for the glory of God and the common good'.[440] Obviously Leibniz implicitly excluded himself from this description.

In 1675, towards the end of his Parisian stay, Leibniz composed a text loosely modelled on the famous moment in the *Odyssey* in which Hermes shows Odysseus moly. This unfinished text, though striking, has hitherto evaded scholarly scrutiny.[441] In it he set forth an altogether different understanding of the Republic of Letters, one far removed from any ideal of equality, brotherhood, or the circulation of new knowledge or 'practicalities of life' (*commodités de la vie*), as he was otherwise wont to emphasize. In fact, far from extolling practical matters and realizable projects,[442] Leibniz, this time, engaged in an

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[437] Shelford (2007).

[438] Laerke (2015), p. 106.

[439] Leibniz, 'Dialogue entre un habile Politique et un Ecclesiatisque d'un pieté reconnue', 1679-1681, A VI, 4C: 2242: 'Boldness is indeed a vice of youth, a sign of immaturity, and it takes preemptive judgment and disdain for genuine scholarship. It spreads because of an excessive freedom to philosophize. Unfortunately, these ways of reasoning seize the clearest minds, because they imperceptibly flatter the pride of men and that natural inclination we have to debauchery.'

[440] Leibniz, 'Aufzeichnung für die Audienz bei Kaiser Leopold I.', 1688, A IV, 4: 22.

[441] See A IV, 1: 133–216. In the Introduction to this volume, pp. xix and xxiv, Paul Ritter characterizes Leibniz's musings in his 1675 Relations as 'a confused mix of remarks and reflexions'.

[442] Robinet's interpretation that Leibniz here expounds a project based on a 'true and eternal friendship', which 'responds to a political philosophy of wisdom and love' (1994, p. 285), is not supported by the text.

allegorical meditation on the topic of the Republic, transporting his reader to fabulous lands and mythical ages. While Leibniz had and would continue to use the image of sending colonizing explorers to unknown lands to extend the map of human knowledge, here he gave the image a satirical twist to account for what he believed had devalued and cheapened the Republic of Letters, juxtaposing this Republic with its ideal incarnation. Leibniz presented us with a traveller with the traits of 'a certain Greek adventurer of the nation, named Pythagoras', who amidst the 'infinity of worlds to be discovered' has founded 'a colony of the other world'. In Draft B, this Pythagoras resolves on populating the colony by sending a small fleet whose members, selected after a harsh apprenticeship of five years, would 'speak only once Pythagoras had opened their mouths'.[443]

In Draft C, Leibniz provides a variation on the previous draft. Here, we find that Pythagoras, after clearing part of the land, has 'planted a certain drug there that Mercury had shown him and which we call glory'[444]—and which in fact is none other than the 'real nectar of the gods and the liqueur of immortality'. Trade flourished between this colony and our world until eventually 'savages from the land of ignorance and misery' brought the colony's self-subsistence to an end, leading it to grow dependent on 'refreshments called pensions'. Through the indiscriminate distribution of praise, the inhabitants of the colony began sending a surplus of products of more or less dubious value[445] until a great prince, scandalized at the profanation of the celestial gift of immortality through which 'men had been made into gods', ruled that only real heroes should be 'rewarded for their works by receiving true glory and immortality'.[446]

[443] 'Relation de l'état présent de la République des Lettres', 1675, A IV, 1: 568-71. See the Appendix for the text. It is not clear that any of the drafts was circulated.
[444] A IV, 1: 571.
[445] Ibid.
[446] A IV, 1: 570.

In his first and lengthiest text (Draft A), entitled 'Pensées pour faire une Relation de l'Estat present de la République des lettres', which he dedicated to Louis XIV, Leibniz himself assumes the role of a traveller 'to a country in which all great men aspire to live'. He leads us on a journey in time by framing his depiction of the Republic of Letters as a future—and fundamentally 'foreign' (*aliter*)[447]—projection seemingly at odds with the text's title, which promises an account of the current state of the Republic of Letters. By offering 'conjectures as to its future development',[448] Leibniz set out to provide correctives to what he perceived as the many imperfections of his own time: in this ideal future state, reason would finally be reconciled with revelation at a time when, in defiance of those who 'had too wicked an opinion of the Holy scriptures', 'rigorous geometrical demonstrations *de Deo* and *Mente*' would be available. The path opened by Descartes would be explored, the art of machines exhausted, the 'secret qualities of natural bodies' exploited, and Hobbes would be as known for his moral teachings as Descartes for his physical teachings. This future republic would inaugurate a new age of physiological, mathematical, and medical discoveries[449]—indeed, the state of medicine would be vastly improved and more new drugs made available than in all previous ages.[450] In fact, this age would be so perfect that 'the soul, if the dreams lasted a long time, [would] finally be able to reason perfectly.'[451] After this detour via the future, Leibniz returns to the present to consider the tasks that still remained to achieve this ideal and eradicate contemporary ignorance: 'The people are ignorant everywhere, and I never would have believed, that in a city as refined as Paris, children would be kidnapped today to bathe the sick in their blood.'[452] Chief among the tasks

[447] A IV, 1: 568.
[448] A IV, 1: 568.
[449] Ibid.
[450] A IV, 1: 569.
[451] A IV, 1: 568.
[452] A IV, 1: 570.

is the necessity of arguing 'rigorously' against Cartesian intuitionism and of upholding the 'severity of demonstrations.'[453] By providing an insight into the current state of affairs and appealing to a different future, Leibniz hoped precisely to 'excite [the] devotion'[454] necessary to help realize that future. When he wrote his 'Pensée', Leibniz was hoping to become a member of the French Académie des Sciences, and in it he directly addressed Louis XIV, even dedicating the piece to him. In this connection he referred to 'Glory', as he was to do several times during his first few years in Paris, and especially in his writings to the king. His concept of glory would undergo an interesting transformation in the span of a mere few years, between 1672 and 1675.

While he initially adopted a more 'classical' understanding, whereby glory consisted in the 'most intense passion of the soul',[455] and in his 1672 written address to the king extolled this 'heroic' model of glory, he would gradually come to decry it: 'An integral glory cannot be acquired without converting one's own power into the wealth of others. One who makes himself well-known through crime and slaughter is judged to be powerful but not wise.'[456] He even presented the king himself as paradigmatic of the erroneous idea of glory,[457] comparing it to 'earthquakes, ravages of water and other public calamities'.[458] Already in his 'Pensée' Leibniz had begun distinguishing between true and false glory, increasingly identifying the former with intellectual advancement for the benefit of mankind. Thus, for instance, he had explained the decline of the colony and the growing strife as resulting from the commodification of glory when, the inhabitants having lost their

[453] A IV, 1: 570.
[454] A IV, 1: 569.
[455] A IV, 1: 247-48.
[456] A IV, 1: 248.
[457] Piro (1999).
[458] Leibniz, 'Conversation du Marquis de Pianese et du Père Emery Eremite', 1679–80 (?), A VI, 4: 2275-76.

autonomy, they had been forced to 'sell' their merchandise—glory—in order to obtain 'bursaries'.[459]

The multi-perspectivism that contributes to the exchanges and vitality of the Republic of Letters must not, however, degenerate into acrimony. While it 'affected novelty',[460] audacity, more often than not, ended up spreading a spirit of sectarianism, strife, and complacency, which impedes the collective discovery of truth and progress. In their eagerness to disparage and make a name for themselves, *novatores*[461] and amateur philosophers are keen to undermine any progress, causing the Republic of Letters to lose itself in a confusion of disputes and the proliferation of conflicting 'singularities', and hence to stray from the search for truth: 'Instead of holding hands to guide each other and to assure we are on the right track, we run around haphazardly and in all directions and we run into each other, rather than help and support each other' and 'with their heads full of empty subtleties without demonstration, and fighting out of caprice and passion, people miserably lose the precious time they could have used to advance solid knowledge.'[462]

Leibniz henceforth associated 'glory' with what was created, transmitted through time, and enduring. The multiplication of opinions and merchandise, the proliferation of sectarian authorities, the growing complexity of literature and information and their accumulation into a disorganized mass—all without supervised or regulation—had contributed to creating a 'labyrinth of letters' that would soon be impossible to unify and would make any collective action or thought impossible:[463] 'this horrible mass of books,

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[459] Piro (1999).
[460] Leibniz, 'Recommendation pour instituer la science générale', 1686, A VI, 4: 695.
[461] See Garber (2018).
[462] Leibniz, 'De la philosophie cartésienne', 1683-85 (?), A VI, iv, 1482.
[463] Interestingly enough, in his *Praefatio operis ad instaurantionem scientiarum* of 1682 (A, VI, 4: 440), written only a few years later after his 'Pensées', Leibniz presented a similar allegory, but this time concerning 'erudite' knowledge. The issue here was not the quality or excess of the goods, but their lack of organization and a proper inventory. The inability of the *érudits* and to produce a cohesive scientific body had resulted in their irrelevance and oblivion in the past.

which always increases ... the multitude of authors that will shortly become infinite, will expose them to the danger of falling into oblivion, and the desire for glory which animates many scholars will suddenly cease; it will perhaps become shameful to be an author when it was once honorable.'[464] The discoveries and heterodox opinions encouraged by this new 'philosophical century'[465] had culminated in a kind of creative disorder.[466] Only through regulation and self-regulation would the Republic be able to fulfil its primary task: to ascertain what within this forum of the free exchange of ideas and theories was solid and useful, to make a record of human expereince and knowledge. The Republic of Letters was primarily meant to be a forum in which humanity assessed 'how far we have advanced and what there is still to do',[467] so that humanity's achievements became permanently inscribed in time.

Leibniz thus seemed to suggest that the ideal, true Republic of Letters was born out of the transmutation of the contingent into the perennial. The Republic thus described by Leibniz is one in which those 'marvellous things'[468] of each century have passed into posterity—and more precisely, reached the supra-temporal state in which the past has been transcended and contingency overcome. (He did not, however, elaborate on the requisite criteria of supra-temporality.) Here we come to the crux of the issue in these three short texts and Leibniz's conception of the Republic of Letters: Leibniz strikes an unusual chord not only by his choice of genre, the literary device of allegory and fable, but by his emphasis on the passing of time and the judgement made by history, which determines what subsists

[464] A IV, 3: 789-95; see also A VI, 4A: 698.
[465] A II, 1: 171.
[466] Piro (1999).
[467] Leibniz, *De Republica Literaria*, 1681, A VI, 4: 438.
[468] A IV, 1: 570.

throughout the ages and what falls into oblivion: ‘We erect great buildings on ideas which will be overthrown one day. But something solid and admirable will remain.’[469]

Like true glory, which attached to the eternal, ‘time’ for Leibniz was ‘like the King who abides by the maxim to only reward those who are truly singular in each species’.[470] Time’s passage presented itself all the more acutely in the realm of the *belles lettres*, for whereas scientific progress appeared linear and incremental, the value of the humanities (as we would now call them) lay in their exemplarity and conformity to perennial standards. As Leibniz stated, ‘a beautiful musical tune that will always be sung is like a freshly-discovered geometrical theorem’.[471] This distinction lay at the heart of the ongoing *Querelle des anciens et des modernes*, which culminated in the 1680s and in whose terms Leibniz framed his understanding of the Republic of Letters. Only by a recourse to a past—that is, to the values that had defied time to become supra-temporal and would ideally continue into an equally supra-temporal future—could one hope to escape the vagaries of contingency and mutability. Since medals ‘are for all places and time’, and ‘inscriptions, similarly, are for all times’, it was necessary to ‘find a secret to permanently fix the French language so that it would no longer improve—something that only belongs to the dead or decaying languages whose civilizations have perished or are in decline’.[472] For the same reason, owing to the ‘abundance of good books’ written in the vernacular, those written in Latin are likelier to survive.

For Leibniz, these visions and projects were eminently political, and contemporary France was best placed to realize them. As Leibniz had already sketched out in the more utopian plans for academies that he had drafted in Mainz and reiterated in various letters to

[469]A IV, 1: 569.
[470] A IV, 1: 569.
[471] A IV, 1: 569.
[472] A IV, 1: 569.

Conring and Chapelain, the crisis brought on by political and religious turmoil, as well as by the wave of new scientific discoveries, had made it necessary to rethink the role of intellectuals in society and the articulation between power and knowledge.[473] Leibniz's ideal political state both supported learning and was heavily informed by it. In this state, a large number of the citizens of the Republic of Letters would hold official positions in courts, academies, and universities, helping to guide and administer the state. His ideal Republic of Letters, the goal of which he would pursue, was thus simultaneously political and scientific. For only when it was achieved would 'something solid and admirable' remain.[474] That is, only a properly functioning Republic of Letters, paradoxically restored by political fiat to its original autonomy,[475] could ensure the immortality of humanity's great achievements. As he sought to indicate in his allegorical tale, Leibniz was persuaded that true glory derived from a mutually beneficial alliance of power and wisdom, especially in the political cultivation and sponsorship of the arts and sciences.[476] Accordingly, he presented the king as being able to salvage the Republic and give it new life.[477]

Some of these early proposals thus reveal Leibniz to be a radical political thinker and visionary who, by weaving science, economy, philosophy, and theology together, sought to redesign society as a whole. By sketching out far-reaching scientific, socio-economic, administrative, and educational reforms, he aimed to 'establish a *res publica* of the entire human race', under the guidance of an 'authoritarian welfare state' headed by philosopher-king figures uniting in themselves wisdom and power[478] and driving the rational

[473] Marras (2011), p. 68: 'The republic of letters for Leibniz is inevitably more than an ideal, imagined republic; it was a concrete one.'
[474] A IV, 1: 569.
[475] Piro (1999).
[476] Griard (2004).
[477] Piro (1999)
[478] Schneiders (1975); see also Ramati (1996), p. 430: 'All of his outlines were intended to further the same utopian ideal: political power should be given to wise and pious men, who are best suited to guide mankind into a more ordered and rational phenomenal reality because they are able to combine scientific theory with practice.'

reform of their society. By setting up such metaphysical technocracies, such princes would not only reap financial benefits but also eternal fame by contributing to God's glory.[479]

'Funny Thought'

Leibniz expanded on the nexus between knowledge, science, and power in his 'Drôle de Pensée' of 1675, a reverie that took the shape of a wish-list of the most extraordinary sights and curiosities. In it he envisaged a completely unprecedented kind of scientific academy that would bring together experts and *honnêtes gens* alike,[480] and turn scientific demonstration and experimentation into a public spectacle within the broader 'theatralization' of scientific conceptuality. Within a society reorganized by science as a permanent and ubiquitous encyclopedia,[481] several 'Academies of Games' spread about throughout the city of Paris[482] would showcase 'all things imaginable',[483] and even the seemingly impossible, with self-playing instruments and vessels that could navigate against the wind.[484] Inspired by the recent spectacle of an automaton in the form of a man that had been made to run across the surface of the Seine, Leibniz composed a small text in which he imagined a vast array of the most extraordinary and beautiful representations. Giving free rein to human ingenuity and imagination, the 'alternative to the [Parisian] scientific academy' presented in 'Drôle de Pensée' encompassed all kinds of displays, games, artefacts, and natural phenomena, including 'magic Lanterns, kites, artificial meteors, all manner of optical marvels; a representation of the sky and the stars ... fireworks, jets of

[479] See, e.g., 'Grundriß eines Bedenkens von Aufrichtung einer Societät', 1671, A IV, 1: 531. It is unknown whether these drafts were sent to Louis or anyone else, but it is difficult to avoid the impression that these visions expressed the essence of Leibniz's ideal scientific society (with him as a member), whether the Académie or another.
[480] Robin (2004).
[481] Robin (2004).
[482] 'Drole de Pensée', September 1675, A IV, 1: 562-68.
[483] A IV, 1: 565.
[484] A IV, 1: 564.

water, vessels of strange forms; Mandrakes and other rare plants … [r]are and extraordinary animals', as well as a 'Royal Machine for races with artificial horses', not to mention 'speaking trumpets'.[485] Leibniz imagines that 'the representation could be combined with some sort of story or comedy', and that this performance might include 'extraordinary tightrope dancers [and] perilous jumps'. The public might observe 'a child who raises a great weight with a thread', and there would be an 'anatomical theatre', as well as a 'garden of simple [elements].'[486]

In their seminal work *Leviathan and the Air-Pump*, Steven Shapin and Simon Schaffer have examined the production of matters of fact through the use of performance and rhetoric.[487] This increasingly involved making the domains of theatre, opera, and spectacle privileged modes of legitimation and dissemination in a bid to make the new scientific discourse more palatable and ensure its widest possible dissemination.[488] The realignment of scientific discourse with the canons of Parisian *honnête* sociability took the shape of the exploitation of the essentially demonstrative and performative nature of the new science,[489] one which appealed more to the senses than to pure intellect. What Jacques Truchet describes as the later seventeenth-century's 'triumph of theatricality',[490] in which spectacle and theatricality assumed privileged roles[491] in the processes of cultural legitimation and diffusion, therefore also came to encompass scientific conceptuality. It was epitomized by the Parisian scientific, cultural and social scenes that Leibniz came to inhabit.

Leibniz further exploited an interesting confusion of genres which contributed precisely to the poetic of ambiguity characteristic of his age and its production of norms of

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[485] A IV, 1: 563.
[486] Ibid.
[487] Shapin and Shaffer (1986).
[488] Robin (2004), p. 179; see Jones (2006), pp. 184-87.
[489] Robin (2003), p. 151, speaks of 'the intimately theatrical essence of scientific experimentation'.
[490] Truchet (1992).
[491] Robin (2007), p. 335: 'the new science also undetook to raise itself to the rank of a performing art'.

truth. By deliberately borrowing a term from the lexicography of drama,[492] he emphasized the naturalization of theatricality and performance underpinning the production of scientific—and social—norms.[493] As he shows, representation lies at the heart of *honnête* sociability and conversely, *honnête* sociability lies at the heart of representation. Only under these conditions—whereby cheating in gambling, unless banished by agreement, might be permitted—would the new science be widely disseminated and 'ennobled'.[494] Calling this institution an 'academy of representations' captured the performative nature of scientific experimentation. And by showcasing science and learning as a profoundly empirical experience, 'opening the eyes' of its audience,[495] Leibniz offered a further refutation of the Cartesian tendency to neglect sense-experience. By turning the experimentation at its heart into play and spectacle,[496] this new science would appeal to the 'taste' of Parisian high society by 'drawing on … what was fashionable and had the appearance of quality'.[497] Leibniz thus rendered the 'dissemination of wisdom'[498] contingent upon the acquisition of the imprimatur of polite sociability. Enlisting illusion, strategic deception wonder and excitement for the 'curious and monstrous',[499] this extraordinary spectacle would not fail to have 'good and important' consequences, furthering scientific understanding and even fostering further discoveries. In fact, Leibniz imagined that 'all honest men would want to have seen these curiosities, so that they would be able to speak about them'. 'Even women

[492] Robin (2003), p. 156: 'In Richelet, three entries out of twelve on "Représentation", "Représenter", or even "Se representer", specify "terme de Comedien".'
[493] In his entry on *representation*, Furetière (1690) includes references to acting; 'The Poets in their Tragedies make vivid representations of the incidents of History and of the passions of the Heroes… TO REPRESENT. To make an image or painting of an object, which lets us know it as it is; is also said of what conveys things by words, & by gestures ....'
[494] Robin (2007), pp. 340-41.
[495] Wiedeburg (1970), p. 646.
[496] Jones (2006); Bertucci (2017).
[497] A IV, 1: 567.
[498] Ibid.
[499] Wiedeburg (1970), pp. 1005, 621.

of quality', he adds, would wish to see them. In this wonderland of 'new representations', 'one would always be encouraged to push things further.'[500]

Leibniz's reverie includes a most curious and unexpected passage that further highlights the ambiguity of this 'academy of pleasures': 'There would be several houses or Academies of this nature throughout the city. These houses or rooms will be built in such a way that the master of the house can hear and see everything that is said and done, without being noticed by means of mirrors and pipes. Which would be a very important thing for the state, and a kind of political confessional.' This 'academy of games' would serve to educate its audiences through play, entertainment and illusion; at the same time it would help collect information useful to the state on those very same audiences. Leibniz here hints at the versatility of such a panopticon—including for disciplinary purposes—hoping no doubt to ingratiate himself with the political authorities.[501] The very same apparatus that would distract audiences and lull them into a sense of wonder would provide the state with a ubiquitous gaze with which it would be able to patrol their lives. Leibniz here placed the senses, in particular that of sight, in the service of political power. That which served to experience, observe, verify, probe, and finally, elucidate could, conversely and disconcertingly, be deployed to achieve the very opposite, namely used to monitor and possibly deceive from the shadows.[502] In Leibniz's conception, transparency and deceit could thus perfectly coexist. His long-held dream of a ubiquitous gaze[503] in the service of philosophical, logical, and experimental illumination has now acquired a more sinister sense here by doubling as the 'political confessional' for an unwitting public.

[500] A IV, 1: 565.
[501] Robin (2004). It remains unknown, however, whether anyone in power ever saw this vision.
[502] Knecht (1981), p. 16.
[503] Jones (2006).

We find here, therefore, little distinction between science, pedagogy, profitability, and political control. The philosophical and scientific are coupled with the playful, which itself doubles as the pedagogical and, potentially, the disciplinary. Similarly, Leibniz was one and multiple people at the same time, whose various identities did not exclude each other but in fact often overlapped: passing seamlessly from one function and register to another, Leibniz the projector and experimenter regularly doubled with Leibniz the political operator, agent, and informant. Epistemological fluidity coincided with a degree of social fluidity.

Leibniz's interest in political control, or what may be termed the state's disciplinary apparatus, has remained relatively unexplored by scholarship.[504] And yet, from—and perhaps especially at—very beginning of his career, Leibniz offered his services to aristocratic employers in a wide range of capacities, from the legal to the commercial to the theological. And although he was committed to a number of utilitarian projects for the public good, he obviously remained beholden to his employers. In fact, in what perhaps seems to contradict more widespread public perceptions of Leibniz, especially his well-publicized irenicism, he regularly advised or sought to advise on military matters, the drafting of political and military memoranda, designing guns, recommending war against the 'barbarian', calling for the conversion of the 'infidel' and the enslavement, if necessary, of young boys in the style of Janissary armies.[505] Ultimately, irrespective of his schemes for philosophical languages and religious reconciliation, Leibniz remained throughout his life first and foremost in the employ of princes whom he needed to placate. To sell his services to the French state would simply have been a logical next step for him, especially given that

[504] Kempe (2015b) is an exception in this regard: his work has touched on Leibniz's military science in which play and games play an essential role as a way of acquiring knowledge.
[505] Wilson (2016).

he had actively courted Colbert and the king even before arriving in Paris.[506] The confusion of genres and coexistence of different registers in his envisioned academy attested to the nexus between science and political power at the heart of Colbert's vision of learning, one in which Leibniz was eager to participate.

Yet, radically, this 'Academy', for which Leibniz would obtain royal approval, would also be the first of its kind to be completely self-funded,[507] being constituted as a business venture in such a manner that public good and profitability would coincide. In evident contradiction to the academy's surveillance function for the purposes of state control, Leibniz thus also imagined it as an autonomous and intellectually independent body, free to pursue its own research objectives. No wonder, then, that he struggled at times to navigate the tension between scholarship and power, and to reconcile the ideal of unfettered research with the reality of subservience to power. As he would find out quickly enough, willing as he was ready to place his knowledge in service of power, that power did not in turn feel obliged to implement his schemes or cater to his vision of learning.

7. Infiltrating Colbert's state Republic of Letters

Even before setting out to Paris, Leibniz had set his sights on the Académie Royale des Sciences and more broadly, on the state-backed Republic of Letters. The figure who had now for the past ten years masterminded the economic as well as the cultural, intellectual and scientific revival of Louis XIV's France was Jean-Baptiste Colbert (1619-1683), the King's finance minister. As controller of finances, he worked relentlessly to improve the

[506] See Moll (1982) and Soll (2009).
[507] A IV, 1: 565.

state of French manufacturing and restore the government's finances from the brink of bankruptcy through a fiscal refoundation, notably a series of financial reforms at a time of increasing economic competition from European neighbours. Crucially, he implemented the *dirigiste* policies codified in his *Memoradum on Trade* (1664),[508] which aimed at ensuring France's economic recovery and independence through the encouragement of commerce and manufacturing in a wide array of fields.[509] More generally, the authorities established new industries, protected inventors, invited specialized workmen from foreign countries, and prohibited their French counterparts from emigrating in a bid to confine talent to France. Little escaped Colbert's purview in his quest to establish France as a worthy economic rival to its more successfully European counterparts—from encouraging major public works projects to allocating monopolies, setting tariffs, promoting the French merchant marine, and instituting the French East India Company. Key to this economic, cultural, and scientific transformation and success was Colbert's newly erected centralized state information system.[510] To set it up, Colbert turned statecraft into a 'practically oriented state research institute',[511] and built a network of state scholars who placed their erudition, methods, and skills in the service of the state, from its policy-making to its quotidian administrative functions. His was a learned administration in which political administration and scholarship went hand in hand in what Arthur de Boislisle called 'erudition d'état'.[512]

Part of Colbert's strategy concerning the state Republic of Letters was the recruitment of foreign scholars and scientific figures such as Huygens, Cassini, the German

[508] See Bertucci (2017), pp. 30-40.
[509] This included, among others, cloth and glass production with the foundation of the Manufacture royale de glaces de miroirs in 1665 to supplant the importation of Venetian glass (forbidden in 1672, as soon as the French glass manufacturing industry was on a sufficiently sound footing) and to encourage the emulation of Flemish technical expertise in cloth manufacturing.
[510] See Cole (1939).
[511] Soll (2008).
[512] Boislisle (1874-97), I, xxi–xxii; see also Briggs (1991).

Hermann Conring, and the Polish-Lithuanian Protestant astronomer Johannes Hevelius. In return for royal largesse and pensions, these scholars were unambiguously expected to place their particular skills and mobilize their intellectual networks in the service of the state and to engage in propaganda on its behalf.[513] His project went beyond bringing the instruments of learning under state control and thus regulating the public marketplace of ideas. By co-opting learning for the service of the French absolutist state,[514] Colbert's administration epitomized the confusion between state and scholarship, which came to coexist in an ambiguous symbiotic relationship that was simultaneously nurturing and repressive.[515] By setting up this 'state Republic of Letters'[516] and bringing the political and learned realms together,[517] Colbert set the tone for the kind of research that should be carried out by favouring research projects of a practical, empirical, and industrial bent. Scholars were no longer independent figures but state operatives, with many now employed in the service of the crown as natural philosophers, historians, librarians, archivists, and diplomats and propagandists.

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[513] Maber (1985).

[514] Dew (2009) and Soll (2009) offer sophisticated accounts of Louis XIV's chief minister co-optation of scholarship—including, as we have previously seen, Oriental studies—on behalf of the state.

[515] To quote Soll (2009), p. 12: 'The case of Colbert's information system shows the extent to which a public sphere and Republic of Letters coexisted in a symbiotic and competitive relationship with the growing sphere of state information and knowledge. It also shows the growing role of experts and how the state played a central and innovative, as well as repressive, role in the growth of modern information culture.' Colbert's administration does not accord with Jürgen Habermas's well-known interpretations of the public sphere as a hub of civic opposition to state power. In this case the interconnection between state and scholarship was much more complex and ambiguous. On the limits of openness in the Republic of Letters, see Malcolm (2004), p. 299; and cf. Habermas (1989).

[516] See Colbert (1861–67), vol. V, containing his correspondence with cultural figures. See also Soll (2005), pp. 48–50; Collas (1912b); Ranum (1980), pp. 188–96; and Stroup (1999). On Colbert's relationship with the poet Jean Chapelain, whom he enlisted to guide the king's distribution of pensions to scholars, see Soll (2005), pp. 48–50; and Chapelain (1880–83), II, p. 275.

[517] See Rothkrug (1965).

The centrepiece of this edifice[518] was perhaps the Académie des Sciences, the creation of which in 1666 had institutionalized science and formally linked it to power.[519] Research in natural philosophy—strictly separated from *belles-lettres* and political and religious questions—was henceforth to be conducted no longer by amateurs funded by private patrons, but by scholars 'living for and through science' and working for the state towards the production of technical and practical applications.[520] In Leibniz's view, Paris and in particular the Académie would provide him with freedom to devote himself to his research[521] and the 'calm state' to which he had aspired since his days in Mainz and in which he could devote himself undistracted to his own scientific research,[522]—indeed there was 'nowhere better opportunity than in France' since the king supported with pensions scholars 'from whom something [was] to be expected'.[523]

Already as a young scholar, Leibniz was animated by the dream of meeting an enlightened and generous prince who would leave him to pursue his ideas for the public good,[524] and to this end Leibniz sought to place his learning and science in the service of the French state. One of the first strategies he devised was writing to the eminent academician Jean Chapelain (1595–1674), who had come to occupy a position of unrivalled influence in the official direction of literary life in France.[525] Transformed from a 'curious who informed

[518] Even though we do not posssess direct comments, it is fair to assume that Leibniz grasped the highly controlled nature of court and science in Paris, and that like Colbert, he had a particular appreciation for systems.
[519] Salomon-Bayet (1978).
[520] Ibid.
[521] Bayet-Solomon (1978), p. 160.
[522] Leibniz to Johann Friedrich, first half of October 1671, A II, 1: 165; Leibniz an Peirre de Carcavy, early November 1671, A II, 1: 183; Leibniz to Jean Gallois, end of October 1682, A II, 1: 530.
[523] Leibniz to Johann Friedrich, second half of October 1671, A II, 1: 268.
[524] Leibniz to Johann Friedrich, January 1675, A I, 1: 274: 'I am disinterested and seek only the protection of a great prince…. a man as myself whose only concern is to acquire glory through significant discoverites in the arts and sciences and to oblige the public through useful works should find a great prince able to penetrate to the bottom of things in order to assess their value and who is guided by generous feelings and glory provided that the state of affairs allow him to listen and favour beautiful things'.
[525] Maber (1985).

other curious' into Colbert's political agent,[526] adviser, and informer,[527] Chapelain placed his numerous epistolary contacts from the Republic of Letters in the minister's service, and drew up lists of *gens de lettres* for Colbert to decide which scholars deserved patronage and royal gratifications. A keen discerner of talent, Chapelain introduced the figures he identified to relevant and vital intellectual circles,[528] singling out the scientist Nicolas Steno, offering d'Herbelot a place in the new academy of Oriental languages in order to lure him back to Paris,[529] flattering the scholar Isaac Vossius by informing him that Louis XIV himself had taken a personal interest in his works, and even asking Hermann Conring to work for the French crown by assembling historical documents that could then be used as French propaganda.[530]

After previously failing to win the approval of the scientific community with the dedication of his *Theoria motus abstracti* to the Académie in 1671,[531] Leibniz now wrote a letter not short on intellectual ambition to Chapelain to recommend his work on legal reform. Legal knowledge had hitherto proved unfailing in its ability to ensure Leibniz's access to the highest political circles, earning him a promotion from the elector of Mainz to the position of *Revisionsrat* at the supreme court of appeal (*Oberappellationsgericht*),[532] and he was therefore relatively confident that his project of legal reform and of the 'rational ordering' of the entire body of law would help him replicate beyond Germany the success he enjoyed in Mainz. Leibniz's letter to Chapelain thus marked the culmination of several years spent closely working on legal reform of the *corpus juris* at the Mainz court,[533] work

[526] Collas (1912b).
[527] Martin (1999), p. 668.
[528] As, for example, Huygens to the Académie de Montmor: see Roger (1981).
[529] Dew (2009).
[530] Soll (2008).
[531] A VI, 2: 27-262.
[532] Antognazza (2009), p. 195.
[533] For more on Leibniz's legal thinking and his project for a *jurisprudentia rationalis*, see Schneiders (1977), Berkowitz (2005), Armgardt (2014), Meder (2018), and Johns (2019).

that he now sought to instrumentalize to penetrate the French intellectual and scientific scene at the highest possible level, even before he had set foot in Paris. Leibniz envisaged a reform of legal thinking and practice along philosophical lines:[534] jurisprudence would be reconceived as a branch of a broader logico-philosophical project in which all disciplines were inextricably connected and erected as a science of law based on the geometric method,[535] uniquely apt, according to him, to ensure certainty.[536] With this universal method, it would be possible to deduce new legal truths by 'bringing only attention and patience to bear' and simply 'following the rules available'. This 'kind of systematic art', whereby the whole corpus of Roman law could be reduced to a few first principles and a limited number of propositions that could then be combined to infinity, would help solve all 'expressed and unspoken problems', especially when it came to the countless mutual complications and exceptions that had emerged between natural and positive legal norms. France, where Roman legal norms were already prevalent, could lead the way in this legal reorganization and help homogenize the legal system across Europe.[537]

Leibniz's determination to use his project for legal reform to advance his own career, not just in Germany but now across Europe, is attested by his eagerness to publicize it to the major thinkers of his time. In fact, around the same time he wrote Chapelain, Leibniz sent out similar letters to others, including Hobbes.[538] He also sent news of his project on the codification of Roman law to Arnauld[539] and to Johann Georg Graevius, a German classical

[534] Antognazza (2009), pp. 61, 85.
[535] Johns (2019).
[536] Leibniz to Jean Chapelain, early 1670, A II, 1: 87: 'It is foolishly objected by some, that mathematical proofs cannot be given in Law. For what expert in figures would here promise diagrams, which wise man would deny certainty?'
[537] Leibniz to Jean Chapelain, early 1670, A II, 1: 83–89.
[538] Leibniz to Hobbes, 13/23 July 1670, A I, 2: 57: 'Four years ago, I started to work out a plan for compiling in the fewest words possible the elements of the law contained in the Roman Corpus . . . so that one could, so to speak, finally demonstrate from them its universal laws.'
[539] Leibniz to Arnauld, early November 1671, A II, 1: 277: 'I am working on a Nucleus of Roman Laws, which presents—in the same words of such laws, concisely and in good order, as a new example of a new perpetual Edict—what is truly law in the entire Corpus, truly fresh [*novum*] and effective law, and can have

scholar based in Utrecht, explaining that 'the labour [he had] undertaken for [him]self' was none other than the 'reduction of all the Roman Laws both natural and civil to their own principles, which are few' and from which, in turn, it would be possible to 'deduce all laws'.[540] Leibniz also reported the news of his uniquely imaginative and intrepid endeavour of a 'rational jurisprudence' to Duke Johann Friedrich of Hanover,[541] and even to Emperor Leopold—since it affected the Roman common law as the basis of imperial law. With this project, it would be possible to see the whole 'geographical map of science' at 'a single glance' and to 'walk through' its 'individual provinces' through the combination of basic 'elements'.[542] Little did Leibniz know, however, that by the time he drafted his letter, the French legal reform movement had lost much of its momentum,[543] and Chapelain's authority was waning.[544]

Leibniz's poor grasp of the situation did not, however, stop him from making other attempts to infiltrate the French establishment. Later he would ask Huet to recommend him directly to the highly esteemed Bishop Bossuet, whose theological designs accorded with his and with whom he sought to forge a mutually beneficial relationship at a time when Christian doctrines were under attack from various sides, including the new science and Cartesianism.[545] In 1675 he even sought to join the dauphin's tutoring team, and in late 1675 he drafted a fascinating letter to the fourteen-year-old dauphin himself:[546] presumably

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force also now. In addition, I am thinking of recapitulating the Elements of Roman Law in a short table which presents, at a single glance, the few clear rules the combination of which can solve all cases, and furthermore, new measures for abridging lawsuits.... In addition to these, I am planning to collect in a short book the Elements of Natural Law, form which everything will be demonstrated from definitions alone.'

[540] Leibniz to Arnauld, early November 1671, A II, 1: 277.

[541] Leibniz to Johann Friedrich, 21 May 1671, A II, 1: 105.

[542] Leibniz to Kaiser Leopold I, August (?) 1671, A I, 1: 60.

[543] See Hammerstein (1972).

[544] Leibniz's writing to Chapelain, instead of to the jurist Guillaume de Lamoignon (who had been recruited to prepare the codificaiton of French laws), is another example of Leibniz's imperfect grasp of a situation: see Brockliss (1987), pp. 277-334.

[545] Leibniz to Huet, 1/11 August 1679, A II, 1: 737.

[546] Leibniz to the Dauphin, end 1675, A II, 1: 394-398. This letter has hitherto remained untranslated. It is reproduced in translation in the Appendix.

intended for Montausier, the dauphin's governor and Huet's superior, this letter expressed Leibniz's commitment to a particular educational ideal—to be elaborated four years later in his better-known 'Portrait of a Prince'[547]—and interspersed extravagant praise of his prospective employer with passages on the proper education of princes and the kinds of virtues they ought to cultivate to govern justly.[548] Whether the letter was actually sent remains unclear, but in it Leibniz delivered an allegorical exposition, which he may have deemed more appropriate to convey his message and more appealing to a teenage boy, in which he sketched out the history of philosophy from antiquity up to the 'new world of the mind … discovered in our age by Galileo, Bacon, Descartes, and other Argonauts'. In a vivid account that reads rather like a martial epic, replete with onslaughts, retreats, defeats, invasions, ambushes, victories—no doubt calculated to stir the imagination and appeal alike to the head tutor and France's future king[549]—Leibniz proceeded to retrace philosophical progress and the 'histories of the struggles of the human mind', a gap in the dauphin's education that he felt uniquely capable of remedying. After devoting much of his narrative to Aristotle's rise in the history of philosophy, Leibniz then recounted how the Aristotelian reign had later came under attack, especially with the rise of mechanical philosophy and new discoveries in physics and chemistry, before finally having to concede defeat and withdraw on several fronts. This state of affairs had been exacerbated by the rise of Cartesianism, for the French philosopher had sent out his 'legions' and engaged in a full-fledged war that threatened philosophy itself. Philosophy had now reached a precarious state, and although the Cartesian invasion had been temporarily repulsed, new dangers had become manifest. Descartes had struck up new alliances with Paracelsus and Van Helmont,

[547] In the original French in Klopp (1864–84), vol. IV, and in English in Riley (1988).
[548] Riley (1988), p. 85: 'Since the order of states is founded on the authority of those who govern them, and on the dependence of peoples, nature…. Thus princes must be above their subjects by their virtue, and by their natural qualities, as they are above their subjects by their virtue, and by their natural qualities.…'
[549] Leibniz was a staunch believer in education through play and imaginative stimulation: see Jones (2006).

and these threatened new hostilities. In this overview, Leibniz presented history and erudition as extremely valuable, especially for their ability to attest to the authority of scripture and theology. It was necessary, he wrote, to expound the history of that war which man conducted with nature. Yet this remarkable attempt to ingratiate himself with Bossuet or Montausier was evidently fruitless.

Louis Ferrand and the pursuit of Abulfeda's Geography

Louis Ferrand (1645-99), was a young *provençal* scholar and Arabist who had been sent to Paris to study medicine but whose 'own Genius irresistibly carrie[d] him another Way, *viz*. to Oriental Studies'.[550] In Paris, Ferrand spent much of his time in the royal library, where he had caught Colbert's eye and come into his employment. The latter had recently spearheaded a royal patronage of *lettres* and Oriental studies as part of a programme of cultural influence and mythologization of Louis XIV[551] which would earn him a reputation as a patron of the 'République des Lettres' even during his own lifetime. Ferrand, with his work on the history of the Crusades and Saint Louis as well as his later involvement in the controversy against the Protestants in the 1680s, fit the bill perfectly. Ferrand had demonstrated his 'assiduity' and come into contact with 'learned persons', and had come to be known for his prodigious' proficiency in oriental learning among men of science. In the 1660s he had begun a new translation of the Hebrew Bible and met Leibniz in Mainz.[552]

Leibniz and Ferrand's relationship was one of mutual assistance from the outset. Ferrand was also a fully-fledged scholar in his own right, referring to himself as 'the last of the learned men in letters', and he relished the kind of erudite correspondence that Leibniz

[550] Pococke (1740), I, 66–67 (paraphrase of a letter of F. Vernon to Pococke, 12 Nov. 1671), quoted in Dew (2009), p. 26. Ferrand had earlier written to Pococke to ask for references on Arab historians of the Crusades.
[551] Dew (2009), pp. 27, 29, 30.
[552] On Ferrand in Mainz, see Dew (2009), pp. 123-24.

made possible, offering to share some of his work with the latter,[553] requesting Leibniz's help on some finer points of erudition, either directly[554] or on behalf of his network of contacts.[555] Perhaps Ferrand's most valuable asset was his knowledge: helping Leibniz to familiarize himself with the Parisian learned world even before he set foot in Paris, Ferrand revealed himself to be a gold mine of information to Leibniz. In particular, he apprised Leibniz of the king's general design 'to restore all things to a better state, and to make the whole reign shine with new splendour' with the Académie des Sciences.[556] There, 'inventions [were] proposed' and 'secret things revealed with one word', and the 'most excellent things' in science were discussed and 'puzzled out', yielding a 'great light … for the sciences.'[557]

In Paris Ferrand acted as Leibniz's first French contact, and of all of Leibniz's correspondents he was perhaps the most resourceful in keeping the German abreast of the Republic of Letters, regularly reporting on theological and scientific developments,[558] whether connected with notable centres of intellectual activity (such as the salon held at

[553] Louis Ferrand to Leibniz, 13 February 1671, A I, 1: 121: 'I will ask the most illustrious Abbé Gravel to share his copy [of this summary] with you'. The correspondence began after Ferrand's return to Paris.
[554] Louis Ferrand to Leibniz, 13 February 1671, A I, 1: 121: 'I come now to uncertain things which I had promised to propose to you for clarification. What is, I beg of you, that village which the Rabbi calls Nossa … what is the outer wall near Cologne that the Rabbi, in Hebraic, writes of as Volkenbourg and elsewhere Voltzkenbourg or Folkenbourg; what is the place near Mainz that the Rabbi calls Garmaissa…. I lack your lights to solve these difficulties and I will take it as great benefaction if you will leave no doubt for me.'
[555] Ferrand to Leibniz, 1672-1676, A I, 1: 454: 'A friend of mine asked me to know if at the Nuremberg Academy [or in its vicinity] … there would not be some scholar Astronomer with whom one could cultivate a correspondence regarding the observation of the stars… I await your answer.'
[556] Louis Ferrand to Leibniz, 13 February 1671, A I, 1: 120
[557] Ibid.
[558] Louis Ferrand to Leibniz, 3 June 1671, A I, 1: 152: 'Meanwhile, I will briefly tell of what is happening in our Republic of literati'; 'This is what I had to say, all in all, on literary matters;' Louis Ferrand to Leibniz, 11 September 1671, A I, 1: 167: 'what is more, I had extensively discussed the business of the Republic of letters of the French, and will talk more about this…' Also Louis Ferrand to Leibniz, May 1672, A I, 1: 435: 'I received news from Germany yesterday, but there is nothing specific to report. The abbé de Gravel sent me a little book entitled Breviarium Chronologiae cum sacrae tum profanae printed in Virzburg in1672. If you want to read it I would be happy to share it with you'.

Rohault's house)[559] or new publications[560] (such as Pascal's *Lettres Provinciales* of 1656-57, Michaele Baudrand Parisino's *Ferrarius Locupletatus*, or Gerauld de Cordemoy's 'Three small treatises'). In addition to reporting on recent experiments through his own connections,[561] Ferrand kept Leibniz abreast of developments in Germany[562] and of some of the main debates raging at the time, such as that which opposed the leader of the Jansenists, Antoine Arnauld, to the pastor Claude. Knowledgeable about the Republic of Letters, Ferrand advised Leibniz to write to Arnauld,[563] even offering to deliver the letter himself,[564] and he recommended Pierre de Carcavy to Leibniz as 'a person whom you ought well to cultivate, for he is all powerful around Mgr. Colbert in everything concerning letters.'[565]

In Ferrand, Leibniz seems also to have found a well-intentioned agent with whom he had much in common.[566] Once in Paris, Leibniz would visit Ferrand frequently.[567] For his part Ferrand appeared to have genuinely valued Leibniz, peppering his correspondence

[559] Ferrand to Leibniz, 3 June 1671, A I, 1: 152.
[560] Ferrand to Leibniz, 13 February 1671, A I, 1: 117: 'But now, in order to satisfy Your wish on all sides, I will touch on new publications…. Various books have recently come out here, among which certain stand out.'
[561] Ferrand to Leibniz, 11 September 1671, A I, 1: 168: 'it was for this reason that I could not yet see one of my friends who often saw the most [Pierre Petit] so that we might know through him whether Petit has attempted the [Terrella experiment] about which you speak; I will have, God willing, learnt about the matter within eight days, and will write what will be said to me.'
[562] Ferrand to Leibniz, May 1672, A I, 1: 452-53.
[563] Ferrand to Leibniz, 25 January 1672, A I, 1: 179 :'It would not be out of place, if I am not mistaken, for you to write to this most famous man and to order me to deliver him your letter.'
[564] Ferrand to Leibniz, 3 December 1671, A I, 1: 175.§110 : albeit not without a warning: 'I have delivered your letter to Arnauld, he has given me no response to Your letter; and he will not, I believe. For when that learned man digs into books constantly, he responds to almost no letters, as I hear. I will take care of the remaining things you have instructed me to do in the next days.'
[565] Ferrand to Leibniz, 3 June 1671, A I, 1: 153.
[566] Ferrand to Leibniz, 3 June 1671, A I, 1: 153. It is interesting to note the distate of both ceremonies and other social rituals: 'As you see, I am using a narrow paper, and eagerly ask that you do the same in the future; I implore you that there should be no ceremonies between us, I said "ceremonies" so that my mind shall be understood by that trite, indeed barbarous word.'
[567] Ferrand to Leibniz, May 1672, A I, 1: 453: 'You will always do me a great deal of honor when it pleases you to come to my house, and I will always count this as a new grace that you will do me. So, sir, you will be welcome whenever you wish to give yourself the trouble.'

regularly with marks of esteem[568] and on more than one occasion acting on Leibniz's behalf by praising his talents to notable figures of the Republic of Letters in Paris, such as the mathematician Père Berthet,[569] to whom he had vaunted 'outstanding gifts of [his] mind' and who, in turn, had shared his opinion on Pater Grandamicus's experiment on magnetism.[570] Crucially, Ferrand sought to promote Leibniz to Carcavy, reassuring the German savant in July 1671 that he did 'not cease to extol the outstanding gifts of [Leibniz's] mind with the most illustrious Carcavy', and that Carcavy had 'formed a great opinion of' Leibniz.[571] In December of that year, Ferrand even requested that Carcavy 'advertise the outstanding gifts of [Leibniz's] mind to the most honourable Colbert', who was well disposed to him, so as to 'bring about what [he] desired.[572]

Leibniz was particularly active in helping funnel books to and from various correspondents across Europe in a bid to establish himself as an indispensable member of the Republic of Letters, as well as to ingratiate himself with established and prospective patrons. The young scholar, Ferrand explained, could prove his worth to Carcavy and the newly formed Académie by initiating a 'book trade' between Mainz and Paris and purchasing books in Germany for the royal library:[573]

> [Carcavy] collects books from all parts of the world at the King's command, has already brought together innumerable volumes of books in all sciences and languages. I have recently shared Your letter with him, and he said to me that you will do him the greatest favour if you take care of sending outstanding books to Paris which will appear in Germany in individual Frankfurt weeks; so that, even if

[568] Ferrand to Leibniz, 3 June 1671, A I, 1: 153: 'You have delivered outstanding examples to me both of Your benevolence and your learning in Your last letters, and to say it with one word: you have satisfied my wish in every aspect; I thank You, Most Honourable Lord, in both regards; and I would like you to believe that the memory of your merits towards me will never be gone from my mind.'

[569] Ferrand to Leibniz, 3 June 1671, A I, 1: 153: 'I had recommended you to outstanding men of our people, before you could agree: especially R.P. Bertet—the Jesuit who is well-versed in Mathematics and almost all other disciplines and languages, who now stays with the most eminent Cardinal Bullonius in the city of Pontesius, *Pontoise* in French—hears Your praises with great joy. There are also many others who admire you greatly, and whom we will praise in a long speech when free time allows it.'

[570] Ferrand to Leibniz, 1 October 1671, A I, 1: 170.

[571] Ferrand to Leibniz, 28 July 1671, A I, 1: 160.

[572] Ferrand to Leibniz, 3 December 1671, A I, 1: 175.

[573] Ferrrand to Leibniz, 13 February 1671, A, I, 1: 120.

> you came across some curious library or a museum filled with coins and other things of this kind for sale, you make this also known to us; but I would overflow with singular joy if this business which I propose appealed to you; and there would be no light addition to my delight if you would, in the first letter you write to me, praisingly mention Carcavy and the academy he directs, and if you would announce Your effort to consent to Carcavy's wishes; in this way, indeed, I would show him Your letter, and the greatest trade of books would emerge between you and us; concerning money, Carcavy would pay it fairly and nothing should be lacking in this area.[574]

Ferrand thus used Leibniz as a key intermediary in the purchase of books that were then dispatched to France[575] primarily for Carcavy's benefit.[576] Ferrand acted as a go-between between Leibniz and Carcavy, exchanging correspondence[577] and delivering instructions, especially regarding the acquisition of books.[578] The abbé de Gravel,[579] in particular, the French envoy in Würzburg, posed himself as an intermediary between Leibniz and his Parisian contacts, Carcavy and Ferrand, not without leveraging Leibniz's eagerness in order to obtain books and in particular for Carcavy and Ferrand.[580]

The Abulfeda episode illustrates well how, under Louis XIV's rule, power and erudition were inextricably linked, and how, while the Ottoman threat was still looming on the horizon, interest in and the dissemination of knowledge about the Islamic Orient reached

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[574] Louis Ferrand to Leibniz, 13 February 1671, A I, 1: 121.

[575] Louis Ferrand to Leibniz, 3 June 1671, A I, 1: 152: 'I ask you to indicate the price of the books which you have sent, and the money will be paid immediately.'

[576] Louis Ferrand to Leibniz, 13 February 1671, A I, 1: 121. 'Meanwhile, Carcavy asks for Patinus' works about which you talk in your letter; all of Petrus Lambeccius' commentaries of the Caesarean Library; the edition of Joseph which has been finished by Andreas Bose; the Bishop of Paderborn's chronicle of his diocese; and Marius Nizolius' books, buried in mould and dust, of whose edition you have taken care of. If you would deliver these books, I will owe you great thanks, and fair payment will be made.'

[577] Louis Ferrand to Leibniz, 3 June 1671, A I, 1: 152.

[578] Ferrand to Leibniz, 1 October 1671, A I, 1: 171.

105 : 'The most illustrious Carcavy has left for the country, and before he left, he instructed me to greet You in his name; and to remind you that the plan of Zunner, the Book Vendor in Frankfurt, is praised very much by him, and that he will take care of his duties to You in this matter with utmost pleasure; thus now that sturdy book vendor may propose his conditions.'

[579] See Badalo-Dulong (1956).

[580] 'I am glad to see by your last of the 11th of the current, that you approve of the thought which I had concerning your recommendation to M. Colbert. You will recognize with time, that I have genuine and sincere intentions to serve you, of which I even believe I have given some proof by those that I recently wrote to Messrs. De Carcavy and Ferrand, where I tried to do justice to yourselves. merit, which must be expected at the Issue.' Abbe de Gravel an Leibniz 16 December 1671.

a peak.[581] In this regard Colbert had begun sponsoring networks intended to bring books from the Levant to Paris and assemble information about the Orient. Compilations of the collected and translated material, which would then serve as the basis for reference manuals with which to supplement other historical texts, were particularly prized.[582] Still, despite Colbert's best efforts to provide an institutional base for Oriental learning—a royal college—this college remained largely inoperative and Oriental studies in Paris at the time remained marginal.[583] One of the best examples of the compilations is the Catholic humanist Barthélemy d'Herbelot's *Bibliothèque orientiale*, which was published in 1697 and served for more than two centuries as an encyclopedia of Islam.[584]

A key figure within this Orientalist 'culture of curiosity' was the traveller Melchisédech Thévenot (1620-1692) who, in his desire to bring potentially useful and hitherto hidden knowledge (especially from overseas) into public circulation through printed translations,[585] had accumulated Hebrew, Arabic, and Persian manuscripts, especially those with historical and geographical content. Ferrand had become aware of Thévenot's project to edit Abulfeda's early fourteenth-century geographical work, based on Ptolemy's *Geography*, which had been supplemented by Arabic authors over time and which contained tables of the latitudes and longitudes of Middle Eastern cities. This work was the object of widespread scholarly fascination, every major European Orientalist scholar from Guillaume Postel to Edward Bernard attempting and failing to produce an edition of it. An edition and translation of the Abulfeda's *Geography*, fragments of which had already appeared in

[581] Dew (2009).
[582] As Abdel-Halim (1964), p. 242, sums up, 'These geographic and historical compilations … remain a complete repertory of the knowledge of Muslims in these fields.... They represent the ultimate evolution of these genres before the centuries of scientific decline; and seeking to make an inventory and synthesis of previous work, they constituted successful and easy-to-use overall works. In the West, they appeared—and rightly so—as the most appropriate general sources for further research.'
[583] On Colbert's support for Oriental studies, see Dew (2009), pp. 25-40.
[584] For more on this particular subject, see Gaulmier (1969). On d'Herbelot see Laurens (1978) and F. Richard (1997).
[585] See Dew (2006), p. 40.

Thévenot's *Relations de Voyages,* fell squarely within the Thévenot circle's remit[586] as an important means of 'illustrating' and perfecting geography 'for the public benefit'.[587] Editing and translating Abulfeda would prove to be an all-consuming and ultimately unsuccessful venture lasting many decades—the work would not be published before the nineteenth century. Thévenot's role included listing it in 1687 among manuscripts to be purchased in the Ottoman Empire by the French ambassador Girardin, and hiring Antoine Galland to produce a French translation.[588] Thévenot's ultimately unsuccessful attempt to produce an edition of the Arabic text is emblematic of the ambivalent and precarious state of Oriental learning at the time: although, like many other *curieux,* he was dedicated to helping promote and disseminate Oriental scholarship in Europe, helping in the process incorporate it to the broader production of knowledge, Thévenot faced an astounding number of obstacles in trying to bring this particular project to completion. After another failed attempt to have the manuscript printed in Holland, Thévenot returned empty-handed to Paris in the spring of 1670. He then resolved on acquiring the copy made for Wilhelm Schickard, German Orientalist and professor of astronomy, from a manuscript in the imperial library in Vienna.[589]

As Nicholas Dew has pointed out, Thévenot's inability to get Abulfeda's *Geography* published is representative of the broader fragility of the nascent field of Oriental studies in Paris at the time.[590] Despite the dedication of networks that were to some extent successful in collecting material, Oriental studies were hampered by a lack of necessary skills, printing

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[586] I.e., according to the anonymous 'Project de la Compagnie des Sciences et des Arts' (1663?), as 'work[ing] towards the perfection of the Sciences and the Arts, and search[ing] comprehensively for everything that could be of some utility or convenience to the human race, and particularly to France' (quoted in Dew (2006), p. 46).

[587] Chapelain to I. Vossius, 12 September 1666, in Chapelain (1880-83), II, p. 476n.

[588] See Dew (2009), p. 119.

[589] For more on the subject of Thevenot's quest's to produce an edition of the Abulfdefa, see the excellent account in Dew (2009), pp. 81-130.

[590] Thevenot even commissioned at his own expense Arabic printing types.

presses, and funding: only substantial institutional backing would enable larger-scale projects such as production of a full-scale Arabic edition. State support was limited, however, even hindering erudition after co-opting it. But restricted as Oriental studies in France remained in the seventeenth century, Leibniz capitalized on the interest in them.

Ferrand promptly informed Leibniz of the venture and the attempts being made to secure the manuscript before suggesting that a deal be struck with Magnus Hesenthaler, since 1656 a professor of history, politics, and rhetoric at the University of Tübingen, who possessed the Schickard transcript.[591] This would be an ideal opportunity for Leibniz to demonstrate his utility to the French state: in this respect, providing Oriental material within the Republic of Letters promised to be fruitful avenue for him. In 1671, for instance, Leibniz was tasked by his patron, Boineburg, with acquiring Johann Michael Vansleben's *Conspectus operum Aethiopicum* (1671) through the intercession of the Parisian agent in Mainz, the Abbé de Gravel,[592] and Ferrand back in Paris. (He succeeded.) Oriental scholarship remained dependent on the mobilization of scholarly networks that, in turn, could help Leibniz himself gain patronage and possibly further his career.

Knowledge was indeed shaped by power,[593] but could, conversely, be instrumentalized and serve as a conduit to power. Indeed, Leibniz's quest for the Abulfeda manuscript illustrates how, within the Republic of letters, knowledge and power could overlap. In the field of Oriental studies, a subset within the broader Republic of Letters,

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[591] A discussion of Leibniz's quest for a translation of Abulfeda's *Geography*, see Bodéüs (1993), pp. 343–46. The story can be traced through A I, 1: 118, 153, 155, 157, 160, 163–66, 167–68, 170–71, 173, 175–76, 178–79, 189–90, 197, 453; and II, 1: 195. There are twenty references to Abulfeda in the first volume alone of Leibniz's *Allgemeiner politischer und historischer Briefwechsel* in the Akademie-Ausgabe.

[592] Abbé de Gravel to Leibniz, 20 September 1671, A I, 1: 169. The German Orientalist Vansleben (also spelled Vansleb and Wansleben), financed by the duke of Saxe-Gotha, had copied some Ethiopian religious manuscripts in Egypt in 1663–64, but had not been able to reach his intended destination of Ethiopa itself. In 1672–73 he returned to Egypt in Colbert's service. See Hamilton (2018), pp. 1–53.

[593] Especially within the French context where Colbert attempted to co-opt all Orientalist networks: see Dew (2009).

Leibniz identified a niche which, if he played his cards well, could serve as his entrée into Colbert's growing institutional apparatus.

Leibniz sought to instrumentalize to his own advantage Thévenot's attempt to secure a copy of Abulfeda, discerning in it an avenue by which to make his way to Paris, even before his infamous *Consilium Aegyptiacum.* Securing the *Geography* of the 'fameux Abulfeda' (as Leibniz referred to him) turned out to be an arduous process. On one occasion, after having had his hopes raised perhaps too often and upon discovering that there existed a copy of the manuscript as well as a Latin translation in Paris,[594] Leibniz wrote rather despairingly to Ferrand, 'I am quite happy to hear the news concerning Abulfeda. For, to confess the truth, I have been unable to talk to you until now—during the recent uncertainty—without embarrassment [*sans rougir*].'[595] Indeed, the arduous negotiations over the Schickard transcript lasted over a year, with Leibniz acting on behalf of Hesenthaler, relaying his high asking price and his lists of demands back to Gravel. Hesenthaler, who soon realized that Ferrand and Colbert were involved in the venture, was prepared to relinquish the manuscript only in exchange for copies of the printed edition when it appeared, as well as a shipment of some of the most sumptuous Parisian publications, including a complete set of the 'Byzantine du Louvre' (the Jesuit-edited *Corpus Historia Byzantina,* then still in progress), an eight-volume Bible—both works produced by the Imprimerie royale—and Gassendi's works in six folio volumes.[596] After the exchange of the goods at the Frankfurt book fair in March 1672 and verification of the manuscript by one of Gravel's associates, the Schickard Abulfeda eventually made its way to Paris,[597] soon

[594] Louis Ferrand, 13 February 1671, A I, 1: 118.
[595] Leibniz to Ferrand, May 1672, A I, 1: 451.
[596] Dew (2009), p. 124.
[597] Cf. Guiffrey (1881-1901), I, col. 503: '20 novembre [1671]: à luy [*sc.* Carcavy], pour dépenses qu'il a payées, sçavoir, au sr Gravelle, résident à Mayence, pour livres qu'il a achetés en Allemagne, 3301 ll.'.

followed by Leibniz, his credit enhanced by his role in the acquisition. Nonetheless, Leibniz had other, greater, plans in mind for himself.

Pierre de Carcavy and Leibniz's calculating machine

Pierre de Carcavy (1600-1684) was the director of the Académie des Sciences, the newly established 'academy of *curieux*',[598] access to which he controlled closely.[599] Carcavy had not only been appointed to the academy, where he was in charge of cartography, at its foundation in 1666, but had also served as the custodian of the royal library since 1663. His aim was to make the king's collections the best in the world across the whole spectrum of learning, from historical and antiquarian fields to the natural sciences. He had previously managed Colbert's own library, at the time providing his master with documents pertaining notably to religious rights and exemptions in France.[600] Carcavy was a keen mathematician who had himself worked on the problem of the quadrature of the circle and whose interest had been further encouraged through his friendship with the mathematician Pierre de Fermat, and at one point he had tried to get Fermat's *Novus secundarum et ulterioris ordinis radicum in analyticis usus* published. A member of the circle of Marin Marsenne, whose role he had effectively assumed at the latter's death in 1648, Carcavy had also become an important member of the Académie de Montmor, corresponding with leading intellectuals and mathematicians such as Roberval, Galileo, and Torricelli. By the time Leibniz contacted Carcavy, the latter had become one of France's most powerful and influential scientific courtiers, amassing an impressive array of contacts throughout Europe, to the extent, in fact, that Henry Oldenburg had once mistaken him for the president of the Académie. Leibniz

[598] Leibniz to Hans Eitel von Diese zum Furstentein, 19/29 June 1671, A III, 2: 4.
[599] Louis Ferrand to Leibniz, 13 February 1671, A I, 1: 120: 'Carcavy, the Royal Librarian, directs this Academy, with Colbert's favour, and he will, if he may be in possession of a rather long life, increase the matter of letters and sciences not by a little…'
[600] Dew (2009).

seems to have been well acquainted with Carcavy's reputation early on. In letters to Peter Lambeck,[601] the librarian at the Imperial court in Vienna—a position he would later covet—and Duke Johann Friedrich of Hanover, Leibniz clearly identified Carcavy, with whom he had been in epistolary contact,[602] as a key player in the Republic of Letters, alongside Ferrand in France, Oldenburg and Wallis in England, and Conring and Guericke in Germany. Leibniz was determined to ingratiate himself with Carcavy by acting as an intermediary on his behalf, sending him books,[603] and more generally keeping him informed of literary developments, including the publication of new journals.[604]

In early 1670s Leibniz had conceived the idea of a calculating machine with the aim of improving Pascal's calculator, the Pascaline, by enabling it to perform multiplications and divisions automatically.[605] Prompted by Ferrand, Leibniz sent a letter to Carcavy, 'all powerful around Mgr. Colbert in everything concerning letters',[606] with news of his calculating machine and other instruments he claimed to have invented as well as several printed works on natural philosophy. Before his trip to Paris, Leibniz had recently learned the 'details of [Colbert's] great plan for commerce and policing (of industry)', a centrepiece which consisted in attracting foreign talent and artisanal skill to France.[607] In Germany, as

[601] Leibniz to Peter Lambeck, August 1671, A II, 1: 149.
[602] Leibniz to Johann Friedrich, second half of October 1671, A II, 1: 160: 'Many *Curiosi*, of whom I have not the slightest knowledge, have replied to my letters with an extraordinary courtesy and willingness, among them gentlemen of the French Academy and the English [i.e. Royal] Society, also Mr von Boineburg, H. P. Kircher and Lana in Italy, Messrs Gericken, Linckern, Conringium, Boeclern in Germany, Messrs Graevium, Velthuysen, Diemerbroeck in Holland, Oldenburg and Wallis in England; de Carcavy the royal librarian, Ferrand and others in France, and many other virtuosos, including *Chymicos* and *Mechanicos*, which it is not necessary tell here.'
[603] Leibniz to Carcavy, 22 June 1671, A II, 1: 213: 'I do not doubt that you have received the books which I have sent a week ago, and among them the *Paderbornian monuments*, which the most Honourable Baron Boineburg has given to me in order for me to send it to You, with greetings from himself added. I will write to the most Famous Ferrandus when I have received the answer about Abulfeda.'
[604] Ibid: 'You have without doubt seen the new *Giornale de Letterati*, whose publication has been begun in Venice. I will write more about letters and sciences also to the most Famous Ferrandus, whom I send regards most officially in the meantime.'
[605] For more on this topic, see Jones (2016).
[606] Louis Ferrand to Leibniz, 11 February 1672, A I, 1: 183.
[607] Jones (2016), p. 142.

Leibniz knew, the cameralist Johann Daniel Crafft's talents had been wasted and his endeavours had been largely unsuccessful on account in particular of the 'absurd laws of craftsmen' through which they guarded their privileges jealously and stifled innovation.[608]

By seeking to cultivate a relationship with Carcavy, Leibniz hoped that Carcavy would grant him not only a privilege for his calculating machine, thus validating his claim to superior expertise and yielding great benefits for the state and market alike, but also and more importantly access to Colbert's state Republic of Letters. Leibniz was particularly impressed by the French Académie des Sciences, which by providing a collective and state-propelled research structure sought to improve the lot of mankind as a whole:

> What the English Society has done so far, too, is great in itself, but scant in comparison to what would be in our power if we wanted it enough. And I believe that this is respected by you whenever I imagine the excellent mind of Your King, who—if, as he has begun, plans to make better human affairs—will render a sacred memory of himself for humankind. You will not only win over the English, but all men: if you want to make a little more noble effort, worthy of your greatness and of a King who seeks his glory through the happiness of humankind.[609]

Carcavy, it seems, was very impressed with Leibniz's project for a machine, comparing it to Pascal's 'machine of a time past',[610] and he hoped to show it to Colbert. In early June 1671, he sent Leibniz a very encouraging letter in which he enthused over Leibniz's 'renown' and 'outstanding merit',[611] and obliquely signalled to Leibniz that the latter might potentially be considered for membership of the Académie.[612] In a letter he sent only a few days later, Carcavy's enthusiasm continued unabated.[613] After much praise, Carcavy was

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[608] Ibid. Leibniz to Carcavy, 22 June 1671, A II, 1: 215.

[609] Leibniz to Carcavy, early November, A II, 1: 288. In the last clause (from 'if') Leibniz switches from Latin to French.

[610] Carcavy to Leibniz, 20 June 1671, A II, 1: 208.

[611] Carcavy to Leibniz, 5 June 1671, A II, 1: 191–92.

[612] Carcavy to Leibniz, 5 June 1671, A II, 1: 191: 'But if someone in Germany could be found who made an effort in Mathematics, and especially put his mind to that which pertains to Theory, you would certainly give us great pleasure if you referred him to us—as far as we are concerned, we will dedicate as great a favour as we can to him, after he has become acquainted to us.'

[613] Carcavy to Leibniz, 20 June 1671, A II, 1: 208. 'Meanwhile, farewell, Sir, and continue to illumine the letters and sciences.'

thus already determined to put Leibniz and his projects to good use, enlisting the latter to compile lists of useful German books that Gravel would then have shipped to Paris.[614] Crucially, Carcavy now requested that Leibniz sent him a copy of his calculating machine, which he believed to be 'meticulous and useful', so that he could present it to Colbert and 'praise [Leibniz's] merits' to the minister, emphasizing that 'deeds have more power, especially with him who does more than he says'.[615] In his lengthy response to Carcavy, Leibniz did not offer the required description of his machine, preferring instead to expound his latest physical discoveries,[616] especially as contained in the two treatises that he requested be printed at Carcavy's behest. In November 1671 Leibniz sent Carcavy a most remarkable letter which he requested remain strictly confidential[617] and in which, possibly emboldened by the prospect of an upcoming trip to Paris in the wake of his diplomatic activities, he 'undertook '[to] recommend … [him]self now with increasing boldness':[618] 'I see that you are not only diligent, but also aspire to outstanding and great things and embrace with your mind the progress of the arts and sciences, since the great Colbert, the most apt minister for the true glory of the Great King, encourages such an excellent plan. And truly, what can concern the State more than to raise its own power and human happiness?'[619]

Leibniz proceeded to submit his own proposal for consideration, offering himself to Carcavy as an 'instrument perhaps not useless … for advertising many outstanding things',

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[614] Carcavy to Leibniz, 20 June 1671, A II, 1: 208: 'You will further do me a favour if you indicate to me which ones are edited in Germany, as you have begun to do, and if you instruct the most Renowned Abbé de Gravel to care for their delivery to us.'

[615] Carcavy to Leibniz, 20 June 1671, A II, 1: 208.

[616] Leibniz to Carcavy, 22 June 1671, A II, 1: 212: 'for one thing because I did not think that my Hypothesis had been seen then, which I now believe has reached your hands along with other books, as you have ordered me to discuss some problems in Physics next to my principles'

[617] Leibniz to Carcavy, early November 1671, A II, 1: 290: 'Furthermore, I wish my proposition to be kept secret at least, whatever you may think of it: if you discard it, then because I do not want to be held accountable for things not said; if you lend your ears to it, then because in the that case it may happen, once the matter is spread, that the men I can make use of resist, moved by envy.' I note that the present letter has never been translated and that this constitutes its first account.

[618] Leibniz to Carcavy, early November 1671, A II, 1: 288.

[619] Ibid.

as someone who could 'search excellent things not only from Chemists and noted mechanics, but also from Doctors, Mathematicians and learned men of any kind at all'.[620] On account both of his extensive 'correspondence with most learned men throughout Germany' and of the 'benign opinion' with which he was regarded 'throughout courts everywhere, including among German and foreign Ministers', Leibniz had achieved a certain stature with 'most famous Men, not only Germans, but also Italians, Englishmen, Belgians' who were used to responding to his letters 'very kindly, and not only send back idle talk, but also substance'. 'Learned men of all kinds, Theologians, Jurisconsults, Doctors, Mathematicians, also experts of history and languages' were 'not displeased about their exchange of letters with [him]'. Leibniz had also been offered positions by 'great leaders, or certainly from the greatest Men in the State', positions he had declined only because he 'would be away from the public when occupied with freer and perhaps more fruitful scientific research'. Continuing, Leibniz emphasized that he had 'never asked anything more ardently than that it be allowed for [him] to spend [his] time quietly in raising the sciences and this, as it were, business of the arts'.[621]

A scheme whereby Leibniz could 'search out everywhere among the secrets, the circumstances, the arts by which human power is increased'[622] was in fact in perfect keeping with Colbert's ethos[623] and would not fail to earn Carcavy himself no small amount of recognition and glory.[624] Leibniz, with his customary brashness, thus proceeded to dictate his terms: Carcavy would 'easily recommend [him] with [the former's] wisdom and most

[620] Leibniz to Carcavy, early November 1671, A II, 1: 289.
[621] Leibniz to Carcavy, early November 1671, A II, 1: 289.
[622] Leibniz to Carcavy, early November 1671, A II, 1: 290: 'If the priests had passed a bill that all inventions by monks should be made public only by the trust of obedience, they would without doubt be the rulers of the world, for also Berthold Schwarz's gunpowder invention could have remained with them only.'
[623] Leibniz to Carcavy, early November 1671, A II, 1: 290: 'There is no mortal who knows this better than the great Colbert.'
[624] Ibid.

persuading loyalty' to the minister in such a manner as to 'effect that there [would] be a place also for [Leibniz] among the foreigners whom the Greatest King adorns with his generosity'. In exchange for his membership and adequate compensation, as well as his freedom from other duties,[625] Leibniz would offer a range of services, including obtaining books, compiling indexes, and revealing various products of 'ingenious minds, inventions, experiments, thinkers… things that will be published, hidden ones, neglected, posthumous ones, of Libraries, Museums, and of all matters'. While there undoubtedly existed 'more learned' scholars than he, he conceded, it would be difficult to find someone 'more ready for this plan … through experience, education', and 'finally through the joy itself which [he had] almost from childhood on received from the variety of long acquaintance'. No one had regretted recommending him and, addressing Carcavy's concerns in the hope of formalizing as soon as possible a working relationship with Académie, he had proven himself to be not merely a man of words, but also one of action: 'I have shown that I could do something in that area, not only perhaps by vain words until now, but also sometimes by deeds. And you will not in vain ask anyone who knows me, who will, I hope, also say the same'. Indeed, he would be able to deliver 'even greater things than expected'.[626]

Carcavy responded to Leibniz a couple of weeks later with a letter that was simultaneously admonishing and encouraging.[627] After briefly elaborating on Pascal's calculating machine, Carcavy offered to send Leibniz a more detailed description of the machine, or better yet to compare Pascal's directly with Leibniz's own, were the latter to send an exemplar.[628] Carcavy seemed at first to share Leibniz's caution in his previous letter

[625] 'It must also be deliberated that the time which is spent on these things (not sparse, of course, for a hand washes the other, and not more directly than by an exchange [*sc.* of ideas, arguments] can something be achieved from the curious people, those he must, as he wants to, in turn satisfy) must be taken away from other occupations.'
[626] Leibniz to Carcavy, early November 1671, A II, 1: 290.
[627] Carcavy to Leibniz, 5 December 1671, A II, 1: 307.
[628] Carcavy to Leibniz, 5 December 1671, A II, 1: 307.

against the dangers posed by the 'excessive imagination' which he credited with the 'invention of many beautiful secrets'. Carcavy, nonetheless, strongly distanced himself from Leibniz's position, not, in fact, without a touch of sarcasm, to emphasize that schemes should be put forward for consideration only once they had been proven to be valid:

> But as it is very difficult to produce riches, even more so to profit from what [projectors] themselves do not fully grasp, displaying neither order nor method in any of their operations, and quite often persuading themselves that secrets of nothing are of great consequence because it required a lot of effort to conjure them, you will agree with me, sir, that there is not much to recommend these kinds of discoveries as good before there is greater confidence in them.…[629]

His criticism was double-pronged: on the one hand, Carcavy rebuked Leibniz again for failing to expound his theories fully and sending 'confused speculations', thus rendering some of his texts difficult to grasp. On the other hand, Carcavy was concerned with the feasibility and possible practical implementation of the many schemes that Leibniz had sent him and his colleagues. While Carcavy remained interested in Leibniz's project for a new calculating machine, of which Leibniz still had disclosed very little, he was nevertheless unwilling, in the absence of tangible results, to accede to the young man's requests for immediate membership of the Académie and a pension in the expectation that he would prove useful to Colbert and the Académie in the future. Since Colbert was only 'satisfied with what was real and solid', Carcavy would, he cautioned, present something to the minister only once Leibniz 'had begun to send something effective' for assessment.

Colbert remained open to the possibility of rewarding Leibniz if the latter were indeed to send Carcavy 'something worthy of being seen', in which case the German would be 'assured of three things': first, that his invention would not be stolen or that he would not receive credit for it; secondly, that he could set the conditions for the use and dissemination

[629] Ibid.

of any machines or descriptions of them; and third, that he would receive appropriate financial compensation.

In what was clearly a reproach of Leibniz, with whom he was growing frustrated for a tendency to promise much while delivering little, Carcavy concluded his letter by remarking the dangers of the *amour-propre* of 'authors' who overestimated the novelty of their inventions. Carcavy was much older than Leibniz and no novice at this game, having had to deal with his fair share of schemes and projectors over the years. The proliferation of schemes[630] had made him wary and more determined than ever to act as a gatekeeper on Colbert's behalf,[631] protecting the latter from potential scams while seeking to attract genuine talent.

Even before setting foot in Paris, it seems, Leibniz had begun to squander his credit by leaving Carcavy and members of the Académie des Sciences increasingly unimpressed, wasting their time and goodwill with unclear ideas and half-baked projects. To be sure, this did not stop Leibniz from claiming regular contact with Carcavy,[632] and even presenting himself as one of Carcavy's inner circle. In a letter to Albert von Holten, for instance, Leibniz discouraged the Tübingen orientalist from presenting his 'cylindrical Hebrew grammar' (*Grammaticam ... Hebraicam in cylindris*)[633]—inspired by Leibniz's own *De arte combinatoria*—to the Royal Society, suggesting instead that more a fruitful avenue might

[630] This type of activity became so pervasive towards the end of the seventeenth century that Daniel Defoe famously nicknamed his era the 'Projecting Age'. Decades earlier, however, scholars were already commenting on the rampant passion for schemes.
[631] See Jones (2016), pp. 114-116.
[632] Leibniz to Jakob Thomasius, 21/31 January 1672, A II, 1: 320: 'I, who I am used to have exchanges with Carcavy, librarian of the king, who by order of Colbert takes care of the literary things [*sc.* the books in the library], I have found by chance, among other things, a mention of the Reinesianarum inscriptionum.'
[633] In what was probably a note to himself (A II, 1: no. 96), Leibniz contemplated the usefulness and combinatory potential of Von Holten's cylindrical grammar, comparing it to similar ventures including Kircher's, Wilkins's, Comenius's, and his own *De arte combinatoria* and leading Leibniz to ponder on the possibilities of a logical machine. Similarly, Leibniz muses, it would be possible to construct a cylinder that would be able to provide all possible relations between certain given terms decomposed into simple elements. This could form the basis for an artificial language which could be applied to question of law. For more on this, see Couturat (1901), p. 115.

be pursued with the French Académie, where, by intervening on his behalf with Carcavy and Ferrand, Leibniz could (he claimed) provide von Holten 'with the surest route to those Maecenases'.[634]

Over the next half a year, it seems that Leibniz requested Carcavy's assistance on a number of matters and proposed to him either orally and in writing, a number of projects[635]—of which only a few details are known—but there is no evidence that Carcavy accepted these proposals. In this regard the contrast with the difference in treatment received by Leibniz's friend and fellow projector Johann Daniel Crafft is striking. Having obtained a privilege to produce steel from iron in France,[636] Crafft was left in limbo by various delays and interruptions in the plans to transfer his workshop to France,[637] and he finally enlisted Leibniz to act on his behalf.[638] In his response to Leibniz, Carcavy reassured him that, provided Crafft carry out what he had promised to Colbert and agreed with Du Fresne, Mainz's envoy in Paris, both would hold up their own end of the bargain.[639] Crafft was clearly perceived as a reliable and effective operator whose ventures offered great potential. Leibniz, from whom Carcavy and Gallois had in July 1671 greeted the prospect of

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[634] Leibniz to Albert von Holten, 17/27 February 1672, A II,1: 324: 'Carcavius the king's librarian has been given this brief concerning literary matters by Colbert. He has some under-librarians, learned men, of whom in short Cotelerius is in charge of Greek holdings, Ferrandus of Oriental. I have exchanged letters with Ferrandus often, with Carcavius sometimes.'

[635] Leibniz to Carcavy, 22 June 1671, A II, 1: 215: 'I hope that You have received my second letter, which I have entrusted to the learned young man, Lord Lersnerus, the son of the Senator in Frankfurt, when he went to You—I had inserted in it a little Sheet about some matter which should not be despised. If you have received and read it, I ask you to insert in your response, which I expect very soon, another sheet of paper responding to that paper.' And Leibniz to Carcavy, early November 1671, A II, 1: 290. 'A short while ago I have recommended to You the Book Vendors and Machine Vendors… The Book Vendor Zunner will diligently gather the prices of books first, then as he will be ordered, also themselves., and in the meantime he will propose also the conditions about superfluous business to you. This matter will be settled clearly upon my arrival, as I hope, along with that more important one, which you remember has once been executed at the great Colbertus' at my request.'

[636] Johann Christoph Crafft to Leibniz, 5 October 1675, A I, 1: 426-427.

[637] Leibniz to Carcavy, 22 June 1671, A II, 1: 215.

[638] Ibid.

[639] Carcavy to Leibniz, 10 July 1671, A II, 1: 229.

learning,[640] lost much of his credibility by December and was unable to make headway with the Académie. By mid-1672 his principal value to Carcavy seems to have been had been reduced to reporting on new discoveries,[641] particularly concerning the progress of Otto von Guericke's experiments on vacuum.[642] In less than a year, therefore, it seems that Leibniz's credit with Carcavy and at the Académie largely evaporated.

Enthralled by the mechanical arts and inventions, from Des Billettes's 'thousand instruments and pretty inventions' and to the machine that walked on water,[643] not to mention his own plan for a calculating machine, Leibniz was particularly receptive to France's new policy to attract foreign talent. For Leibniz was a project-maker who could design ingenious solutions to real practical problems, and it was in this capacity that he put himself forward. He was an audacious thinker and a master of discerning the needs and concerns of his patrons or potential patrons and mirroring them back to them. But what Leibniz truly sold when promoting his projects was himself. Leibniz presented himself as superior form of projector, upon whom the success of the crown would depend at a time when the royal administration was more than ever intent on having natural philosophical and artisanal knowledge yield practical and technological applications.[644]

When Leibniz arrived in Paris in 1672, he was interested above all 'in understanding and inventing machines',[645] and he began working on producing a functional machine. Alongside his work on mathematics, he intended the machine as his entrance card to Parisian learned circles,[646] and hoped to sell it to the French crown and have it mass produced once

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[640] Johann Leyser to Leibniz 13 July 1671, A I, 1: 159.
[641] Compare this to July 1671 when the theologian Johann Leyser had written to Leibniz from Paris that Carcavy, alonside the editor of the *Journal des Sçavans* and secretary of the Académie Jean Gallois, assuring the latter that desired nothing more thant to benefit at the meetings of the Academie from Leibniz's learning: Antognazza (2009), p. 123.
[642] Leibniz to Carcavy, July 1672, A II, 1: 340-341.
[643] Davillé (1922), p. 40.
[644] Jones (2016), p. 98.
[645] Leibniz to Bernoulli, April 1703, quoted in Jones (2016), p. 66.
[646] Jones (2016), p. 60.

the King had made it 'fashionable'.[647] Upon his return in 1673 from England, where he had demonstrated an incomplete prototype of his machine, he applied for funding from the Académie des Sciences to bring the twelve-digit machine machine into practice.[648] After showing a prototype before Colbert and the Académie,[649] Leibniz received a preliminary commission from Colbert for machines for the Royal Observatory and the financial offices in December 1674.[650] However, Leibniz's claim that the production of his machine was well under way, or even complete,[651] could not have been further from the truth. Transforming Leibniz's blueprint into a functioning model, especially with regard to the mechanisms, proved far more difficult than anticipated. In one eye-opening letter to Louis Ferrand, Leibniz depicted the enterprise as a veritable battle of the will, comparing his lot to that of Tantalus, the Greek mythological figure who was punished to endure eternal frustration by the gods after being admitted to their table and betraying them by revealing their secrets and stealing their nectar and ambrosia to give to mortals. Like him, Leibniz had to pay the price of what had seemed like a 'century' of silence, isolation, and 'hermitude' —aside from the presence of two labourers—in the midst of all the great men with which Paris was 'paved'.[652] Leibniz was nonetheless prepared to sacrifice himself for this demiurgic feat on behalf of mankind. The business of his machine required 'the whole of his person', especially since Leibniz was alone, as he emphasized, and had to attend to an 'infinity of trifles' that detracted him from his labour, even only one of which could send everything 'tumbling down' forcing him, like Sisyphus, to start all over again.[653]

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[647] 'De Machina ad usum transferenda,' quoted in Jones (2016), p. 114.
[648] Mackensen (1968), p. 174.
[649] See Denis Papin to Leibniz, 23 July 1705, in Gerland (1888), p. 347: Papin regretted that he had not present when the model was presented, but remembered well that Huygens had been 'very content' with it.
[650] Leibniz to Johann Friedrich, 21 January 1675, A I, 1: 492. 'I nevertheless have been recommended to Mr. Colbert and have been urged to manufacture my Arithmetical Machine on his command'. Also Leibniz to Johann Friedrich, second half of October 1671, A II, 1: 267.
[651] Jones (2016), p. 119.
[652] Leibniz to Louis Ferrand, May 1672, A I, 1: 452.
[653] Ibid.

In early 1675 Leibniz drew up terms for the Académie des Sciences concerning his 'reasonable' compensation upon delivery of well-functioning calculating machines—compensation not only for the actual expenses and demands on his time, but also for the financial and reputational risk to which he was exposing himself by focusing exclusively on producing the machines.[654] With no timely delivery of the machines, however, Leibniz's once overconfident language shifted to pushing for the recognition from the crown of his intellectual ownership of his invention.[655] Leibniz ultimately failed to produce a sufficiently functional machine, much to his would-be patrons' dismay, and in early October he missed yet another appointment to demonstrate the machine in Saint-Germain-en-Laye before the duc de Chevreuse.[656] In fact, he was never able to produce a model for his machine nor ever received a privilege for it.

Leibniz was proposed by Jean Gallois, the duke of Chevreuse, and Christiaan Huygens as a replacement at the Académie for the recently deceased mathematician Roberval.[657] But Gallois withdrew his support, however,[658] having taken offence at Leibniz's reaction to one of his talks.[659] Huygens, who had been taken ill, sought unsuccessfully to change Gallois's mind.[660] Furthermore, Leibniz's failure to produce his machine in a timely manner, as well as the number of foreigners already present at the Académie, as the duc de Chevreuse intimated to him,[661] likely contributed to undermining

[654] Mackensen (1968), p. 170; Jones (2016), p. 74.
[655] Jones (2016), p. 148.
[656] Leibniz may have presented a model of the machine to Colbert at Saint-Germain in late October 1675: Salomon-Bayet (1978), p. 156.
[657] See the summary in the Introduction to A III, 1: lxix–lxxii; and Leibniz to Gallois, 2 November 1675, A III, 1: 306–7. Unlike the Royal Society, the Académie had a *numerus clausus*, so that a new member could be elected only after an existing one had died.
[658] Müller (1969), p. 167. Antognazza (2009), p. 174.
[659] Bos (1980), p. 373; and the Introduction to A III, 1: lxxi.
[660] Salomon-Bayet (1983), p. 167.
[661] Barber (1955), p. 174.

his candidacy for a position. To his profound disappointment, the seat left vacant by Roberval went to a native competitor instead of to him.

8. Finding a new patron

After losing both Boineburg and Schönborn in quick succession in 1673, Leibniz found himself in a precarious financial and professional situation. He had initially obtained from Schönborn a leave of absence to remain in France to 'perfect himself' and 'serve the cause of piety'.[662] But wanting to prolong his stay, he was ready, if necessary, to accept a new scientific or political assignment in order to stay in Paris for as long as possible and gain a foothold there. He tried to obtain a diplomatic post: to replace Du Fresne, who had just died, as Mainz's resident in Paris, but this effort was scuppered by France's declaration of war on the Holy Roman Empire.[663] More generally, Leibniz hoped to remain in Paris on some sort of scientifico-political mission in the service of an enlightened prince to whom he would report back on the latest political and scientific developments while maintaining a diplomatic presence at the court of Louis XIV. More specifically, he hoped to be hired by the new prince-archbishop of Mainz who, in addition to agreeing to pay him the arrears on his salary for the past two years, would allow him to remain in Paris, immersed in the French learned world, while serving the interests of the Mainz court.[664] Such an 'amphibian' existence, before 'finding matter to fix [himself] advantageously', would suit him rather well, as he confided to Christiaan Habbeus.[665] (He would later make a similar proposal to J. C. Kahm, Duke Johann Friedrich's private secretary, but to no avail.) The new elector, Lothar Friedrich von Metternich, however, had plans of his own, none of which involved

[662] Leibniz to Johann Friedrich, Autum 1679, A I, 2: 226.
[663] Davillé (1920), pp. 147–48.
[664] Antognazza (2009), p. 152.
[665] Leibniz to Habbeus, 5 May 1673, A I, 1: 417.

giving Leibniz a position as a cultural and political resident in Paris, and consequently he granted Leibniz permission to remain in Paris only 'for some more time … without danger to his post'.[666]

Leibniz was confirmed in his duties as a tutor for Boineburg's son, the young Philipp Wilhelm, by Boineburg's widow in 1673, a task that neither tutor nor pupil seems to have found particularly rewarding.[667] Towards the end of December, Leibniz requested from Boineburg's widow the payment of his outstanding salary, for tuition and other services, including the laborious recovery of Boineburg's French rent and pension.[668] When he was dismissed from his duties in September 1674, he was not remunerated for the many additional tasks assigned to him by the late baron.

Soon, the necessity of finding new employment could no longer be avoided and Leibniz, who was possibly in debt,[669] could no longer afford to be as selective in his choice of employment as he had perhaps been in the past. He had previously received two offers of employment, the first soon after his arrival in Paris, as the secretary to the Danish prime minister, Count Ulrik Frederik of Güldenlow, for which he would have received an annual stipend of 400 thalers together with free accommodation and dining rights. Leibniz, however, had then not been ready to give up his freedom to pursue philosophical projects in Paris.[670] Whether Leibniz had not found the offer sufficiently attractive or whether his demands, which included being granted the title of royal counsellor and the use of a copyist to help him with his more mechanical tasks, had been considered excessive, nothing had come of it.

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[666] Melchior Friedrich von Schönborn to Leibniz, 5 May 1673, A I, 1: 349.
[667] Davillé (1921), p. 169.
[668] Antognazza (2009), p. 153.
[669] Hirsch (2000), p. 76.
[670] Leibniz to Habbeus, 5 May 1673, A, I, I: 416.

In his search for an enlightened prince who would employ him as an adviser while allowing him to pursue his own intellectual pursuits away from court, Leibniz's initial contacts with potential employers did not run as smoothly as he might have wished. Although he was generally careful to model his proposals after the concerns and imperatives of potential new patrons and adhere to the norms of courtly behaviour,[671] he was not reluctant to express his own priorities in making the patronage work for him: the patronages Leibniz envisaged were ones of mutual benefit, and he clearly sought patrons who would enable him to implement his own projects. He certainly understood that the cultivation of patrons was governed by certain rhetorical conventions, but his impatience to succeed, and perhaps his very determination to realize his schemes of human advancement, led him occasionally to neglect those conventions or to deploy them in such an exaggerated manner that risked appearing insincere and gauche, thereby undermining his aims. Before finally settling at the court of Duke Johann Friedrich of Hanover, Leibniz sampled the job market, so to speak, in the expectation that his philosophical and scientific standing would automatically secure him a courtly position, an expectation of which he would soon be disabused.

Between March 1675 and March 1676, Leibniz wrote several letters to potential employers, and they are particularly illuminating of his state of mind at the time. One particular noteworthy overture was to Duke Christian von Mecklenburg-Schwerin, whom Leibniz had met in Paris and for whom he had previously drafted legal documents regarding the annulment of the duke's second marriage. In a series of rather remarkable letters, Leibniz attempted to transform this limited commission into the more permanent position of state counsellor, of which he had a rather flexible understanding. In his March 1675 letter to

[671] On which see Kettering (1986), esp. ch. 1; van Houdt, Papy, Tournoy, and Matheeussen (2002); and Fumaroli (2015).

Mecklenburg, for instance, he requested that he not be 'forced to follow his Court, since if [he] had been willing to settle down so soon in a fixed place, [he] would long ago have been in employment as advantageous as [he] might wish'. Despite the dearth of employment offers, Leibniz presented himself to the duke as being in a strong bargaining position and as having freely chosen his predicament—rather than having had to address an increasingly urgent need for employment and salary—and as such, he laid down his conditions. If the reasons just mentioned were not sufficiently compelling, there was another one: his safety, which he linked to the duke's own interests. Since 'the assignments that [he] would be undertaking could come to light in spite of [his] best efforts to conceal them', an 'official position' would 'enable [Leibniz] to push the duke's interests with zeal', notwithstanding that the latter's 'enemies were powerful here'.[672] By all accounts and much to his surprise, Leibniz's letter did not produce the expected result. It seems that Leibniz initially lacked the self-awareness to appreciate that his brazenness and disregard for social hierarchy, combined with a lack of tangible results corresponding to his self-panegyrics, were bound to cause friction and misunderstandings. Once realizing his misstep, Leibniz promptly apologized for 'having failed to explain [himself] properly', with the result that 'His Royal Highness had understood [Leibniz's] request differently than he had intended'. He attempted to rectify his blunder by adopting a more deferential tone and assuring that he expected the duke to 'confer unto him the evoked honour' only once he had been able to produce tangible results, 'after having rendered Him effective services… [and] solid reasons in conformity with His interest.' [673] This backtracking, however, came too late: the damage had already been done and Leibniz was forced to recognize that he was not considered as special or indispensable as he thought himself to be. The momentary setback did not, however, deter

[672] Leibniz to Christian von Mecklenburg, March 1675, A I, 1: 477.
[673] Leibniz to Christian von Mecklenburg, March 1675, A I, 1: 478.

him from attempting to cling on to his conditions, citing, for instance, the menacing prospect of unspecified and 'powerful forces' in order to secure 'a perpetual and lengthy advantage' in the shape of an official position and a salary that would 'cover [him] from any pursuits or reproaches'.[674] In exchange, Leibniz would serve the duke 'as a lawyer and in any other capacity', even if he could not commit to 'ranking among his servants or following his court' because of his desire to pursue the life of the mind.[675] Leibniz would be able to 'execute several beautiful inventions and useful curiosities' of which the duke would 'see the effects and experiments': in this manner, both parties would find satisfaction. Throughout this letter Leibniz remained careful to point the promise of tangible results. Pending his approval, the duke would obtain 'a true and considerable satisfaction in no more than two weeks' on the basis of 'reasons he would reveal to him [*des raisons que je pretends luy decourvir*]',[676] in which both Leibniz and the duke would find their interests.

Despite his efforts, this second letter failed to restore Leibniz to the duke's good graces, and his third and final letter signals the complete breakdown of the relationship. A clearly irritated Leibniz lashed out at the duke and comes close to crossing the line. Leibniz vented his indignation by striking an uncharacteristically unrestrained, reproachful, and direct tone to denounce what he perceived as his ill-treatment: 'There are people of the first order who are kind to me, and who would not approve of such bad treatment.' Ever the lawyer, Leibniz proceeded to deploy a wide umbrella of arguments in the space of a paragraph, appealing to the principles of natural justice and the duke's need for reliable and loyal agents, insisting that the force of logical necessity would make his conclusion 'difficult

[674] Ibid.
[675] Leibniz to Christian von Mecklenburg, March 1675, A I, 1: 479: 'Because of my design, which is to devote myself to science rather than to business, and to cultivate the reputation I have acquired among people of knowledge.'
[676] Leibniz to Christian von Mecklenburg, March 1675, A I, 1: 479.

to resist'.[677] His correspondence with Mecklenburg betrays a combination of naiveté and a belief in his exceptionality, which he seemed to think dispensed him from attending to the niceties of courtly etiquette. This is one of many examples of Leibniz's overestimation of his political and social skills. Undeniably gifted as he was, he was 'skilful but clumsy', as Claire Salomon-Bayet puts it.[678]

Leibniz must have recognized his error with Mecklenburg, for he changed tack when dealing with another potential employer, Johann Friedrich. His initial contact with the Hanoverian ruler can be traced back to 1671 when, from Frankfurt, Habbeus had drawn the duke's attention to Leibniz by recommending him in the most glowing terms, prompting the duke to ask Habbeus to urge the young jurist to depart immediately for Hanover. Although an offer failed to materialize at that time, Leibniz chose on Habbeus's recommendation to keep his options open,[679] Leibniz and Johann Friedrich began a loose correspondence in which the savant reported on his scientific, philosophical, and theological work in Paris and London. From the outset, Leibniz again presented himself as exceptional, but this time in a more muted tone than with Mecklenburg. Against all odds, he explained to the duke, he had succeeded in making his mark through much labour, and after 'an infinite number of imperfect attempts' had finally been acknowledged by his peers as 'able of achieving the extraordinary'. He had undertaken 'a completely new study' in mathematics and 'discovered the strangest and most useful truths', as the greatest mathematicians of the time had been able to attest. His arithmetical machine, he claimed inaccurately, had been completed 'and surpasse[d] all expectations' revolutionizing calculation in such a manner that it would henceforth no longer necessitate 'any labour or application of the mind.'[680]

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[677] Leibniz to Christian von Mecklenburg, March 1675, A I, 1: 479.
[678] Salomon-Bayet (1978).
[679] Antognazza (2009) p. 87.
[680] Leibniz to Johann Friedrich, 26 March 1673, A I, 1: 492.

Though motivated fundamentally by financial necessity, Leibniz now presented himself as one in whom duty and natural inclination coincided. He was now careful to insert a leavening of flattery into his terms for the fortunate recipient of his services: he owed 'everything' to the duke, who had showered Leibniz with his 'goodness'.[681] Having 'never manifested any haste for things of this nature'—a claim that many recipients of his letters would have contradicted—he would simply accept the unfolding of the course of events.[682] He could not believe his luck to have met such a 'generous' prince,[683] worthy of a 'particular cult' and to whom veneration and even a kind of tenderness was owed.[684] He was not acting out of necessity or duress but under the most auspicious circumstances. Leibniz now characterized his success as the product of luck and favourable conjecture—indeed he was 'not quite sure how he had succeeded'.[685] He had been particularly blessed to meet the duke; the world was full of individuals 'whose abilities infinitely surpassed Leibniz's and yet who had failed to produce something great or useful' for failing to have a similar encounter.[686] Only a few days later Leibniz repeated his determination and readiness to serve Johann Friedrich and 'contribute to his satisfaction as soon as possible'. He even claimed to have no stronger 'passion than to be' in Hanover.[687] This was certainly disingenuous, given that Leibniz would do everything he could to remain in Paris as long as possible, eventually delaying his move to Hanover by nearly a year.

Even when Leibniz did adhere to social norms and respected the distinctions of hierarchy, he was not hesitant to try to leverage better conditions for himself before his employment had been confirmed. He was prepared to divulge a 'favourable opportunity' -

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[681] Ibid.
[682] Leibniz to Johann Friedrich, 10/20 November 1675, A I, 1: 501.
[683] Leibniz to Johann Friedrich, 10/20 November 1675, A I, 1: 501.
[684] Leibniz to Johann Friedrich, 11 January 1676, A I, 1: 504.
[685] Leibniz to Johann Friedrich, 26 March 1673, A I, 1: 492.
[686] Leibniz to Johann Friedrich, 26 March 1673, A I, 1: 493.
[687] Leibniz to Johann Friedrich, 22 March 1676, A I, 1: 513.

only once his terms for appointment had been met;[688] he deserved to be confirmed an official counsellor on account of the Abbé de Gravel's invitation to accompany him to a peace conference.[689] In response, Johann Friedrich was generous but inflexible, establishing the pattern that would come to define their relationship—at least from the duke's perspective: 'When [the ruler would] have the opportunity to give [Leibniz] new marks', he would happily do so.[690] What emerges from Leibniz's letters, therefore, is a portrait of a remarkably ambitious individual with a strong sense of mission who was not always successful in balancing his intellectual goals and personal expectations with the social realities and power dynamics at play.

Nonetheless, such was Leibniz's determination to remain in Paris that he even wrote to Colbert directly in January 1676, on the very same day that he confirmed his employment in Hanover, in a last-ditch attempt to land an appointment at the Académie. It is fair to say that, throughout his correspondence with French dignitaries, Leibniz was always at least implicitly addressing himself to Colbert.[691] But this time, writing in some desperation, Leibniz was emboldened to recommend himself, which his relatively lowly social status would not otherwise have permitted, purely on the basis of the advancement of the sciences. The strategy of presenting himself as a disinterested scholar, distinguished by his 'loyalty' (as he informed Christaan Habbeus), is one that Leibniz was to adopt repeatedly, particularly in exchanges with prospective patrons. Loyalty was especially important in such precarious times, and Leibniz would ensure his to a patron who was endowed with 'a solid genius, good taste and prompt to lend his support to useful and easily achievable endeavours':

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[688] Leibniz to Johann Friedrich, 10/20 November 1675, A I, 1 : 501.
[689] Leibniz to Johann Friedrich, January 1676, A I, 1: 507
[690] Johann Friedrich to Leibniz, 11 February 1676, A I, 1: 510.
[691] Hence Leibniz's frequent references to Colbert, to his power of judgment and personal interests, in letters to others. He entreated Gallois, for example, to 'keep him in as great a protector as Colbert's good graces'. Leibniz to Gallois, first half of December 1677, A III, 2: 297.

> all the qualities of which you speak to me, loyalty alone is what I dare to boast, and of which all those with whom I have had to interact have been fully persuaded, having been graceful enough to confide in me their greatest secrets without regret… And as I know that this quality, combined with some effort, and a modest knowledge, can compensate for the failings of others even in greater matters, I begin to regain a little courage, and to console myself for what I lack.[692]

Yet even as he accepted the appointment in Hanover, Leibniz sought to keep his options open.

Learning from France for Germany

Leibniz was to remember his time in Paris fondly, and he sought to keep that memory alive by cultivating an extensive French epistolary network thereafter. The city had provided him with opportunities and contacts that would not have been available to him in Germany.[693] He would continue viewing the French capital as one of Europe's pre-eminent centres of novelty in the scientific and *galant* worlds alike,[694] which he felt he had experienced at their heights: 'France never boasted more talent than in 1672', he wrote in 1715, the year before his death, lamenting that ever since 'erudition had declined on account of a decline in the public finances, even if they were still superior to those of other nations'.[695] Leibniz's stay in Paris was of a decisive importance in determining the rest of his intellectual trajectory. He had been transported from a small German court to the centre of European civilization and come into contact with some of his generation's greatest thinkers. And it was in Paris that he had become a first-rate mathematician, pioneering a new branch of mathematics and mechanics, and had begun to develop some of his key philosophical ideas.

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[692] Leibniz to Habbeus, 5 May 1673, A, I, I: 415.
[693] Fischer (1855), p. 150; Davillé (1909), pp. 147-78, 463.
[694] Davillé (1923), pp. 57–58.
[695] Leibniz to Westerloo, 8 July 1715, quoted in Davillé (1923), p. 58.

However limited his political influence, Leibniz was able to observe and learn from France's successes, especially in economic matters, with the aim of enabling the German states to emerge from France's shadow and establish its own set of manufactures and political scientific structures.[696] Germany would then be able not only to compete with France, but to 'undermine' its commerce 'for ever' and to wage industrial war against it.[697] In Paris, Leibniz revealed a talent for extracting natural philosophical as well as trade secrets, and his notes over the years are replete with numerous kernels of artisanal knowledge concerning materials, techniques, and mechanisms, knowledge that he would seek to direct towards Germany's benefit. Unsprisingly, then, his admiration for France was coloured by a pronounced ambivalence towards the nation. As an outsider and critical observer, he was not oblivious to her many miseries, which he probed some detail;[698] and his admiration for her learned and scientific apparatus coexisted with a deep disdain of her bellicosity and destructiveness. In an 'ode to France' written between 1672 and 1676, he implored her to 'take hold of [her] fortune' and to 'look around [her] at the smoking walls of the world' she had left behind in its ravaging hubris, and instead 'hold fortune in reverence', for 'there are Powers in heaven, and prosperous men are ill-advised to contend with Nemesis'. France did not nor would not always enjoy her present success: in this bold plea Leibniz urged France to 'give peace to the peoples' and 'pardon a supplicant world'. If he had previously presented fortune as subservient to France's destiny and Louis's glory in political and military terms, Leibniz now enjoined France to restraint and implored her now to 'learn how to live among mankind'.[699]

[696] Davillé (1923), p. 60.
[697] Couturat (1901), p. 520 n. 7, quoted by Davillé (1923), p. 60.
[698] See Davillé (1922), p. 25.
[699] A I, 1: 456-57.

PART II

1. Leibniz in his correspondence with Duke Johann Friedrich (1676-1678): the sincerity of a projector

No longer able to prolong his sojourn in Paris, where he had settled in early spring 1672 and enjoyed several years of relatively unconstrained intellectual and scientific freedom, Leibniz finally took up service at the court of Duke Johann Friedrich in Hanover in late 1676. In Paris, at the time the world's hub of science and scholarship, he had pursued a wide array of scholarly interests and got to know the greatest minds,[700] and so it was reluctantly and with a heavy heart[701] that he had accepted the office in Hanover and only once his hopes of finding a position either in Mainz, Paris or Vienna had failed to materialize.[702]

Johann Friedrich had recently turned fifty when Leibniz came into his employ. He was the son of Georg (1583-1641), Duke of Brunswick - Lüneburg - Calenberg, and Anna Eleonore of Hessen - Darmstadt (1601-1659). A well-educated prince, the duke entertained the notion of setting up his court as a local power and intellectual centre notably through the recruitment of officials and brilliant minds[703] from all different corners of Europe.[704]

The court Leibniz joined upon his departure from Paris was comparatively small. At court Leibniz interacted with the two chamber councilors, Otto Grote, who led the privy council (*Geheimer Rat*), the highest administrative body of the duchy; Hieronymus von Witzendorff, who oversaw the cabinet office charged with the general administration of the duchy (*Kammer*);[705] the vice-chancellor Ludolf Hugo, who directed the chancery or ministry

[700] Rescher (2013), p.119.
[701] Hofmann (1974), p. 302.
[702] His attempts to get appointed as historiographer at the court of Leopold I were unsuccessful.
[703] Antognazza (2009), p. 199.
[704] Rescher (2013), p. 121. See further Breger and Niewöhner (1999) and, more generally on the Hanoverian court, Schnath (1976).
[705] Antognazza (2009), p. 199.

of justice (*Kanzlei*); and his direct superior, the valet Johann Carl Kahm. To these would later be added Leibniz's correspondences with the Mining Authority in Clausthal and its president, Friedrich Casimir zu Eltz, as well as with Friedrich Wilhelm Leidenfrost, the government secretary in Osterode during negotiations with Eltz and the mining office.

Leibniz had been acquainted with Johann Friedrich ever since 1669, when Leibniz had been recommended to him by Christian Habbeus[706] and got to know him personally in October 1671 during his stay in Frankfurt.[707] Already shortly after they had met, Leibniz had been very candid with the duke about his scientific and theological ambitions, offering an overview of his work and laying out his plans[708] before him by discussing, for instance, his *Jurisprudentia rationalis* which would help achieve the 'truth with as much security as possible' or the strides made by his *Theoria motus abstracti* and *Hypothesis physica nova*.[709] Over the years Leibniz had kept the duke abreast of his work and activities, and upon the unexpected demise of his two patrons, Boineburg and Schönborn,[710] the ruler renewed his offer of employment, which Leibniz finally accepted in 1676. His appointment marked the beginning of a forty-year association between Leibniz and the House of Hanover in which Leibniz would spend much of the rest of his life serving as court librarian and advisor while acquiring a reputation as one of Europe's most eminent philosophers and mathematicians. Leibniz's several face-to-face meetings with the duke[711] were supplemented by an extensive and wide-ranging epistolary exchange that spanned a little less than three years, from Leibniz's departure from Paris in late 1676 and return to Germany via London and the Low Countries to the duke's premature demise in December 1679. Over this period, he wrote

[706] Christian Habbeus to Leibniz, 30 November 1669, A I, 1: 210.
[707] Davillé (1921), p. 76.
[708] Leibniz to Johann Friedrich, second half of October 1671, A II, 1: 260-69.
[709] Leibniz to Johann Friedrich, 21 May 1671, A II, 1: 170-76.
[710] Leibniz to Johann Friedrich, 15/25 April 1673, A I, 1: 491.
[711] Leibniz to Jean Gallois, first half of December 1677, A III, 2: 293.

seventy-nine letters of varying lengths to the duke. Whether Leibniz's letters were delivered directly to the latter or passed through the latter's chamberlain, Johann Carl Kahm, and whether all of them reached him at all remains unclear. That some did not would help account for Leibniz's frequent repetitions in the letters.[712]

Leibniz as court librarian

Leibniz had been recruited first and foremost as a librarian, the previous incumbent, Tobias Fleischer, having taken up the post of cabinet secretary at the court of Denmark. As such, one of his main tasks was the constitution of a ducal library.[713] This he set out to accomplish diligently by bringing together books, old and new, in order to build an 'exquisite and accomplished'[714] library that would act as an 'encyclopaedia' and 'inventory'.[715] While he was disappointed with his appointment,[716] it was perhaps this very sense of discontent that prompted Leibniz to excel at his duties, and take possession of this role and make it his. As he confided to Duke Johann Friedrich in mid-December 1676 soon after his arrival in Hanover, Leibniz had no intention of being an ordinary court librarian, but declared that it was his intent to extend a little 'the usual care of the Library, and therefore the traditional duties of a Librarian.' He was determined not only to secure a more rounded position at court as court counsellor, but also to leave his mark on a particular field he conceived as

[712] Many of Leibniz's letters were reports of his activities rather than a two-way exchange, which would account for some repetitions. He also kept copies of his most of his recipients' letters, from which it is generally possible to reconstruct much of the exchange.
[713] On Leibniz's library work see Palumbo (2014) and Paasch (2005).
[714] Leibniz to Johann Friedrich, January 1677, A, I, 2: 9.
[715] Leibniz to Johann Friedrich, May 1679, A I, 2: 175: 'My opinion has always been and still is that a library must be an Encyclopedia, that is to say that one can be instructed there if necessary in all matters of consequence and practice.' Leibniz himself himself collected books assiduously, bringing back many from France, England, and the Low Countries: see Palumbo (2014), pp. 610-11, 613–14.
[716] Leibniz felt that the library post as such was simply not commensurate with his talents or expectations, writing that the advantages it offered were 'fertile only for the mind, and sterile in everything else' and 'that there [was] no occasion to make friends, nor to to acquire the slightest authority, not to excel at anything' (Leibniz to Johann Friedrich, January 1677, A I, 2:12).

being part and parcel of a broader project for the advancement of the human sciences and the reform of learning.[717]

While Leibniz never wrote a systematic treatise on library science along the lines of Gabriel Naudé's widely circulated *Advis pour dresser une bibliothèque* (1627) or Louis Jacob's *Traité des plus belles bibliothèques* (1644), he did commit to paper his thoughts on library organization and improvement in letters and memoranda to various patrons, princes, officers, ministers as well as fellow librarians and booksellers—to such an extent that he would later come to be seen as an authority on the subject. In fact, shortly after he arrived, Leibniz addressed to the duke a dense *promemoria* for the improvement of the ducal library in which he emphasized the crucial role of the Republic of Letters and its networks of correspondences in helping relay the correct books and learned journals, and offered to place his own extensive correspondence network in the service of 'helping assemble not only new books' but also 'the loose sheets, little speeches which are lost and ... the controversies which are in vogue among the learned.'[718]

Upon his arrival, the library possessed only 3,310 printed books and 158 manuscripts.[719] As Leibniz set out to explain to the duke—and later to his successor Ernst August—the library was the concrete embodiment of the current state of knowledge in the very physicality of its books. In this capacity, it should not be a mere accumulation of volumes, but a carefully selected repository offering the best and most useful books across all disciplines. This general inventory would bring to light the 'seeds of the evident and wonderful truths', 'new realities', 'ingenious observations', and 'remarkable considerations' offered by any field of knowledge and any kind of mechanical art, including those that were wrongly or superficially considered marginal. In this respect, in fact, devising methods of

[717] Leibniz to Johann Friedrich, January 1677, A I, 2: 12.
[718] Ibid.
[719] Palumbo (2014), p. 610.

organization of libraries as privileged 'storehouses' and 'memories' of mankind would prove a lifelong preoccupation.[720]

During his stay in Paris, Leibniz had imagined a *bibliothèque à sa phantasie*,[721] an ideal library that would contain two categories of books: first, those containing inventions, demonstrations, and experiences, and second, books of a political, historical, or geographical nature.[722] A library was unlike a stone or a metal object but a living being, one which, in the image of the *res publica literaria* and with the help of enlightened patronage, would record past achievements as well as the state of all knowledge at a given moment with its share of beautiful discoveries, experiments, and curiosities. The most important books were not the most 'voluminous' ones but those that, ultimately, would help realize the common good and the true felicity of humankind. For this reason, Leibniz challenged the traditional image of the library—and the role of traditional court librarian hitherto entertained. The latter was usually expected to suggest to his patrons the acquisition of sumptuously illuminated manuscripts or lavishly engraved folio volumes with the intention of reflecting the prestige of a dynasty or of projecting sovereign political power. But in Leibniz's view, libraries should place the values of usefulness and learning above those associated with social status.[723] They should not be mere court ornaments rife with books 'of little use' (*livres de peu d'usage*) or 'fashionable ideas' (*livres à la mode*) but mirrors of the Republic of Letters. In keeping with his more general stance towards knowledge, Leibniz was concerned with sifting among the 'awful mass of volumes' that could be detrimental to true *savants* and selecting those precious gems that would help contribute to the advancement of knowledge and science. In this manner, a 'beautiful library' should circumvent social hierarchies in

[720] Leibniz, 'Einrichtung einer Bibliothek' (1680), A IV, 3: 349–53 (in French).
[721] Leibniz to Christian Habbeus, 5 May 1673, A I, 1: 417-18.
[722] Leibniz to Johann Friedrich, January 1677, A I, 2: 15-16.
[723] Palumbo (2014), p. 616: 'The concept of the *bibliothèque de parade*, based on the ostentation of luxury and puissance, was always and radically extraneous to Leibniz's vision.'

favour of the aims and ideals of the Republic of Letters;[724] and as time passed, Leibniz would elaborate increasingly on the strong link between the library and the Republic of Letters. Writing later in his life to the court librarian Hertel, he defended his understanding of his role and function as court librarian: 'I prefer thirty small curious books to a voluminous work that contains nothing more than repetitions…. I consider mainly whether the author has offered, through his book, a service to the Republic of Letters.'[725] Rejecting for himself the role of traditional court librarian, Leibniz thus proceeded to extend his subversive gaze to the library itself by envisaging it less as a mere mirror of social status than as the very embodiment of the Republic of Letters. A diligent librarian, Leibniz attended to library's smallest details and oversaw its expansion,[726] notwithstanding various difficulties created by the need to accommodate the newly acquired Fogel collection.[727] Over the course of his correspondence, he regularly updated the duke about the library's operations and acquisitions, as well as his various negotiations to purchase libraries[728] and books from various booksellers from Hamburg to Amsterdam, including Johann David Zunner in Frankfurt am Main, Thomas Heinrich Hauenstein in Hanover, Daniel Elsevier in Amsterdam, and Caspar Gruber in Brunswick. This task in particular provided Leibniz with ample opportunity to show off his skills as a smooth operator and gifted negotiator, and one of notable successes was to acquire the Dutch publicist Wicquefort's library in 1677, on which he probably drew to prepare *Caesarinus Furstenerius* and other political works.[729] In the case of the valuable collection of the recently deceased medical physician Martin

[724] See also Leibniz to Duke Johann Friedrich, January 1677, A I, 2: 15-16.
[725] Leibniz to Lorenz Hertel, 3 April 1705, A I, 24: 508.
[726] Antognazza (2009), p. 80.
[727] Leibniz to Hieronymus von Witzendorff, October 1678, A I, 2: 94; Antognazza (2009), p. 209.
[728] Leibniz to Johann Friedrich, 6/16 July 1678, A I, 2: 56.
[729] Davillé (1909), p. 31.

Fogel,[730] Leibniz managed to acquire 3,600 volumes for a much lower price by concealing his true interest in the library.

Eventually and through his efforts, Leibniz could reassure the duke in early 1678 that the ducal library had become 'one of the choicest one ever had in Germany',[731] from which the ruler would not fail to derive much glory.[732] Crucially, too, helping bolster the ducal library's prestige would also further cement Leibniz's own status as a scholar of distinction, and allow him to further position himself, within the Republic of Letters and at court, as a purveyor of 'all sorts of knowledge, correspondences and curiosities'.[733]

Widening his sphere of influence

With the exception of a few weeks spent in Hamburg in the hope of securing the savant Joachim Jungius's library, mainly through the intermission of the latter's disciples, Heinrich Siver and Johann Vagetius,[734] Leibniz spent all of the three years from 1676 to 1679 in Hanover and the Harz mountains. There, he was determined to go beyond the duties of his librarianship—'I undertake a little more than the care of its Library requires, and that a Librarian is generally accustomed to doing'[735]—and extend his influence by seeking, if unsuccessfully, to persuade the duke to create the new office of Director of the General Archives especially for him[736] and entrust him with the administration of cloisters[737] and confiscated church property.[738]

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[730] On Fogel see Marten and Piepenbring-Thomas (2015).
[731] Leibniz to Johann Friedrich, May 1678, A I, 2: 55.
[732] Leibniz to Johann Friedrich, 7 August 1678, A I, 2: 67:'However, the choice that His Royal Highness made of this Library will be published everywhere; and everyone will think that he has chosen well.'
[733] Leibniz to Johann Friedrich, January 1677, A I, 2: 15.
[734] On Leibniz and Jungius's papers see Kangro (1969) and Wahl (2017).
[735] Leibniz to Johann Friedrich, January 1677, A I, 2: 12.
[736] Leibniz to Johann Friedrich, Autumn 1678, A I, 2: no. 71, no. 72, § no. 73.
[737] Leibniz to Johann Friedrich, December 1678, A I, 2: 110.
[738] Leibniz to Johann Friedrich, autumn 1678, A I, 2: no. 73.

As an advisor to the duke, Leibniz suggested reform in a variety of domains such as the judiciary[739] by reactivating his project for a new imperial Code, a project he had already initiated in Mainz and would ultimately intend for the Kaiser.[740] He also continued his work as a political publicist,[741] advising the duke and defending proposals on a wide range of issues from internal administrative reform, which aimed at improving the efficiency of public administration[742] and introducing social security allowances,[743] to more consequential diplomatic matters and ongoing European conflicts. Leibniz drafted several proposals and memoranda towards government policy,[744] typically drawing on historico-legal scholarship to bolster the political interests of the House of Brunswick or the prospects of peace in May 1677.[745] In the summer of 1677, Leibniz set about working on the House of Brunswick's co-equalization of status with the electors of the Holy Roman Empire—its status having previously been limited to that of observer—by developing a new concept of sovereignty in the interests of the German princes.[746] An abridged French version of the arguments of this tract, *De jure suprematus ac legationis principium Germaniae*, was later distributed to all of the delegations at the Nijmegen peace conference,[747] which had been convening since 1675 in an effort to find a resolution to the war incurred by the belligerent policies of Louis XIV.

Later, in the summer 1679, Leibniz set immediately to work on his *Caesarinus Furstenerius*, which drew on the history of the Empire to argue for the rightful claims to

[739] Leibniz to Johann Friedrich, 3 December 1676, A I, 2: no. 2; Leibniz to Johann Friedrich, December 1677, A I, 2: no. 33; Leibniz for Ludolf Hugo, March 1678, A I, 2: no. 37.
[740] On Leibniz's activities as a jurist see Berkowitz (2005), Armgardt (2014), and Artosi and Sartor (2014).
[741] On this role see Beiderbeck (2014), pp. 370-71.
[742] See A I, 2: nos. 70-74 and 94; and Schneiders (1975).
[743] Antognazza (2009), p. 210.
[744] Leibniz to Johann Friedrich, December 1678, A I, 2: 110; Leibniz to Johann Friedrich, 3 December 1676, A I, 2: 2.
[745] Leibniz to Johann Friedrich, Mai 1677, A I, 2: no. 13.

[747] Antognazza (2009), p. 205.

direct representation of German princes in the Electoral system.[748] Despite his hope to become a high-flying political and diplomatic operator, Leibniz was never appointed to an official political post or entrusted with diplomatic duties. Nonetheless, he set out to transform Hanover into an important centre for learning and, in this effort, aspired to act as a *touche-à-tout*, an advisor 'without portfolio', an expert-in-residence on matters of learning, science, and technology in a way unprecedented before and unparalleled after.[749] This would enable him to exert influence—if not by birth, then through his intellect—even if in an unofficial capacity. Thus, for instance, he documented various legal matters and yet had no particular office in the legal system. In both Paris and London, Leibniz explained, he had had 'the opportunity to advise excellent people' in a broad array of fields, including 'in matters of religion and state' as well as 'in science, the arts and curiosities.'[750]

A 'walking Encyclopedia' at the court of Hanover

No sooner had he arrived in Hanover than Leibniz undertook to set some of his designs in motion. A 'walking encyclopaedia' (*inventaire ambulant*), as he described himself in the long memorandum he intended for the duke shortly after his arrival,[751] Leibniz set out to establish himself at the court of Hanover as a recognized purveyor of information, schemes, proposals, and more generally as a fount of ideas and information, in the hope of slowly but surely, carving out a niche for himself.[752] Leibniz committed himself to sharing all 'useful or pleasant reflections or inventions', hoping, too, that the duke would 'show [him] some trust in matters that He [saw] fit' and 'help [him] carry out some other inventions or proposals useful to the public', and with the ultimate aim of helping to bring about 'the

[748] Antognazza (2009), p. 204. For more on Leibniz's work in this context, see the essays in Altwicker and Cheneval (2020).
[749] Rescher (2013), p. 130.
[750] Leibniz to Johann Friedrich, February 1679, A I, 2: 121.
[751] Ibid.
[752] Rescher (2013), p. 130.

advancement of the arts and sciences useful to man and advantageous to the state'—an aim that, under the duke, could be carried out 'cheaply and expediently' and in a manner even surpassing 'foreign Academies'.[753]

In Hanover Leibniz was housed in the librarian's quarters immediately adjacent to the duke's private apartments and dining rooms, and this may have contributed to the development of a personal relationship between the two, whereby the duke could informally consult the savant on a wide range of issues.[754] That Leibniz was in the employ of a naturally 'curious' and 'enlightened prince', who expected to be kept up to date with the latest scientific developments, granted him a privileged access to the ruler—'which no one else had',[755] as he would state to Gallois, not without exaggeration—as well as the possibility to 'occasionally cultivate his first loves'[756] and 'keep [himself] in the habits of his fellow savants'.[757] The duke treated him with 'a bit more liberty' and gave him free reign to absent himself from his official duties 'however often this would seem to be necessary for the sake of other labours', that is, in order to 'pursue useful studies' and 'elaborate in spare hours, on what [he had] once invented'.[758]

From Hanover, Leibniz set out to cultivate an extended network of correspondents,[759] some of whom were 'undoubtedly some of the most skilled in Europe';[760] and he kept himself abreast of new developments, curiosities, and controversies,[761] including the melting of iron[762] and the invention of 'perpetual light',[763] as well as relaying 'all kinds

[753] Leibniz to Johann Friedrich, February 1679, A I, 2: 121.
[754] Antognazza (2009), p. 200.
[755] Leibnz to Jean Gallois, September 1678, A III, 2: 503.
[756] Leibniz to Jean Gallois, first half of December 1677, A III, 2: 294.
[757] Ibid.
[758] Leibniz to Conring, June 1678, A II, 1: 633
[759] Leibniz to Johann Friedrich, 6 January 1677, A I, 2:12.
[760] Ibid.
[761] Leibniz to Johann Friedrich, 6 January 1677, A I, 2: 17.
[762] Leibniz to Johann Friedrich, May 1678, A I, 2: 53.
[763] Leibniz to Johann Friedrich, 6 July 1678, A I, 2: 57.

of knowledge'[764] to the duke. Accordingly, 'hardly a week [would] go by without us learning something curious and pleasant in this way'.[765] He also commissioned the production of various scientific instruments intended for the duke, such as barometers and thermometers;[766] and he informed the duke of the books he had received[767] and shared with him scientific news, including about microscopes and astronomical experiments.[768] In this manner, Leibniz placed his position in the Republic of Letters in the service of his ruler and the pursuit of the public good—two aims that did not, however, always coincide, as we shall see.

While advocating new projects, Leibniz was eager to reassure the duke that he was concerned solely with the latter's best interests and the advancement of the public good: 'my designs only seek the satisfaction of my prince.'[769] He presented himself as the 'instrument' of the duke's glory and the welfare of mankind: 'The great design which I have and which encompasses all others consists in the advancement of the useful arts and sciences.'[770] Leibniz matured in a tough marketplace of ideas in which he analysed opportunities acutely and strategized accordingly. He was always on the lookout for new information and schemes, and drew on the knowledge provided to him by his various informants in his determination to help transform Hanover through the promotion of invention, technology, and manufacture. He was convinced that the natural and theoretical sciences should be made to yield practical applications and ensure the kingdom's economic prosperity, especially against the backdrop of European conflict.[771] Even seemingly improbable schemes, such as

[764] Leibniz to Johann Friedrich, 6 January 1677, A I, 2: 12.
[765] Leibniz to Johann Friedrich, 6 January 1677, A I, 2: 16-17.
[766] Leibniz to Johann Friedrich, 6 July 1678, A I, 2: 57.
[767] Leibniz to Johann Friedrich, 10 September 1678, A I, 2: 71.
[768] Leibniz to Johann Friedrich, November 1678, A I, 2: 99. Leibniz reports that 'a craftsman [*Mechanicus*] from Delft has improved the microscope to such an extent that one can see even the changes which happen every day in the growth of plants, and distinguish the shapes of the gross parts of the air'.
[769] Ibid.
[770] Leibniz to Johann Friedrich, autumn 1678, A I, 2: 88.
[771] See introduction, A I, 2: xxxi–xxxviii.

Wenzel von Rheinburg's[772] and Johann Joachim Becher's[773] gold-making processes in Vienna and Holland respectively, should be given adequate consideration—even if this prompted a formal complaint against a charlatan to the city of Amsterdam on at least one occasion.[774] Negotiations for the acquisition of trade secrets or manufacturing processes depended on 'trust' and on whether one was 'convinced of the good faith' of the party being dealt with, in which case some reward could be promised 'on the condition that the secret be successful'.[775] Leibniz assessed the validity of potential projects and recommended those whose 'solidity' he could attest to and believed would be of interest and benefit to the duke, especially those of a commercial nature. In this manner, he identified and brought to the duke's attention various commercial opportunities, such as the production of phosphorus and cast iron,[776] and the development of machines to clean ports and canals.[777] From the inception of his employment he set out to acquire for a 'reasonable price' a device to 'prevent the progress of fires', 'Rabel's cure, 'the art of melting iron so that it [became] malleable', and 'a particular cart invention'.[778] He also extolled the merits of phosphorus,[779] urging the duke to negotiate its acquisition before Brand sold it off to the first comer;[780] the extraction of iron ore from the Harz mountains for industrial purposes; the use of machines for the mechanization of silk and wool manufactures; and even the potential curative power of various drugs such as wound water, antipyretic, and Moxa.[781]

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[772] Leibniz to Johann Friedrich, end of December 1678, A I, 2: 106.
[773] Leibniz to Johann Friedrich, mid-June 1679, A I, 2: no. 139.
[774] Johann Friedrich to the City of Amsterdam, September 1679, A I, 2: no. 170.
[775] Leibniz to Johann Friedrich, end of December 1678, A I, 2: 106.
[776] Leibniz to Johann Friedrich, May 1678, A I, 2: 54.
[777] Leibniz to Johann Friedrich, end of December 1678, A I, 2: 175.
[778] Leibniz to Johann Friedrich, January 1677, A I, 2: 18.
[779] Leibniz to Johann Friedrich, 6 July 1678, A I, 2: 57: 'one of the most admirable discoveries that we have ever heard about and I have no doubt it will have consequences'.
[780] Leibniz to Johann Friedrich, 31 July 1678, A I, 2: 64: 'Many people have assured me that there is something solid, and many reasons lead me to believe that Mr Brand truly possesses it; I believe that is worthwhile considering something so important.'
[781] Introduction, A I, 2: xxxvii.

In addition to commending to his patron new projects he deemed 'useful or agreeable',[782] Leibniz promoted individuals whom he considered reliable and potentially useful. One such venture was the manufacture of wool in Saxony by a certain Johann Crafft, a 'frank and honourable man who did not advance things that were without basis'[783], and like Leibniz formerly in the service of the Elector of Mainz. On one occasion, Leibniz 'had judged it necessary' to share Crafft's highly successful plan for wool manufactures[784] for Saxony and Erfurt since he had become aware that the duke of Hanover was himself seeking to manufacture cloth. Not only did he vouch for Crafft's character, but, on account of Crafft's self-interest and friendship with Leibniz himself, Leibniz was confident that Crafft would do 'everything that it would be reasonable to desire'. In a letter of May 1677, Leibniz suggested recruiting Crafft and setting up a commercial partnership between the courts of Hanover and Saxony, from which further negotiations and collaborations could potentially develop.[785] Throughout the correspondence Leibniz was thus keen to recruit and promote new savants and inventors, seeking funding and protection for them in order to induce them to reveal their secrets and help them 'bring these inventions to a point of perfection'; and he regularly suggested individuals he believed would be assets to the service of the duke and useful to the kingdom. This led him to characterize Brand, the discoverer of phosphorus, as 'someone who knew something that could be of benefit', and in early 1678 to recommend Tschirnhaus's appointment at the Hanoverian court.[786] In addition to vaunting the latter's

[782] Leibniz to Johann Friedrich, September 1678, A I, 2: 91.
[783] Leibniz to Johann Friedrich, May 1677, A I, 2: 24.
[784] Ibid.
[785] Ibid.
[786] Leibniz to Johann Friedrich, beginning 1678, A I, 2: 46.

'able qualities', Leibniz was quick to point out Tschirnhaus's lack of 'ambition' or 'interest in advancement',[787] thus implying the latter's potential pliability.[788]

Leibniz's own projects and specialness

Leibniz's stay in Paris had provided him with renewed impetus, enthusiasm, and expertise by bringing him into close contact with many of its scientific personalities and societies. His return to Germany, which he viewed as the opportunity finally to implement some of his schemes, began a period of innovation that would only end with the death of Johann Friedrich. Leibniz presented himself as a new kind of state counsellor and a superior kind of projector, 'capable of seeing the openings necessary to improve technology and polity at once' by converting 'the imperfectly understood and ill-distributed knowledge of artisans into practices essential to develop the state and its people'.[789] In Paris, Leibniz had busied himself with 'extraordinary tasks, which [he] had not yet pushed to the end',[790] and in which the duke, 'whose sophisticated taste [did] not satisfy itself with common things',[791] was bound to find some interest. He offered 'to bring new inventions and curiosities from extraordinary cabinets' to the court of Hanover, 'having learned from workmen themselves many things, some curious, others important for commerce and manufacture'.[792]

While his Parisian experience had impressed on him the value of organized research and knowledge, it had also exercised a moderating influence on him: as he was able to witness the daily workings of academic societies, and encountered first-hand the difficulties of implementing his own calculating machine, Leibniz scaled down his projects for societies

[787] Ibid.

[788] Leibniz had worked with Tschirnhaus in Paris. Ironically, the latter would plagiarize Leibniz's differential calculus in a publication that appeared in the *Acta eruditorum*, thus precipitating a ten-year hiatus in their relationship.

[789] Jones (2016), p. 87.

[790] Leibniz to Johann Friedrich, 21 January 1675, A I, 1: 491.

[791] Ibid.

[792] Leibniz to Johann Friedrich, 21 January 1675, A I, 1: 493.

to more realistic and modest scales, henceforth preferring more practically oriented and focused projects, such as his *Bedencken über die Seidenziehung*, on silk manufacture.[793]

Many of his projects now assumed narrower concerns, often in the shape of local ventures aimed at promoting commerce through manufacture. Some of these more concrete and targeted projects entailed ways of improving the efficiency of existing public administrative structures, as in the organization of archives or the development of water drainage systems. Leibniz even suggested creating an academy of commerce and languages, so that the young could acquire necessary linguistic skills, and he recommended the establishment of a bureau of information modelled after Théophraste Renaudot's *Bureau d'Adresse* from which people could find particular goods for sale or hire or indicate goods they needed—a prototype of what, for example, Craigslist provides in the internet age.[794]

By 1676, Leibniz had encountered two of Europe's most prominent academies, the Parisian Académie des Sciences and the London Royal Society, and he sought to apply the expertise embodied by them when he joined the court of Johann Friedrich, a prince who seemed amenable to his scholarly and scientific plans and whose concern for 'public welfare' Leibniz judged might play to his advantage. Still, as Leibniz had to navigate the realities of court life and win over his employer, it quickly dawned on him that he would have to contend with the political realities of his time and attune his musings to them. He no longer enjoyed the freedom to dream that his younger years had afforded him, but now had to work within the parameters and strictures of a relatively rigid system geared above all towards efficiency, public utility, and financial return.

In addition to his official commissions, Leibniz therefore used his position as a counsellor to put forward various—generally unsolicited—proposals of his own, many of

[793] See Roinila (2009), pp. 165-79.
[794] Leibniz to Johann Friedrich, September 1678, A I, 2: 76. For more on this, see Solomon (1672).

which, he claimed, would provide him with the opportunity to demonstrate his zeal and devotion towards the duke, consolidate his position at court, and establish his 'brand' of knowledge**.** These included his plan for more extensive work on the *Demonstrationes catholicae*[795] and his project for a calculating machine that promised to be 'one of the most remarkable inventions of this time'[796] and be of 'great consequence for the public good' since it promised to 'deliver men from the slavish toil of calculating'.[797] Among the other 'chimera' (*chimères*)[798] Leibniz conjured up to provide valuable sources of profit for the kingdom were a special form of wagon that could be used 'in peacetime for the usefulness of commerce and the traffic of travellers, and in war for cannons and convoys',[799] a cipher-machine, mechanized silk production, improved watches, a number of pharmacological remedies, and a proposal for promoting the brewing of a local beer.[800]

A more significant proposal was for a new pumping system in the Harz mines.[801] First broached by Leibniz in spring 1678 and culminating, after a long series of letters and memoranda, with the ratification of a treaty in October 1679,[802] this proposal encountered much resistance both in the mining authority and in the duke's entourage. The project was intended to solve, once and for all, the flooding of the Harz mines[803] and to guarantee the kingdom's economic independence through harnessing the power of perpetual motion, thus extending 'man's dominion over nature'.[804] In this manner, the forces of nature would yield many practical uses and benefits for the duke and his state. Furthermore, Leibniz reassured,

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[795] Leibniz to Johann Friedrich, October 1679, A I, 2: 221. On the *Demonstrationes* see Schepers (2011) and Dingel (2019).
[796] Leibniz to Johann Friedrich, 26 March 1673, A I, 1: 488. On the calculating machine see Jones (2016) and Lenzen (2018).
[797] Leibniz to Johann Friedrich, February 1679, A I, 2: 125.
[798] Leibniz to Johann Friedrich, December 1678, A I, 2: 111.
[799] Leibniz to Johann Friedrich, February 1679, A I, 2: 125.
[800] Leibniz to Johann Friedrich, autumn 1678, A I, 2: 79
[801] On the Harz mine project, see Hecht and Gottschalk (2014).
[802] Leibniz to Johann Friedrich, Autumn 1678, A I, 2: no. 73.
[803] Leibniz to Johann Friedrich, February 1679, A I, 2: 80.
[804] Leibniz to Johann Friedrich, February 1679, A I, 2: 121-25.

the project would not inconvenience the duke or risk damaging his reputation. On the contrary, the duke would be able to extract from this 'almost inexhaustible treasure'[805] many 'advantages', including increased revenue and glory for himself, in particular by attracting foreign investment.[806] The cost of the project would be minimal but its 'effect … as great as possible.' Within this exchange Leibniz remained careful to couch profit-making in noble terms, transmuting the duke's self-interest into the pursuit of the greater good.[807] In this manner, Leibniz hoped to reconcile personal advancement with the satisfaction of the public good and the advancement of the sciences (as he saw it), along with other proposals for societies such as *Ordo Caritatis or Societas Theophilorum*,[808] *Consilium de Scribenda Historia Naturali*,[809] and *Consultatio de Naturae Cognitione*,[810] all of which would broadly tend towards the compilation of human knowledge and the advancement of science. The income from the privilege promised by the duke for Leibniz's technical inventions for the Harz mines would, if successful, support the establishment of a foundation,[811] an 'academy'[812] that would help implement—and 'immortalize beyond his death'[813]—Leibniz's plan for a universal philosophical language.[814] This so-called 'universal characteristic' would 'carry the forces of the mind as far as the microscope has pushed those of sight' and reduce all reasoning to calculation in such a manner that it would be possible

[805] Leibniz to Johann Friedrich, spring 1679, A I, 2: 83: 'I have no doubt that there is still much hidden wealth that we could already reach if we made use of all the industry we are capable of and all the strength that nature has given us. Why do we want to leave to posterity what is in our power: especially since metals in the mines have some sort of life which diminishes when neglected.'
[806] Leibniz to Johann Friedrich, February 1679, A I, 2: 130.
[807] See Smith (1994), p. 9.
[808] A I, 2, pp. 76-77.
[809] A IV, 3: no. 132.
[810] A IV, 3: no. 133.
[811] Leibniz to Johann Friedrich, 29 March 1679, A II, 1: 702.
[812] Ibid: 'Your Highness may one day strengthen this beautiful plan that He has formed of an Assembly for the advancement of science, which by this means can be made perpetual, and pass to posterity.'
[813] Leibniz to Johann Friedrich, 29 March 1679, A II, 1: 703: 'But the real way to fix this thought and make it immortal will be through the foundation'.
[814] On the universal characteristic see Rossi (2006), ch. 8; and Mugnai (2014).

to ‘invent with ease’ and establish truths ‘in an irresistible fashion’,[815] providing an incomparable aid and acting as **‘**the table of things, the inventory of knowledge, and the judge of controversies’.[816]

On several occasions throughout his correspondence, Leibniz acknowledged the unorthodox nature of some of his projects: ‘But this is because even the most solid things can look strange, when the mind is distracted or when it is unprepared. This is why I had reason to fear that the Duke might not have tasted something so far removed from the thoughts and occupations He has every day.’[817] Once again, as he regularly did when assessing the projects and ventures that were presented to him, Leibniz provided for the possibility for the seemingly impossible, for that ‘which ha[d] never entered the minds of men’ and which ‘no one would believe to be possible.’ For this reason, preserving his mechanical secret in the Harz would be easy since ‘no one could ever imagine that air could be harnessed for such a purpose.’[818]

Notwithstanding his proximity to the duke, Leibniz effectively remained in competition with other projectors, many of whom he was determined to cast as either useless or deceitful.[819] The impression he sought to convey to the duke was that, if his projects seemed particularly unusual, it was because of his unique talents and knowledge. Thus he took pains to distinguish himself from the mass of projectors by reasserting the well-founded nature of his own projects:

> It has been some time since I promised His Royal Highness proposals which I believe to be advantageous and without incurring any burden to his subjects. I wavered a long time before reaching this resolution. For I know that all new

[815] Leibniz to Johann Friedrich, February 1679, A I, 2: 126.
[816] Leibniz to Johann Friedrich, 29 March/8 April 1679, A II, 1: 701.
[817] Leibniz to Johann Friedrich, April 1679, A I, 2: 167. The Hanoverian court was a smaller court and Leibniz assumed the authority to address the duke directly on all kinds of subjects.
[818] Leibniz to Johann Friedrich, February 1679, A I, 2: 127.
[819] Leibniz to Johann Friedrich, mid-September 1678, A I, 2: 68: ‘Dr Becher is very eager for this secret, which compels me to believe that it, namely to produce gold from Dutch sand, is worth nothing, or at least very doubtful.’

> proposals are naturally suspect, and that we usually have a poor opinion of those who venture to make them concerning matters of state, especially nowadays, when one finds everywhere adventurers and opinion givers, whose only aim is to catch something, oblivious to the success of their ventures, when they have their purpose, and never lacking in excuses and pretexts to blame someone else when they fail to succeed.[820]

Leibniz defended himself from possibly being branded a braggart or intriguer; his claims were not 'idle boasts' (*fanfaronades*) but the by-products of sheer intellectual prowess and the application of his 'restless mind', which he insisted had been admired by the 'greatest intellects in France'—even if he had not felt comfortable sharing such 'advantageous sentiments' since he 'was not so favourable' to himself'.[821] Leibniz had 'no other interest than that of acquiring honour by considerable discoveries in the arts and sciences and of obliging the public by useful works'[822] under 'the protection of a great prince', who could 'penetrate to the bottom of things' and was inclined to 'favour beautiful things'.[823] He promoted 'only his industry and work', and could be faulted only for his modesty, a trope which he rehearsed on several occasions over the course of his correspondence:

> I therefore readily admit, and in good faith, that I do not have a good memory, nor a strong imagination, and even less this prominence of spirit and this pleasant disposition, which enables one to shine in society, but instead I have good will and determination, which is the only thing that depends on us, whereas the other talents are bestowed upon us by nature and strengthened by a few conjunctures of fortune. This desire that I had to produce things of considerable importance had opened up unknown roads for me, and made me study an art which has not yet been fully cultivated by men.[824]

Leibniz's sincerity, in particular, distinguished him from the mass of 'bad' projectors. Acting, he insisted, out of 'affection' rather than 'interest, or flattery', and abhorring 'the superfluous', he averred, 'I agree that there are many who would be more capable of this task than myself: but good intention coupled with mediocre talent is

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[820] Leibniz to Johann Friedrich, spring 1679, A I, 2: 79.
[821] Leibniz to Johann Friedrich, February 1679, A I, 2: 122.
[822] Leibniz to Johann Friedrich, 19 January 1675, A I, 2: 274.
[823] Ibid.
[824] Leibniz to Johann Friedrich, February 1679, A I, 2: 122.

sometimes better than great strength of mind which is unaccompanied by sincerity'.[825] By actively peddling this image of himself, meticulously fashioning this 'disadvantage' into a virtue, Leibniz sought to single himself out for special treatment and exclusivity in certain realms, hoping that the Elector would entrust him—and ideally him alone—with the task of masterminding schemes of various natures, including those pertaining to theological reconciliation: **'**What I desire in general is that His Highness grants me a little more trust regarding serious matters than he generally accords others.'[826]

Leibniz's letters thus reveal not only his deeply ambivalent relationship to projects and projectors, but also his determination to assert his exceptionality and become the duke's exclusive advisor, especially in matters of technology and industry.[827] He continually insisted that his proposals were not only 'very reasonable' but 'novel' and 'remarkable'[828]—just as he himself was, as he took trouble to point out. (By contrast, he characterized his rival Becher as a 'very odd man' [*tout à fait bizarre*] with whom he 'wanted nothing to do'.[829]) The German mathematician now turned courtier had no small estimation of his own intellect, placing himself on par with such luminaries as Aristotle, Bacon, and Galileo. In fact, his gift for invention was such that it would soon eclipse all other methods by effecting irreversible change on men's conduct and reasoning.[830] Furthermore, his talent was not limited to mathematics, as had hitherto been thought, but extended to theological matters. Indeed, his primary meditations concerned theology, and he 'had only applied himself to mathematics and scholastics

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[825] Leibniz to Johann Friedrich, autumn 1678, A I, 2: 87.
[826] Leibniz to Johann Friedrich, autumn 1679, A I, 2: 229: 'Fourth, if there is any semblance of success in the main part of this pious business, it will take some secret negotiation, and I hope that His Highness will use me.'
[827] Leibniz to Johann Friedrich, 29 November 1678, A I, 2: 87: 'This being granted, I said, it is useless to think of other inventions which are not worth our own, and all that remains is to take a whole resolution and to work hard and firmly, for the demonstration and execution of this design….'
[828] Leibniz to Johann Friedrich, January 1677, A I, 2: 9.
[829] Leibniz to Johann Friedrich, mid-September, 1678, A I, 2: 68-70.
[830] Leibniz to Johann Friedrich, February 1679, A I, 2: 122.

for the perfection of his mind and to learn the art of invention and demonstration'—an art, he believed, he had taken as far as possible. In fact, only he held the key to the solution of certain intractable problems, as he had recently been able to demonstrate within the realm of mathematics:

> it is common knowledge that I was the only one able to solve certain arithmetical problems set forth by [the mathematician] Ozanam: as for geometry I was the first to find the secret of the tables of sinus, and remedied this lack of practical geometry in such a way that it is now possible to easily solve the problems of trigonometry by rule without having recourse to books and Tables; this is something of vital importance to travellers and engineers, who are not always certain to have their books on them and one of the greatest advancements in practical geometry that we have witnessed in our time.[831]

In this regard a letter Leibniz wrote to Johann Friedrich in the autumn of 1679 is particularly striking. In this letter, which effectively served as a job application, Leibniz, through the guise of a fictional third party, engaged in a lengthy and hyperbolic, albeit altogether rather conventional, self-description to vaunt his exceptional talents and signal his special value to the duke.[832] The fictional author of the letter describes how in Paris he had met a 'man of religion' whose 'merit was universally acknowledged' and who had 'meditated at length on the controversies' without, however, ever 'falling into excess'. This man was truly remarkable in his 'ability to explain a passage and to show its true meaning', which he did 'with force and a singular clarity' and he also displayed a 'perfect knowledge of what we call the humanities'. In fact, he was able to move his readers 'as soon as he started composing verses, which happened to him only very rarely' but 'as if he had done nothing else in his life'. His style was 'simple and natural', whether in Latin or in the vernacular, but also 'strong and incisive' when needed. Furthermore, this was a man unencumbered by any type of artifice and untainted by any form of deceit or dissimulation

[831] Leibniz to Johann Friedrich, February 1679, A I, 2: 123. Leibniz claimed to have developed successful methods of making the trigonometrical table superfluous and was seeking here to take advantage of popular interest in Diophantine analysis.
[832] Leibniz to Johann Friedrich, autumn 1679, A II, 1: 761.

(‘*serré sans obscurité*’, ‘*agréable sans fard*’): ‘He disliked putting on appearances [‘*couleurs empruntez*’] and believed that the beauty of a speech should consist in the strength of its arguments. He was, for these reasons, master in the art of reasoning: everyone agreed with him.’ As he immersed himself in the study of scientific controversies, Leibniz’s curiosity had been awakened by new discoveries in mathematics and physics, and he had become determined to leave his mark in those fields too. A significant discovery in the realm of mathematics remained the ‘most assured mark of a solid mind’, for its strength lay not in words or rhetoric, but in ‘demonstrations whose good and defaults were visible.’[833] This had prompted Leibniz to abandon his studies and duties to reach Paris, ‘which is the centre of all beautiful curiosities’: it was there ‘that he [had shown] what he could [do] … distinguish[ing] himself from all others’, and had been ‘acknowledged by the great scholars of Paris as one of the finest geometers, capable of making discoveries of consequence.’ Indeed, ‘no foreigner of his kind (and he was) was ever received more favourably by persons of merit.’ Yet in spite of all these achievements, Leibniz’s ‘demeanour did not seem to promise anything extraordinary’, and ‘his ordinary conversations were rather weak.’ In fact, he ‘did not possess nor feign to possess the art of showing off his skills’, so that his fictional interlocutor was ‘surprised not to recognize in him the marks of that which had been reported to him’ about Leibniz. The former had nonetheless been very quickly disabused of this most deceptive initial impression. Leibniz had proved such a remarkable savant in Paris that he had been offered a post there, which he had declined for the pleasure of serving the duke and in the hope of undertaking a world-changing mission with the latter’s support:

> People in Paris were so convinced of my talents in these matters that the most illustrious members of the Royal Academy of Sciences testified publicly to Mons. Colbert, that the latter could not choose anyone other than myself to fill the place left vacant at the Academy by M. Roberval, who had been considered one of the first geometers of time… People thought I had already been received at the Academy when His Royal Highness called me to him. I did not hesitate as to what

[833] Leibniz to Johann Friedrich, autumn 1679, A II, 1: 761.

> I had to do, even if I reluctantly left a city where I had already acquired so many friends and so many admirers; but I considered that it was still quite another thing to receive the support and be listened to by a great Prince, who is enlightened and inclined to beautiful things as I had recognized immediately when I had the good fortune to greet His Royal Highness in Frankfurt. I believed that it would be possible to perform things which would otherwise be buried in an eternal oblivion, and which I could not dare hope for elsewhere under His Majesty's auspices.[834]

This would not be the last time that Leibniz exaggerated his position—an exaggeration here bordering on misrepresentation—in order to leverage a more important status and greater influence. Throughout his correspondence, in fact, Leibniz was frequently simultaneously self-deprecating and boastful, an evident contradiction that would have compromised his credibility in recipients' minds.

Secrecy and control

For someone who enjoyed presenting himself as a fearless outsider who was not stirred by common opinion, Leibniz emerges from his correspondence as extremely insecure, especially when confronted with difficulty or when the beautiful projects he had conjured up failed to materialize as easily as he had expected. He was particularly anxious about acquiring the reputation of a 'projector'. In fact, in the case of the Harz project, such was his fear of being tainted by failure that he remained adamant that his own scheme to help pump water out, his compensation, and even his identity be divulged only once it had proved successful.[835] This secrecy would also foster the impression that the scheme was being carried out on the duke's direct orders[836] and discourage others from trying to render the scheme 'odious' to the duke in the hope that he would 'give it up'.[837] Somewhat oblivious to the practical difficulties and dismissive of the expertise required to implement a scheme

[834] Leibniz to Johann Friedrich, Ferbuary 1679, A II, 1: 684.
[835] Leibniz to Johann Friedrich, October 1679, A, I, II: 221; also beginning of March 1679, A I, 2: 134.
[836] Leibniz to Johann Friedrich, October 1679, A I, 2: 222.
[837] Leibniz to Johann Friedrich, mid-October 1679, A I, 2: 206.

of this magnitude,[838] Leibniz in fact accused some of misunderstanding his project and of 'deliberately' attempting to create difficulties;[839] and he pled with Johann Friedrich to ensure his 'safety' and help 'prevent plotting'[840] against him, especially in the duke's absence. He imagined conspiracies being fomented against him with the aim of 'corrupting' his workers or taking over his project,[841] and he was consumed with a fear of scandal and sabotage, especially when the viability of the Harz project began to be questioned: 'I have already noticed a subtlety which one meditates to my prejudice.' With his 'honour [finally] committed' once the matter had been made public, something 'which [he] had avoided as far as [he] could', in the autumn 1679 and amidst mounting difficulties, Leibniz pleaded with Johann Friedrich to support him while he made 'this effort to get out of the business' now that it was, according to him, close to completion, so that Leibniz might 'be spared unbearable confusion and shame' because it was no longer just about 'gaining money' ('*lucro captando*'), but 'avoiding damage' ('*damno vitando*').[842] Leibniz had, however, omitted to mention that many of these difficulties were self-incurred. The Dutch engineer and court councillor Peter Hartzing had in 1678 submitted a model for draining the water from the mines by the use of pumps activated by wind-power, a model that had been received with enthusiasm by the Harz mining office. Leibniz, however, had dismissed the project in a letter to the duke,[843] before making a very similar proposal that had been ratified by the duke on 15 October 1679.[844] This had prompted accusations of plagiarism against Leibniz,

[838] See Antognazza (2009), p. 335. Such an arrogant approach would not have endeared Leibniz towards mining practitioners, who were of course experts in the field.
[839] Ibid.
[840] Leibniz to Johann Friedrich, mid-October 1679, A I, 2: 214.
[841] Ibid.
[842] Leibniz to Johann Friedrich, mid-October 1679, A I, 2: 206.
[843] Leibniz to Johann Friedrich, 9 December 1678, A I, 2 no. 87.
[844] Antognazza (2009), p. 227.

setting off a conflict between him and Hartzing, in which the mining experts at the Bergamt of Clausthal overwhelmingly supported the latter.

Much of Leibniz's correspondence regarding the Harz project deals with requests for remuneration for his labour and with provision 'for the future, so as not to be overwhelmed one day if bad conjunctures, changes and diseases, after that the flower of [his] age will have passed, perhaps reduced [him] to no longer being able to work with the same success, or not to have approvers and protectors, especially since what [he liked] to do was not to everyone's taste and not for the vulgar'. While remaining always careful to seek for himself 'a perpetual and hereditary advantage',[845] Leibniz requested that the duke conceal the intent of the privilege for as long as possible.[846] When negotiating for what he felt was his reasonable due, Leibniz combined two strategies. On the one hand, he couched his argument in terms of the practices and parlance of the emergent financial and commercial world. On the other hand, he was careful to present himself as the subject of an absolutist ruler to whom he would always defer. Hence he was simultaneously an independent contractor and a self-effacing courtier.[847]

Interestingly, and perhaps not altogether surprisingly, Leibniz nonetheless requested that the duke compensate him before the validity of his scheme had been firmly ascertained or empirical evidence of its efficacy had been obtained.[848] In his own case, however, he suspended his principle that projects should be 'mistrust[ed]' and 'disbelieved' until examined carefully, for his projects represented an opportunity that would otherwise be lost if not seized immediately: if not taken up now, 'maybe several centuries would go by before

[845] Leibniz to Johann Friedrich, autumn 1678, I, 2: 90.
[846] Ibid.
[847] See Jones (2016), p. 120.
[848] Leibniz to Johann Friedrich, 29 March 1679, A II, 1: 703: 'This is why it will not help to write a book about it: since I cannot provide samples of it yet because all things are connected and will not allow themselves to be detached from each other.'

anyone dared to take it up again' especially since 'this thought does not come easily and will always pass for chimerical… being of a nature to only be believed by most men when seen.'[849] Growing increasingly desperate amidst mounting difficulties, Leibniz tried to render his propositions more attractive by going as far as offering to forfeit his compensation altogether should he fail to realize his scheme at all,[850] or within a certain amount of time.[851]

Apart from performing his official duties, then, Leibniz laboured hard to secure additional responsibilities and a tailor-made role at the court of Duke Johann Friedrich. He wanted the duke to know that he was no ordinary projector or courtier. Already in a lengthy memorandum of January 1677, drafted at the very beginning of his tenure, he had bemoaned the discrepancy between his fame and recognized ability and his rank and compensation. By offering him adequate financial compensation and by placing him 'in a position to advance so many beautiful designs', the duke would 'derive satisfaction … as well as glory now and for posterity, wherever the sciences are in esteem.'[852] In return for his loyal service, Leibniz expected 'public marks of esteem'[853] and pleaded on several occasions for the equalization of his status as *Hofrat* with the duke's other councillors so as to secure his position at court,[854] a distinction he finally obtained in December 1677.

Leibniz's concerns with his reputation and financial security constitute a thread that runs throughout his correspondence with the duke and betray his sense of his precariousness within the Hanoverian establishment. He was particularly attentive to maintaining and elevating—as much as was possible within such a highly hierarchical system—his status at court, regularly comparing his situation to that of others. Various slights he received,

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[849] Leibniz to Johann Friedrich, 29 March 1679, A II, 1: 702.
[850] Leibniz to Hieronymus von Witzendorff, mid-October 1679, A I, 2: 217.
[851] Leibniz to Johann Friedrich, April 1679, A I, 2: 167.
[852] Leibniz to Johann Friedrich, autumn 1678, A I, 2: 85.
[853] Ibid.
[854] Leibniz to Johann Friedrich, autumn 1679, A I, 2: 229: 'A coach would be useful to me. His Majesty has been generous to all others regarding coaches and horses.'

whether from the duke's personal doctor, Dr Jakob Kozebue, who remonstrated with Johann Friedrich that Leibniz had taken a place ahead of him in church and thus beyond his rank, or from a malicious French secretary who had failed to wait for Leibniz,[855] only served to heighten his sense of insecurity. Similarly, the attribution of credit was a particularly sensitive issue for Leibniz. He was keen to assert his intellectual authorship over his inventions, especially in connection with the Harz project: 'I have demonstrated everything, and experienced every single part of this invention which I can valiantly call original and mine.'[856] No doubt recalling Robert Hooke's attempted recreation of his calculating machine in London a few years earlier, he expressed irritation with those he perceived as plagiarizing his ideas: 'I dislike the boasts of the people who take credit for what was explained to them in substance, when they [added only] ... some trifle.'[857]

More broadly, Leibniz appears in his correspondence as someone obsessed with maintaining control over his situation at all times and ideally being always one step ahead of others. This obsession manifested itself, among other ways, in uncovering new information while preserving his own secrets and often in acting behind the scenes. Indeed, he was not averse to petty intrigue, including the theft of letters and the use of disinformation and dissimulation. One notable instance was the acquisition of the physician Hennig Brand—and his secrets—for the court of Hanover against Joachim Becher's various attempts at recruiting him. Leibniz tried to develop a somewhat ambiguous role at the Hanover court, often advising on or seeking to influence policy in areas beyond his official remit, including in theological matters, for which Leibniz hoped the duke would 'use him in secret negotiations'.[858] Cultivating opacity in various dealings could yield many advantages,

[855] Johann Kahm to Leibniz, 21 June/1 July 1679, A I, 2: 182–83.
[856] Leibniz to Johann Friedrich, autumn 1678, A I, 2: 84.
[857] Leibniz to Johann Friedrich, early August 1679, A I, 2: 188.
[858] Leibniz to Johann Friedrich, autumn 1679, A I, 2: 229.

especially when developing stratagems to help bring about—nay, mastermind—the reconciliation of the Churches.

In this regard, Leibniz's connection to the Bishop and court favourite Jacques-Bénigne Bossuet (1627-1704) warrants a brief mention. Bossuet was concerned primarily with vindicating the literal meaning of sacred scripture and with defending the Catholic faith, for which purpose he had brought together apologists tasked with protecting the status of scripture from the doubts of rational biblical criticism.[859] Bossuet's *Exposition of the Catholic Doctrine* had impressed Leibniz and from 1678 to 1680 he enthusiastically scoured Germany for Latin translations of Talmudic volumes and directed books and catalogues from his own network of scholars to Bossuet.

While Leibniz was careful to keep Bossuet provided with books sourced from across Germany,[860] he seems to have had greater designs and conceived a greater role for himself, especially once the pope, who 'passe[d] as a good man, enlightened and equitable', approved the French theologian's doctrine—which Leibniz himself qualified as 'the most moderate' he had seen.[861] This '[struck] him as very important and [made him] almost hope that there could finally be a way to reconcile spirits', especially since there were 'only a few points left and if the Pope explained himself on them in the way that [Leibniz] hope[d], and which seem[ed] feasible to [him] nothing would stop those who are well intentioned for the glory of God and the good of [his] Church.'[862] Encouraged, Leibniz suggested forging a piece of writing in the spring of 1679 whose origin it would be impossible to trace, and which would

[859] Preyat (2007), p. 58.
[860] Leibniz to Johann Friedrich, mid-June 1679, A I, 2: 176.
[861] Leibniz to Johann Friedrich, June 1679, A I, 2: 181: 'And the affair will be easy since the Pope now passes for a good, enlightened, and equitable man: and he has shown his zeal by condemning several unreasonable propositions of false morality, and his moderation by approving the exhibition of faith published by the bishop of Condom [Bossuet], which is the most moderate that I have seen yet.'
[862] Leibniz to Johann Friedrich, mid-June 1679, A I, II: 176-77.

be addressed by a Catholic to a Protestant with the aim of converting him.[863] Whether this stratagem, which Leibniz hoped would be approved by the Pope and have an even greater impact than Bossuet's brief,[864] was indeed implemented remains unknown, but the absence of further reference to it suggests that it was not.[865]

At times, as Leibniz put it, it was even necessary to conceal sound projects for the greater good: 'This writing remains buried in silence and secrecy.'[866] His plan for a special clock is one example: 'I have not yet revealed this thought to others, but have preserved it for a worthy recipient' and he was reluctant to communicate 'the essence of [t]his invention.'[867] There lay, it seemed, an unbridgeable gap between him and the rest of the court.

Between artifice and sincerity

One form of this modus operandi was Leibniz's deployment of rhetoric that, in certain respects, went beyond the epistolary conventions of the time and served again to emphasize his exceptionality. Preterition (or apophasis)[868] was Leibniz's rhetorical device of choice throughout his correspondence with the duke. It is a rhetorical figure of speech in which the speaker or writer draws attention to something by professing to pass over it, revealing by obfuscating. The implicit is rendered explicit by the pretence of not making it so. More broadly, by resorting to this seemingly oxymoronic device, the writer blurs the distinction between the implicit and the explicit. Crucially—and what concerns us here—the peculiarity and force of this device lies in its staging and exposition of that very pretence. Leibniz

[863] Leibniz to Johann Friedrich, autumn 1679, A I, 2: 227-28.
[864] Leibniz to Johann Friedrich, autumn 1679, A I, 2: 228.
[865] This may indicate that the duke did not fully trust Leibniz, despite the latter's clear conviction that the duke supported him.
[866] Leibniz to Johann Friedrich, autumn 1678, A I, 2: 82: 'the things of greatest important must remain in silence'.
[867] Leibniz to Johann Friedrich, February 1679, A I, 2: 125.
[868] See Henkemans (2009).

regularly deployed this device when making requests of the duke, as in his long memorandum of 6 January 1677 with its financial demands.[869] His most characteristic use of preterition, however, was to advertise his exceptionality while professing his modesty.

On a later occasion in the autumn of 1678,[870] Leibniz delivered a lengthy panegyric of the duke and his numerous qualities before concluding that it would actually be 'useless and even ill-advised' to do so. While claiming that he did 'not say all these things to justify [his own] conduct', he must have been trying to do precisely that. In general, Leibniz's deployment of this device can be seen as seen as emblematic of an impatient and ironic attitude towards court conventions and protocols. The court society in which he moved was strictly codified and relied on the perpetuation of a naturalized artifice through tacit social consensus. Without openly defying these conventions, Leibniz nonetheless distanced himself from them by adopting their rhetoric in exaggerated or paradoxical ways, thereby creating the impression of a disjunction within the text. In a letter from the middle of June 1679,[871] for instance, Leibniz suggested taking up Counsellor Block's position immediately after expressing regret at the latter's demise. By proceeding in this manner, Leibniz exposed both the fictionality of pro forma expressions of regret and the genuine motivation behind them. His focus on personal advancement and his own projects often led him to disregard proper decorum, especially when he felt that time was of the essence. In his dogged pursuit of truth—and of his own cause— Leibniz adhered only half-heartedly to conventions from which he probably considered himself absolved to a great extent; he was, after all, no ordinary courtier.

Precisely his failure to conform to social norms more fully—which is to say, more successfully insincerely—made Leibniz's rhetoric appear gauche and insincere. His

[869] Leibniz to Johann Friedrich, 6 January 1677, A I, 2: 12.
[870] Leibniz to Johann Friedrich, autumn 1678, A I, 2: 81.
[871] Leibniz to Johann Friedrich, mid-June 1679, A I, 2: 178.

persistence, indeed pushiness, especially when experiencing difficulties, were bound to make him appear an ambiguous figure at the very least. Exposing artifice for what it was and yet still resorting to it cast Leibniz as a social projector in spite of himself. Ironically, then, Leibniz's reluctance to properly fashion himself as a courtier, owing to his commitments to sincerity and truth, contributed to his appearing unreliable and slippery.

In what proved a difficult balancing act, Leibniz deliberately placed himself simultaneously within and without the court system. He acknowledged the discrepancy between court life, with its strict hierarchy and rigid codes, and his own projects, many of which, he recognized, were rather far fetched. His letter to Johann Friedrich of April 1679 is particularly noteworthy in this regard. In it, Leibniz struck an unusually candid note, explaining that truth does not always square with everyday matters and can thus strike one as unconventional and bizarre:

> It is not that they are far removed from the truth - for after all the design of perfecting the human understanding is so important and so certain that one could not speak of it in terms significant or confident enough. But, on account of the fact that even the most solid things can appear strange, when the mind is distracted or unprepared. I feared somewhat that Your Highness had previously not tasted something so far removed from his daily preoccupations and activities... I have experienced among individuals that most people would not suffer to be entertained about certain matters, however good they might be when they are not of their taste.[872]

This tension was even reflected at a linguistic level. While most of the letters from the correspondence were drafted in French, some were written in German. The latter tend to address administrative and financial issues. Whereas the letters written in German, with their formalisms and circumvolutions, seem to have been written in Leibniz's official capacity as a counsellor, the letters in French, in which he expressed himself and discussed his projects more freely and took more liberties, gave voice to the audacious and ambitious thinker. When writing in French, he felt emboldened to confide in someone he believed, or at least

[872] Leibniz to Johann Friedrich, April 1679, A I, 2: 166.

wanted to believe, understood and shared his vision of progress and was prepared to support his loftier plans. This distinction between the two languages illustrates the tension between Leibniz's official capacity within a highly hierarchized German administration and the niche he sought to carve out for himself in the wake of the intellectual and scientific excitement he had experienced in Paris. As Tim Hochstrasser has accurately observed, Leibniz wanted success at court, but only on his terms: 'While he desired the favour of rulers so as to enable him to enjoy academic freedom and diplomatic responsibility, he was not unwilling to fulfil the minimum requirements of court service. He hoped that the status he enjoyed in the 'Republic of Letters' would translate automatically into equivalent recognition in court society, disregarding the subservience to the hierarchy which other courtiers regarded as routine.'[873]

Leibniz's rapport with the duke is symptomatic of the tension between court-life (or 'artifice') and intellectual life ('sincerity'), and of how the latter, in his relationship with the duke, ultimately prevailed. To be sure, Leibniz's tone toward the duke was always, as one would expect, deferential. He always concluded his letters by reassuring the duke of his devotion and his deference to the will of the duke, whom he knew would act justly and always in Leibniz's best interest. Above all, Leibniz was keen to present himself as a sincere and self-effacing subject who placed the duke's happiness and glory above everything else and whose fate happily depended on the latter's goodwill: 'Your Royal Highness knows that I am wholeheartedly devoted to whatever pleases him: and that he only has to turn me down to make me almost as happy. But not yet knowing his decision on this matter, I flatter myself that he could perhaps give me this place.'[874] In keeping with his official position, too, Leibniz spared no effort flattering and grooming the duke:

[873] Hochstrasser (1998), pp. 7-8.
[874] Leibniz to Johann Friedrich, mid-June 1679, A I, 2: 178.

> All these reasons would no doubt have silenced me, if I did not have the honour of serving a Prince like His Majesty. Because he does not fear new proposals, like those who never dare to be generous; and the charms of novelty do not bind him to anything rash. He has however undertaken some very great and extraordinary things since the happy accession to his regency, which in this manner will be rendered forever memorable. Moreover, since he is so naturally inclined and displays a curiosity found in great souls, he neglects nothing but pays no attention to people or external circumstances which are irrelevant to the matter at hand but do not fail to make great impressions on weak minds. It is also no small thing that one can be assured of his confidence and discretion. His Majesty knows how to keeps secrets… and He possesses insights which dispense him from having to consult others except when He wishes to unburden himself. For (and this is the main thing) He possesses all the promptness and foresight necessary to delve into any matter, as difficult or embarrassing it may be, as long as he is made aware of its importance.[875]

Nonetheless, Leibniz's rapport with the duke exceeded that between a subject and his patron. Leibniz perceived the duke as more than a simple means to an end. His correspondence with the duke is wide-ranging and regular, and his letters bear out a certain degree of intimacy, or at least the desire for such intimacy with the duke. The duke, 'favoured by heaven', had conceived a 'beautiful design … for the advancement of the sciences', and unlike most, and in particular 'the vulgar', could understand Leibniz's vision—or so Leibniz hoped.[876] Throughout the correspondence, Leibniz seems to view himself, and persisted in representing himself, as the intellectual and scientific extension of the duke, the latter's arm or 'instrument', and conversely the duke as his agent, in what he wanted to believe were their shared goals. Behaving towards the duke in a manner that far exceeded his official position, Leibniz often used the personal pronoun 'we' (*nous*) when discussing his projects. Frequently resorting to the formula, 'I take the liberty of ...', Leibniz often sought to act above his station[877] and would suggest what his employer should write and do according to the canons of natural justice or enlightened behaviour (which generally happened to correspond to Leibniz's own aims). Occasionally Leibniz even dictated to his

[875] Leibniz to Johann Friedrich, spring 1678, A I, 2: 93.
[876] Leibniz to Johann Friedrich, February 1679, A II, 1: 680.
[877] Leibniz to Johann Friedrich, mid-October 1679, A I, 2: 213: 'I am taking the liberty of submitting to His Highness a proposal which strikes me as very reasonable.'

employer instructions for the speedy execution of a project or the terms of a contract: 'He will be kind enough to declare that this right will belong to me, as inventor and entrepreneur, with all obligations attached and under the same conditions.'[878] Though always careful to affirm their conformity to royal intent, Leibniz often presented his arguments as self-evident, so self-evident in fact that only 'blindness' could prevent one from recognizing their validity.[879] Should irrefutability not be sufficient, however, Leibniz would present the duke with an array of arguments or objections emanating from different perspectives and from which he could then select. This strategy would at least create the illusion of offering the duke maximal freedom of choice.

Leibniz encouraged the duke to exercise his authority in various ways. On some occasions Leibniz characterized the materialization of his great projects as being purely contingent on the duke's approval and 'will'. On other occasions, he tried to pressure the duke into using his influence to maintain secrecy—as in the case of the Harz project—or sought the duke's protection when his plans failed to materialize. More broadly, Leibniz hoped that others would form a good opinion of him by virtue of his mere association with the duke.

Consequently, Leibniz's relation to the duke evinces much more complexity and subtlety than the 'self-fashioning' described by such historians as Mario Biagioli. The model of self-fashioning illuminates the paradox at the heart of the legitimation process of scientific claims, especially those at odds with a dominant conceptual paradigm. The solution for scientific practitioners lacking in high social status by birth lay in entering into patronage relationships with society's powerful. This patron-client exchange was a polite fiction concealing mutual interests; it was based on mutual obligation, even though the exchange

[878] Leibniz to Johann Friedrich, February 1679, A I, 2: 132.
[879] Leibniz to Johann Friedrich, mid-October 1679, A I, 2: 213.

was generally presented as voluntary and disinterested by both parties and couched in the language of courtesy.[880] One rather curious but effective strategy consisted in effacing oneself behind one's patron and transferring authorship of the discovery to the latter.[881] Galileo, for instance, presented his 1610 discovery of the satellites of Jupiter as 'Medicean Stars', that is, as emblems of the Medici dynasty rather than scientific discoveries.[882] As Biagioli has demonstrated, Galileo's courtly role was integral to his science.[883] The legitimation of his scientific discoveries lay in his skilful self-fashioning in the Medici court and his ability to forge for himself a new socio-professional identity as court philosopher.

Leibniz's case, however, can be characterized adequately neither in terms of 'self-fashioning' nor in terms of a straightforwardly instrumental relationship. A passionate and original thinker, Leibniz had to contend with epistemological and social paradigms that were at odds with his, and he did not always negotiate the discrepancy between them well. The correspondence reveals a reluctant courtier who was ready to abide by the conventions of the court—but only up to a certain point. Ultimately, Leibniz was more interested in his own visions and brand of knowledge, which he hoped he would, with the support of the duke, gradually impose at court. Ironically, sincerity and projection: Leibniz in this case appeared as a projector precisely because of his commitment to sincerity.

Whereas Leibniz wrote numerous letters to the duke, the duke is known to have sent only six documents to Leibniz, most of which were decrees, in particular concerning the Brand and Harz projects. The duke's opinion of Leibniz is thus difficult to gauge; to what extent he shared his employee's commitment and enthusiasm for great intellectual and scientific projects remains uncertain. This much can be said: as far as the duke was

[880] Kettering (1988), pp. 131-51.
[881] Biagioli (1996), pp. 193-238.
[882] Biagioli (1992), pp. 85-105.
[883] Biagioli (1993), p. 2.

concerned, Leibniz's projects were viable and ultimately successful only insofar as practical applications resulted from them and they were financially profitable. Only rarely, then, did the duke's and Leibniz's visions actually converge. Though Leibniz himself was not discouraged from promoting projects that he recognized might seem outlandish to most, only his technical proposals would ultimately be put into practice.[884]

Leibniz's correspondence with Johann Friedrich thus reveals not an isolated demiurgic genius, but an extraordinarily human character driven above all by ambition and vision. Leibniz clearly angled for a special position and had singled himself out for special treatment from the outset of the relationship, a risky strategy that was bound to antagonize many. In fact, he had been in no hurry to take up his new appointment. While he had originally received confirmation of it in January 1676, Leibniz finally arrived in Hanover only in December, after several complaints from Johann Carl Kahm, the payment of 200 thalers to Leibniz, and even the threat of cancelling his appointment. Leibniz would eventually ascribe his failure to comply with Kahm's instructions and incredible tardiness to ill-health and difficulty of transport.[885] At the court of Hanover, he was constantly acting above his station, testing the norms and conventions of the court, drafting unsolicited petitions, requesting money, and pushing for a higher rank and ever-greater responsibilities. Worse, he risked undermining himself by acquiring the reputation of a mere projector, since many of the projects he promoted failed even as he sought greater recognition for himself. Leibniz was already, and intent on remaining, a misfit.

2. Leibniz with his fellow projectors

[884] Introduction, A I, 2: xxxviii.
[885] Antognazza (2009), pp. 174–75.

Leibniz cultivated close relationships with a number of projectors over the course of the 1670s, and most of these relationships were coloured by a strong ambivalence. Within the context of new natural philosophy which had given rise to a flurry of novelties and propositions, the question of how to assess experimental findings that often lacked rigorous verification or 'solidity' was posing itself with increasing urgency.[886] From the tide of 'beautiful propositions' emanating from all corners and saturating the epistemological horizon, only a handful could actually be verified or realized and it was 'most reasonable that we should mistrust these things, and that we do not believe anything before seeing them'.[887]

These projectors engaged in a wide range of ventures, many fanciful and foolish, including the '*Philosopher's stone*, perpetual motion, a part for malleable glass or incombustible oil', and even 'an Elixir of immortality'. In a striking and previously unexamined letter to Carcavy drafted several years earlier in his bid to obtain a privilege,[888] Leibniz—undoubtedly writing self-referentially—had elaborated in greater detail on that particular breed of inventors: 'harmful to oneself, useless to all… but of greater use for the state in the future than can be believed—and they now come to be known. They alternate between insanity and wisdom. And because there is no great mind without this mixture, at least the *appearance* of stupidity has prevailed among them, or, to say it philosophically, has acquired its residence.' That 'type of men', he continued, for the main part, did 'not breathe or speak anything but inventions, experiments, new ideas, and not always in vain' for there was often 'a lot of gold hidden in this manure, if one [had] the patience to look for it' including 'the secrets of art and nature; argumentation, metallurgy' as well as 'emended medicine'. And yet, many of these projects were all too often squandered or fell into oblivion

[886] See Duchesneau (1982), pp. 223–238.
[887] Leibniz to Johann Friedrich, 15/15 October 1679, A I, 2: 219.
[888] Leibniz to Carcavy, early November 1671, A 2, 1: 287–90.

on account of the neglect of their authors, who 'wither[ed] away to the last bit with ruined faculties, lost reputation, neglected, despised, poor, embittered by their misfortunes and, as they believe, an ungrateful world' and took 'what was in the state's interest not to perish' to the grave with them since 'nobody cared for them …listened … [or bought] what they did not want to give out for free, after it was created with great labour'. Men who devoted their lives to the pursuit of 'neglected and vanishing things' and the creation of excellent ventures by exploring the productive potential of art were often left at the mercy of circumstances that lay beyond their control:

> I know those who have used up ten… even twenty full years with ongoing wanderings, in order to collect everywhere in all of Europe hidden and curious findings; and yet these good men, once they returned home, had hardly enough to sustain their lives; not on account of a flaw within their venture, of which they have many and excellent ones, but [*sc.* by a flaw] of character, of someone who is ill with the sickness of the stone, and who is rolling that Sisyphian rock in the vain hope of finding something, neglecting everything else.

Still, although many schemes were intended to 'deceive', while others yielded disappointing or no results, thus rendering projectors even more 'suspect', some did produce the most unexpected and marvellous results, and they should not all be dismissed out of hand,[889] for some—such as Leibniz's own—might be able to yield 'extraordinary' results, especially since that which was 'despised' here could well be 'deemed as the highest invention or secret' there.[890] Poor appearances could conceal a great treasure:

> And without doubt, for the most part, such Phaethon-like ventures go astray, but some endeavours stumble into heroic medicines, new colours, machines useful for life, and into summarizing our labours. A part of the experiments is delivered in a way that they are useless in themselves; joined with other experiments which are hidden in another part of this dung heap, they can in the end shine out towards a huge gain.

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[889] By the same token, Leibniz did not completely rule out the possibility of transmuting base metal into gold. Ariew (1998), pp. 276-77, describes Leibniz 'as a sober, cautious interpreter, a skeptic one might say, but one who is prepared to concede the possibility of many strange phenomena'.

[890] The arts of Englishmen are known to me, I know in what manner so many famous experiments have come to them; [I know] how long they [these experiments] were despised among the ranks of vile German artisans, and now, when they have reached the magnates of the Royal society, are deemed as the highest inventions or secrets.

The harnessing of mechanical and practical arts, particularly by inventors and projectors, could produce useful and even profitable inventions, and under proper supervision these inventors' enthusiasm and abilities could be harnessed to a properly organized programme of scientific research.[891] It was important, above all, among the merchant arts and sciences to 'subtly transfer the raw material of others to oneself, and to cultivate it by one's own artifices' and, if necessary, to establish a 'kind of trade' with 'those … outstanding minds … who drive forward such excellent and far-reaching things.' As he would write to Crafft, 'in tinkering, a blind person [was] as good as a seeing one.'[892]

At the same time, these projects and propositions were not to be taken at face value, but 'examined' and subjected to a combination of 'reflection' and 'experiments'.[893] Against the prevailing 'insolence of besmirching whatever onto the documents',[894] Leibniz therefore 'listened to everything but believed nothing' until it had been adequately put to the test 'independently of others' beliefs'.[895] In this manner, more popular errors would be avoided.[896] Leibniz himself took stock of this stance for his own research and speculations—it was imperative not to rush into new discoveries but to apply oneself diligently to their demonstration before 'divul[ging] in an untimely fashion', and to 'refrain from expounding [his] dreams in mathematics and mechanics until … [he could] convey them by some result and sample.'[897]

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[891] *Preface to Nizolius*, 1670, A V, 1.2: 413); Leibniz to Carcavy, November (?) 1671, A I, 1: 182; *Bedenken von Aufrichtung einer Akademie*, 1671(?), A IV, 1: 543–52; Leibniz to Tentzel, 29 July/August 1692, A I, 8: 366–67.

[892] Leibniz to Crafft, 5 November 1691, A III, 5: 195. Leibniz would echo the same opinion several years later in a letter to Justel: 'It does occur that out of a thousand men there will be one who will find something rare and extraordinary.'

[893] For more on Leibniz's combination of 'conjecture' with experiment, see Wahl (2015), pp. 225-59.

[894] Leibniz to Conring, 8 February 1671, A II, 1: 133.

[895] Justel to Leibniz, 30 July 1677, A I, 2: 285-86.

[897] Ibid.

It was, in fact, precisely by means of rigorous demonstration and theoretical knowledge that 'the certain would be separated from the uncertain' and that 'demi savant[s] puffed up with an imaginary knowledge project[ed] machines and buildings that could not succeed' would be exposed.[898] Ingenuity in itself was insufficient, but needed to be verified through experience and the deployment of hypotheses: both were inextricably connected.[899] It is however necessary to join reasoning to observation[900] and to extend the realm of demonstrative knowledge to the world of natural philosophy and experience by rendering probabilistic calculations demonstrative.[901] Leibniz mocked scholars who peddled 'empty thoughts and remote speculations' that did not yield 'anything useful', but he equally criticized those who were overly preoccupied with practical details and as a result, could 'hardly meditate on things'.[902]

Johann Daniel Crafft and the affair of the phosphorus

Though Leibniz naturally sought to promote his own projects, it appears that he was more successful as a purveyor of others', especially at a time of German economic reconstruction.[903] The German inventor and projector Johann Daniel Crafft (1624-1697) emerges, in this context, as a privileged interlocutor in Leibniz's correspondence. In Crafft he seems to have found a kindred spirit. For Crafft shared Leibniz's entrepreneurial drive, energy, and outlook, and both were imbued with the belief that scientific discoveries should yield tangible schemes of improvement for the public good.[904] Leibniz and Crafft had known

[898] Leibniz, 'Recommendation pour instituer la science générale', 1686, A VI, 4 : 713.
[899] See Wahl (2015), pp. 251-52.
[900] Leibniz to Huygens, 29 December 1691, A III, 5: 241.
[901] Leibniz to Conring, 3/13 January 1678, A II, 1: 582.
[902] Leibniz, 'Plan zu einer deutschliebenden Genossenschaft' (c. 1691–95), A IV, 6: 791, quoted in Wahl (2015), pp. 252–53.
[903] P. Ritter, quoted in Moll (1982), p. 57.
[904] For more on this, see Slack (2014).

each other since Leibniz's stay in Mainz, and they would continue to exchange numerous letters touching on commercial, technological, and scientific ventures until Crafft's death in 1697. Both were constantly seeking new ventures, and Crafft in particular had a remarkable ability to conceive technical and commercial projects. While he failed ultimately to leave much of a mark—and hence his legacy contrasts markedly with Leibniz's—Crafft was no less an impressive figure in his way. A 'visionary of the early economic enlightenment',[905] Crafft was equally committed to Leibniz's cherished dictum of *Theoria cum Praxi* and spent much of his life seeking practical applications of projects. Under the patronage of his Elector, Crafft would turn Saxony into a testing ground for most of his theories and schemes in a bid to introduce manufacturing into what had, according to him, essentially remained a feudal trading system.

Though little is known of Crafft, a few elements can be gleaned from his correspondence with Leibniz and the curriculum vitae in the shape of a short autobiography that he penned when applying for employment at the imperial court in Vienna and in which he sketched his life and work in broad brushstrokes. Born in 1624, he studied medicine, botany, and chemistry before gaining a medical degree and finding employment in the Harz mountains as a doctor at the Brunswick-Luneburg mining office in Zellerfeld, where he also devoted himself to the study of metallurgy.[906] He later gave up his position and set out on a long journey throughout Europe and even North America, eventually returning with an excellent knowledge of chemistry as well as of manufacturing and commerce.[907] Newly appointed as a commercial advisor to the Elector of Mainz, who sent him on various assignments throughout Europe to collect useful information and propositions, Crafft put his hand to the production of all sorts of small commodities and manufactured products,

[905] Forberger (1964), p. 63.
[906] Forberger (1964), p. 70.
[907] Peters (1916), p. 105.

including glass and metalwork, the refinement of wine and the production of wool and silk. At the Mainz court he also distinguished himself through his efforts to promote manufacturing in the Erfurt region, notably through glass and steel manufacture, a project that however was cut short by the Elector's untimely death. It was also in Mainz that Crafft initially encountered Leibniz.[908]

After the death of the Elector of Mainz in February 1673, Crafft approached the Elector of Saxony with proposals for the introduction of various industries, including the cultivation of mulberry trees and the extraction of silk in Dresden—a project he realized in the following years, setting up Saxony's first silk factory in Leipzig in 1674. In 1675 he was appointed commercial advisor to the Saxon court, and he set in motion, on the recommendation of the Elector, the preparatory work for the construction of an ultimately unsuccessful wool factory in the newly-erected town of Ostra near Dresden.[909] He later received the order to travel to England and Holland in order 'to discover everything that [he] needed, and to return with those workers whom [he] deem[ed] fit to carry out' his designs.[910] Crafft was held in equally high esteem among the Electors of Mainz, Saxony, and Brandenburg, the historian H. Sahring eventually describing him as a 'gifted and ingenious personality' whose life's work found itself cut short by a tragic destiny.[911] In a May 1677 letter to Duke Johann Friedrich, Leibniz described Crafft as having enjoyed the Elector of Mainz's trust especially in the 'execution of matters of consequence', and unusually successful in the implementation of his projects in Saxony 'at a time when these things are never listened to which had had for effect to greatly enhance his 'credit'.[912] The following year Leibniz praised Crafft to Johann Friedrich as a man who could not only 'make proposals

[908] Peters (1916), p. 87.
[909] Forberger (1964), p. 67.
[910] Peters (1916), p. 106.
[911] Sahring (1957), p. 387.
[912] Leibniz to Johann Friedrich, May 1677, A I, 2: 23-24.

but also execute them' and as an unselfish man of good character, let down only by his credulity.[913] Leibniz also requested from Crafft a summary of his most important research to present to the duke.[914] 'Knowledgeable', he had 'great experience in many things', as Leibniz told Ehrenfried von Tschirnhaus;[915] and in a letter to Johann Friedrich, Leibniz emphasized Crafft's scientific and practical knowhow,[916] even recommending the latter's innovative wool manufacture to the duke.[917] In the same letter Leibniz further elaborated on Crafft's professionalism and abilities, characterizing him as 'constantly preoccupied with trade and commerce' and as well-versed in 'dyes and materials' and 'mining'.[918]

Crafft was not only aware of the technical innovations of his time, but he was a great inventor, grasping early on the value of practical implementation.[919] Both Leibniz and Crafft were devoted to the pursuit of the public good,[920] and over the years, they would collaborate on a number of schemes, including the extraction of ore, the manufacture of dye, the reform of coinage, and plans for a sugar distillery company. In exchange for valuable information, Leibniz would continue supporting Crafft to the end of the latter's life, actively championing his friend, regularly lavishing him with praise, and emphasizing his knowledge, abilities, creativity, and integrity.[921] Leibniz vaunted Crafft's merits to his own employers on several occasions,[922] and even tried, unsuccessfully, to have him brought to the Hanoverian court in 1693.

The extensive correspondence between Leibniz and Crafft, spanning a wide array of topics, reveals a close and mutually supportive relationship in which Crafft for his part

[913] Leibniz to Johann Friedrich, May 1677, A I, 2: 23.
[914] Leibniz to Crafft, end July 1677, A III, 2: 201.
[915] Leibniz to Tschirnhaus, 30 January 1693, A III, 5: 487.
[916] Leibniz to Johann Friedrich, 1678, A I, 2: 64.
[917] Antognazza (2009), p. 51.
[918] Leibniz to Johann Friedrich, May 1677, A I, 2: 24.
[919] Forberger (1964), p. 63.
[920] Crafft to Leibniz, 25 July 1678, A III, 2: 475.
[921] Forberger (1964), p. 70.
[922] Antognazza (2009), p. 285.

offered to look after Leibniz's interests and help him in any way he could.[923] Crafft eagerly reported on his own progress and activities to Leibniz,[924] his successes[925] and the various challenges he faced, including during his trip to England in 1677.[926] He also divulged to Leibniz how he had been invited to join a scheme which produced gold from silver[927] and been granted a privilege by the King of France for the production of steel[928]—a process coveted by Johann Friedrich—and he requested that the latter provide Leibniz leave to travel to Amsterdam.[929] Resourceful and talented in numerous fields, Crafft conjured up schemes for a cheap and improved way of manufacturing silk,[930] a project to build a cheap watermill,[931] a new way of producing iron,[932] and even—what he hoped would prove a profitable scheme for him—a mysterious special chair from which 'a queen [could] rejoice with great benefit, since the hard and troublesome work can be done altogether unwittingly by other people'.[933] He was also a veritable fount of information, reporting to Leibniz on book auctions[934] and the outbreak of plague in Austria[935]—and even seeking to formulate a

[923] Crafft to Leibniz, 14/24 March 1673, A I, 1: 413; and Crafft to Leibniz, 6/16 May 1672, A I, 1: 406: Crafft hoped to 'lend Leibniz a hand whenever he [could]'.
[924] Crafft to Leibniz, 25 November 1672, A I, 1: 406.
[925] Ibid: 'In sum, my affairs are so well, according to all human appearances, that I hope to experience an inner peace and satisfaction before my end.'
[926] Leibniz to Crafft, mid-August 1677, A III, 2: 210.
[927] Crafft to Leibniz, 14/24 March 1673, A I, 1: 414.
[928] Johann Cristoph Crafft to Leibniz, 5 October 1675, A I, 1: 426: 'It will not be unknown to Your excellency that by His Royal Majesty my brother has been given the quite grand privilege for the Exercise of making steel from iron in France; Your excellency will also still be able to remember that the same one [*sc.* the brother] has been sent by the electoral prince Johann Philip, in order to learn how the white brass or 'fer blanc' is made, which the erstwhile Minister Monsieur du Fresne or Fraine desires for the King, so that it is made in France.'
[929] Crafft to Leibniz, 7 December 1677, A III, 2: 289.
[930] Crafft to Leibniz, 19 June 1677, A III, 2: 163: 'In the introduction of manufactured goods I have wonderful and compendious speculations which are quite infallible that I can now achieve with a hundred what I could before with a thousand, in such a manner that I could reliably serve a prince, who would grasp their usefulness to his country, with minimal costs.'
[931] Crafft to Leibniz, 20 December 1672, A I, 1: 408.
[932] Christoph Pratisius to Leibniz, 29 Juni 1677, A III, 2: 465.
[933] Crafft to Leibniz, 6/16 May 1672, A I, 1: 406.
[934] Georg Hermann Schuller to Leibniz, 24 November/4 December 1677, A III, 2: 287.
[935] Crafft to Leibniz, 9/19 September 1679, A III, 2: 869: 'The reports from Vienna are bad… the contagion threatens to spread to other parts of Austria, even at court.'

remedy against it[936]—and bringing potential proposals and inventions, such as the imitation of porcelain in Normandy, to Leibniz's attention.[937] They exchanged information about, among other things, the benefits presented by porcelain, experiments on longitudes, a metal improvement process, a 'newly invented liqueur',[938] news from the court in Vienna,[939] their dealings with Brand, and Leibniz's operations in the Harz mountains.[940] For his part, Leibniz congratulated Crafft on the status of his factories in Dresden, reported on his correspondence with Georg Schuller, and asked for more details about the process whereby lead was processed with mercury and sulfur.[941] They both also compared notes on the progress of fellow projectors,[942] such as Becher,[943] and on their impressions of courtiers such as Hornigk, for instance, whom Crafft described as a 'learned and honest man who could be relied on'.[944] Later in 1677, once Leibniz had settled back in Germany, both considered collaborating with Schuller on a gold-making process, a plan Leibniz ultimately discarded in favour of producing phosphorus.[945]

Leibniz found in Crafft an asset of great value who was keen to serve him and could be instrumentalized in a variety of different ways, as in forming a commercial partnership between Hanover and Saxony for wool manufacture in the late spring of 1677. Later, in 1680, Leibniz would rely on Craff's mediation in his scheme to obtain a position as *Reichshofrat* at the imperial court.[946] But while Crafft seems to be have been very

[936] Crafft to Leibniz, 9/19 September 1679, A III, 2: 862.
[937] Crafft to Leibniz, beginning December 1678, A III, 2: 544.
[938] Crafft to Leibniz, 15 August 1679, A III, 2: 806.
[939] Crafft to Leibniz, 9/19 September 1679, A III, 2: 863.
[940] Leibniz to Crafft, May 1679, A III, 2: 744.
[941] Leibniz to Crafft, early October 1678, A III, 2: 508.
[942] Crafft to Leibniz, A I, 1: 415: 'Dr Cardilucius … is nothing to look at … His medical reflections are imaginations…. In my judgement his work are bad.'
[943] Leibniz to Crafft, October 1679, A III, 2: 878.
[944] Crafft to Leibniz, early December 16788, A III, 2: 545.
[945] Leibniz to Crafft, mid-July 1677, A III, 2: 190.

[946] See Smith (1994), p. 187.

forthcoming with his information, and remained eager to collaborate with Leibniz on his schemes and ventures, strengthening what he saw as a mutually beneficial partnership,[947] their collaboration clearly ran up against limits as Leibniz occasionally chose to withhold some information from Crafft, such as his trip to Paris.[948] Upon hearing that his 'trusted friend' had reached Paris in 1672, Crafft suggested travelling himself to Paris, under the pretext of having been invited by Leibniz[949] and with the hope of joining Leibniz in the construction of Crafft's new smelting furnaces, which Leibniz had previously promoted at the Académie for the French state. It seems, however, that Leibniz was intent on 'enjoying the effects' of this invention at court on his own, [950] especially at a time when he was himself hard at work on his calculating machine.

Later in Hanover, when the duke requested his advice, Leibniz responded tepidly to Craffts's scheme for iron processing and manufacture.[951] Crafft sought the support of the Hanoverian court for a silk-winding venture in Haarlem, hoping that Leibniz would be permitted to visit the Netherlands,[952] but to no avail—and Leibniz, evidently disinclined to share the limelight with anyone else or to serve as a conduit between Crafft and experimental philosophers in Paris, eventually advised Crafft to abandon his plans concerning the Hanoverian court.[953] Leibniz was happy to advertise Crafft's merits—as in connection with his scheme in late 1678 for producing silk stockings at one-tenth of the usual cost[954]—but

[947] Crafft to Leibniz, 4 July 1674, A I, 1: 421: 'I wish for My lord to have the luck and the occasion to be at such places, too, so that we may perhaps create mutual benefit, and if my lord pleases, he should give it into my hand, I can serve him better than anyone in it'
[948] Crafft to Leibniz, 6/16 May 1672, A I, 1: 405.
[949] Crafft to Leibniz, 20 December 1672, A I, 1: 407.
[950] Konrad Moll (1982), p. 57.
[951] Leibniz to Crafft, end of June 1677, A, III, 2: 165.
[952] Crafft to Leibniz, end of December 1677, A III, 2: 303.
[953] Leibniz to Crafft, mid-July 1677, A III, 2: 190.
[954] Leibniz to Gallois, 19 December 1678, A III, 2: 571: 'There is another *curieux* versed all his life in what concerns manufactures and commerce, who wrote to me after having found and executed the art of making silk in such a convenient a new way, that he assures to be able to make ten for the price of one. I do not know if Mons. Colbert would give this some consideration at the present moment.'

only as long as this did not risk compromising Leibniz's own standing with the duke. So while he was happy to take advantage of Crafft's help and information, their relationship could be rather one-sided, with Leibniz seeking always to maintain the upper hand. Although Crafft appears to have demonstrated unreserved devotion to Leibniz, Leibniz was more cautious and perhaps calculating, for example in response to Crafft's demand for payment (which Leibniz may have regarded as excessive) from the Hanoverian court for his dyeing technique.[955] Accordingly, Leibniz was willing to help Crafft only up to a certain point—and from a safe distance. He must have greeted the prospect of inviting Crafft to Hanover with considerable ambivalence, to say the least, for so brilliant a projector as Crafft was bound to detract, however unwittingly, from Leibniz's own lustre and perhaps destabilize the position he was trying so assiduously to create for himself in Hanover.

Crafft's unreserved zeal and his ingenuousness may have contributed to the numerous difficulties that plagued his career, and he often shared with Leibniz his frustration at the lack of funds necessary to implement his designs.[956] These difficulties seem to have culminated in mid-1679, when he deplored the bad state of his chemical factories, his powerlessness, and lack of someone 'he could firmly trust', since 'this profession generally seems to have the common misfortune that those who are otherwise honest are led astray when the project has a purpose'.[957] Crafft's financial difficulties were compounded by ill health, in particular gout, for which Leibniz, who suffered from the disease himself, recommended a milk-based diet. Still, one technical project on which Leibniz and Crafft did collaborate was the production of phosphorus.[958]

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[955] Leibniz to Crafft, end of July 1677, A III, 2: 165.

[956] Crafft to Leibniz, 20 December 1672, A I, 1: 407: 'I see no end to my travels… I do not want to return home as I have not finished building … but everything remains paralyzed due to lack of money.'

[957] Crafft to Leibniz, 6/16 June 1679, A III, 2: 760.

[958] For more on the discovery of the phosphorus, see Krafft (1969). On attempts to instrumentalize the natural sciences for technical purposes see Keller (2015).

The history of its discovery in the second half of the seventeenth century involved several protagonists, including Hennig Brand, a self-styled physician from Hamburg, who isolated the element in 1669; the Swede Johannes Kunckel, who produced it in 1683; the projector Joachim Becher; Crafft; and last but not least Leibniz, who in his correspondence at the time and in his *Historia inventionis Phosphori* of 1710 reported on the unfolding of events and later defended Brand against Crafft's and Kunckel's claims to authorship.[959] This history is perhaps remarkable chiefly for the deceit and intrigues that it involved, and it is symptomatic of a particular kind of epistemological and social fluidity that ultimately left Brand cheated out of his discovery. A junior army officer during the Thirty Years' War, Brand had gleaned some chemical and technical knowledge that he now deployed to extract large fees as an alchemist. Still, the 'Dr. medicinae et philosophiae', as he misrepresented himself, was always in need of money. Leibniz's impression of Brand was mixed:

> Dr. Brand does not have the capacity to judge what he is able to achieve, nor to make claims for himself. Not that he had often talked things imagined or vain — but, just like everyone, he also has his own character. Namely: he easily lets himself be patronised, has little power of judgment and leads an irregular lifestyle, but he is quick to act and very skilful in his work... I often noticed him making a big racket about trifles, but he does not make much of things that warrant it. He looks for great mysteries and pipe dreams fantasies, but he neglects the small discoveries he makes which could organize his life better ... He is a man to make twenty attempts in a week.[960]

Like many of his contemporaries, Brand had pursued alchemy, and it was in the process of seeking the Philosopher's Stone that he discovered phosphorus in 1669 after exposing the residue remaining in the distillation and crystallization of urine to very high temperatures in a tightly closed retort. Brand called the newly-formed luminescent substance phosphorus after the Greek word for 'light-bearer'.[961] In 1676 Brand apprised the chemist and alchemist Johann Kunckel of this luminous substance, and Kunckel, sensing a wonderful commercial

[959] See *Misc. Berl.*
[960] Quoted in Prinzler (1993), p. 4.
[961] Emsley (2000), p. 405.

opportunity, in turn wrote enthusiastically to his colleague Crafft, who at the time was serving as trade adviser (*Handelsrat*) to the court of Saxony and living in Dresden. Negotiations with Brand began shortly after, Crafft quickly betraying Kunckel by turning directly to Brand behind Kunckel's back and buying the process and Brand's stock of phosphorus samples for 200 Reichsthaler. Kunckel left Hamburg, to which he had invited Brand, empty-handed and only received timid and evasive responses from the latter to further requests for information. Although Brand refused to share the process with him, Kunckel eventually succeeded in replicating it later that year and would, on this basis, portray the discovery of phosphorus as a largely personal achievement, first in his *Oeffentliche Zuschrifft von dem Phosphoro mirabili und dessen leuchtenden Wunder-Pilulen* (*Public Communication of the Phosphorus Mirabilis and Its Wonderful Luminous Pellets,* 1678) and later the 'Historie vom Phosphoro und Rubin' in his posthumously published *Laboratorium Chymicum* (1716). Crafft for his part set out to demonstrate this 'eternal fire' (*ignis perpetuus*) at various electoral courts, vaunting its possible alchemical powers and commercial potential and offering it up for sale. Leibniz drew Johann Friedrich's attention to his new chemical element as well as its possible commercial applications, and in the spring of 1677, Crafft stopped in Hanover, where he gave a demonstration of the phosphorus and its peculiar properties before the duke and other members of the court, including his old friend Leibniz. In mid-July, Leibniz reported on this phenomenon to his friend l'Abbé de la Rocque in a letter entitled 'Le phosophore de Mr Krafft ou liqueur et terre seiche de sa composition qui jettent continuellent de grands eclats de lumiere'.[962] During his demonstration in Hanover, Leibniz reported, Crafft, whom he described as 'a curious fellow who labours in Holland toward his fortune and for his glory', had presented

[962] Letter from Hansen and Justel for De La Rocque, mid-July 1677, A, III, 2: 191.

two vials.[963] One contained a 'liqueur that glows at night much like glowworms … which at night produces rather beautiful effects': 'If one rubs the face, the hands, and the clothes with the liquid, it lights them all up . . . [and] the clothes are not ruined by it.'[964] The other vial contained the same matter but in a dry form that seemed to sparkle 'without having been exposed to sunlight'. One large piece of this phosphorus would undoubtedly suffice to light up an entire room, according to Leibniz, even if it still remained difficult to produce one of considerable size.[965] In September 1677 Leibniz wrote a letter to the duc de Chevreuse, Colbert's son-in-law, on 'M. Krafft's phosphorus,' in which he marvelled at phosphorus' intense luminosity: 'I was recently presented with a truly extraordinary species of phosphorus or glowing matter. We know that Lapis Boniensis, exposed to strong light, receives it and preserves it in the dark for some time, but this is altogether something else. Phosphorus does not require to be exposed to any outside light since it preserves it in itself.'[966] In both letters to de la Rocque and Chevreuse, Leibniz seemed to suggest that the perennial search for 'perpetual light' (*lumière perpétuelle*) may have come to an end, for this matter's incandescence seemed boundless inasmuch as it could 'last at least several years.'[967] In one particular chunk sent to Oldenburg in London and examined through a piece of glass, it was even possible to discern 'various images of the sun, each one bigger than the next'.[968] Phosphorus in itself remained a mysterious substance whose 'considerable qualities would perhaps one day be elucidated'.[969] It was surely animated by a 'true flame only visible in the dark but otherwise not strong enough for touch to discern it.'[970] Neither its toxicity

[963] Ibid.
[964] From *Journal des Sçavans*, 2 August 1677, pp. 244-46, quoted in Smith (1994), p. 248.
[965] Leibniz to Chevreuse, mid-July 1677, A III, 2: 192.
[966] Leibniz to Chevreuse, September 1677, A III, 2: 232.
[967] Ibid; Leibniz to Chevreuse, mid-July 1677, A III, 2: 191.
[968] Leibniz to Chevreuse, mid-July 1677, A III, 2: 192.
[969] Leibniz to Chevreuse, September 1677, A III, 2: 232.
[970] Ibid.

nor its great self-ignitability were then known, even though Brand already suspected these as he later reported to Leibniz.[971]

Such a marvellous invention would yield the most fantastical (and entertaining) applications, including 'fire fountains' and 'fire numbers and figures' capable of illuminating the night sky;[972] but its dissemination and the divulgation of its process were also a matter of general interest.[973] The discovery of this 'perpetual light' had, however, come at considerable expense and its secret was now preciously guarded 'as a matter of consequence'.[974] Still, a 'reward that would make it worthwhile' could entice the inventor to reveal its method of production.[975] A monarch, for instance, would perhaps find 'an object that had been sought out by so many and worthy of him.'[976] Such a ruler could in fact be none other than Duke Johann Friedrich, who, having been convinced by Leibniz of the importance of the phosphorus, ordered his official immediately to begin negotiating with Brand for its acquisition.

A formal contract was drawn up and signed on 14 July 1678 between Brand and Leibniz, who acted on behalf of the duke. Brand committed himself to 'communicate his fire along with other curiosities he was privy to'[977] and to 'travel to Hanover when called upon, to cultivate a diligent correspondence … and to work toward the perfection of his fire'.[978] Leibniz, on the court's behalf, promised 'to pay Brand ten thalers each month and an additional one hundred and twenty thalers per year as commission'.[979] Further payments

[971] Brand to Leibniz, 30 April 1679, A III, 2: 731: 'When I had the fire in my hand … [it] lit up God help me… [leaving] my skin burn[t]… [and] my children screaming so terrible it was to look at'.
[972] Leibniz to Chevreuse, September 1677, A III, 2: 233.
[973] Leibniz to Chevreuse, Mid-July 1677, A III, 2: 192.
[974] Leibniz to Chevreuse, September 1677, A III, 2: 233.
[975] Ibid.
[976] Ibid.
[977] Leibniz to Brand, 14 July 1678, A III, 2: 474.
[978] Ibid.
[979] Ibid.

would be made upon the communication of 'other curiosities'[980] which Brand may come to know[981]—a reference, in all likelihood, to Brand's claim that he could transmute silver into gold. Leibniz's haste in securing the acquisition of the process was also a way of pre-empting Johann Joachim Becher's rivalry in acquiring the process for his own employer, the Duke of Mecklenburg-Gustrow.

Even after the conclusion of the contract, Leibniz repeatedly expressed his concerns to the duke that the projector Becher would still attempt to lure Brand into the service of his employer.[982] 'With a little bit of money', as he knew first-hand, Brand could be 'induced to anything'.[983] In order to prevent any possible attempt to influence Brand, Leibniz resorted to all the means at his disposal, not only offering Brand more money and promising him to head a large-scale production,[984] but commissioning the theft of a cache of letters from Becher's apartment. In November 1678, Becher left Hamburg for Holland, where he attempted unsuccessfully to sell his project of an 'eternal mine' (that is, the programmed extraction of gold from sand dunes) to the Dutch government. For the slight he had suffered at the hands of Leibniz, Becher would try to exact revenge through ridicule, spreading the rumour that Leibniz wanted to build a special type of carriage that could cover the Amsterdam-Hanover route in six hours.[985]

After the contract was concluded, Brand, now 'well ensnared',[986] came to Hanover, where he worked on producing a larger amount of phosphorus over the course of five weeks.

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[980] Ibid.

[981] Leibniz to Brand, 14 July 1678, A III, 2: 474.

[982] Leibniz to Johann Friedrich, 31 July/10 August 1678, A I, 2: 63: 'The only problem is that Brand, because he is in bad straits, will sell it for a small amount to the first bidder.'

[983] Ibid.

[984] Ibid.

[985] Becher (1682), p.147: 'This Leibniz is known by his works, [he is] a very learned man… [who] has written his own philosophy and other things. But I do not know who set him on this mail-wagon, from which he does not want to dismount, even though he has sat on it for several years, and sees that the chariot does not depart.'

[986] Leibniz to Johann Friedrich, mid-September 1678, A I, 2: 68.

During that time, Leibniz learned the exact manufacturing process, so that he could now replicate it.[987] In the late summer of 1679, Brand returned to Hanover to produce a larger quantity of phosphorus, and for nearly eight weeks he worked with his stepson on extracting between one and 1.5 kilos of phosphorous from more than a hundred tons of urine collected from army latrines. Unbeknownst to Brand, and despite the various promises that had been made to him, Leibniz was all this time betraying his confidence. Even prior to the conclusion of the contract, Leibniz had set out in confidential letters to the duke how to get hold of Brand's secrets—ideally including the method for producing gold—while persuading him to work for the court for the least amount of money and in the most efficient manner.[988]

An overworked and underpaid Brand, however, did not remain in Hanover long, even breaking off his stay to renegotiate the terms of his contract and demand more money. Already after his first trip to Hanover, he had complained bitterly to Leibniz and Crafft about his low pay, not least because he had a large family to provide for, and had threatened to accept Becher's generous offer, despite Crafft's requests that he avoid Becher. 'Becher', as Brand wrote to Crafft, was as 'honest a man as [he had] met in all [his] days, while Leibniz [was] a fickle person, indeed very similar to a clown'.[989] In desperation, Brand tried unsuccessfully to blackmail Crafft and threatened to take drastic measures, especially as he knew that Crafft 'could help [him]' but chose 'not to'. If Crafft failed to behave 'honestly' towards Brand, he 'would regret' his actions and a 'sombre horizon would lie ahead'.[990] Leibniz placidly appeased Brand by referring to the terms of the contract and promising further payments. At the end of 1679, however, the Duke of Brunswick died and Brand

[987] Leibniz to Johann Friedrich, mid-September 1678, A I, 2: 69: 'The urine of soldiers standing in the camp was collected in pens, and when there was a sufficient supply, Brand came to us and performed the display outside the city. Everything that he did himself, I did with my people in other laboratories.'
[988] Prinzler (1993), p. 10.
[989] Prinzler (1993), p. 11.
[990] Ibid.

returned, unpaid, to Hamburg. He later endeavoured to dig up a treasure in Schipbeek, but this endeavour too ended in failure and he was even beaten up by the disappointed soldiers and spectators before vanishing from the horizon. He probably died in 1692.[991] Crafft, meanwhile, had entrusted a sample of phosphorus to Robert Boyle, who had long been fascinated with the substance and would manage to replicate its production before going on to lay the foundations of phosphorus chemistry (which he detailed in his 1680 publication *The Aerial Noctiluca or New Phenomena and a Process of a Factual Self-shining Substance*) and to produce the first commercial phosphorus.

Holding up a mirror to himself: Leibniz and Johann Joachim Becher

Inquiries about and references to Becher pepper Leibniz's correspondence in such a manner that it would be remiss not to examine his relationship, or more accurately his fascination, with Becher (1635-1682). Becher was an alchemist, a fellow courtier and projector, and the author of *Foolish Wisdom and Wise Foolishness*.[992] Ten years older than Leibniz, he too had been a member of the Mainz court and had had Boineburg and Schönborn as patrons. Aside from Herbert Breger's and Pamela Smith's studies, which constitute excellent forays in the matter, little attention has been devoted to the relationship between Becher and Leibniz.[993] Yet from 1669 to 1679, the figure of Becher looms large in Leibniz's correspondence, appearing dozens of time in letters to a wide range of recipients. Leibniz followed Becher's career with great interest and not without a certain amount of admiration and envy.[994] While they certainly hailed from different backgrounds and Becher's vision remained more overtly

[991] Ibid.

[992] For more on Becher, see Lorber (2017); Smith (1994).

[993] See Breger (1993); and the valuable juxtaposition of Becher and Leibniz in Smith (1994).

[994] Bredekamp (2004), p. 147, notes that Leibniz perceived Becher as a problematic personality but nonetheless admired his ingenuity and courage. In 1669 Leibniz told Lambert van Velthuysen that Becher was a man of 'maximi ingenii', but rather restless, which always aroused his dislike (16. April 1670, A II, 1: 19).

commercial than Leibniz's, the two were more similar than either would have liked to concede.[995] A polymath, Becher published on a wide array of topics, including politics, economics, chemistry, alchemy, moral philosophy, ethics, and even social utopia. Like Leibniz, Becher had moved in and out of different worlds, scientific, artisanal, and commercial, in his attempt to fuse theory with practice. From 1657 onward he was engaged as a court physician, mathematician, and commercial advisor in Mainz, Bavaria, and Vienna respectively, while travelling widely throughout Europe.[996] Crucially, both Becher and Leibniz believed in the power of philosophers to capture the productive potential of knowledge and direct material progress, helping transmute raw materials into new sources of revenue for their patrons and thereby providing a solution to the economic difficulties that had befallen the German territories in the wake of the Thirty Years' War.[997] Becher was particularly efficient at establishing himself as an economic counsellor and at introducing commercial values into the world of the nobility. Both Leibniz and Becher set out to capture the knowledge and methods of artisans and bring them within the sphere of the state, in this manner insinuating themselves as irreplaceable intermediaries between artisans and the court. Alchemy in particular became for Becher the perfect metaphor for the regenerative power of art in the material world, 'the vehicle by which he spoke at the court of production and material growth'.[998] For him, 'the great work of the alchemical laboratory [was] no longer the microcosm of the salvation of humanity, it is the model of trade and

[995] Commenting on their relationship, the German historian Wilhelm Dilthey (1926), pp. 24-25, writes, 'No one among Leibniz's contemporaries took the new ideal of a universal culture, in which this great century lived, more deeply to heart than Johann Joachim Becher.... Political and scientific arrangements finally coincide for him, as in the great utopias of all times. His ideas and plans went as far as Leibniz's ever did. And he too devoted his life to their realization.'

[996] See Jan Lazardig (2006), and Teich (1988).

[997] Smith (1994), p. 9.

[998] Ibid.

manufacture'.[999] Both, too, used their scientific expertise to land court appointments from which they sought to carry out their programmes.

Leibniz was intrigued by Becher, whose career he closely followed and sought to emulate in several respects, even on occasion competing for the services of the same artisans. Like Leibniz, Becher strove to create a space for himself and his ideas within the rigid structures and codes of courtly society and to project his own plan onto the world around him.[1000] His activities were wide-ranging: in 1669, for instance, he went to Amsterdam, where he purchased a colony in Guyana for the West India Company on behalf of Prince Casimir of Hanau, which he hailed as a 'political stone' because it would ennoble commerce and make it regenerative'.[1001] More generally, he proposed economic policies for the principalities that constituted the Holy Roman Empire as well as measures against the import of French goods into the Free Imperial Cities. In Vienna he founded a *Kunst- und Werkhaus*, where he hoped to train vagrants and orphans in the arts and trades of porcelain, the weaving of silk and wool, the preparation of chemical products (including medicines), the manufacture of glass, and many other practical processes.

Leibniz's engagement with Becher, who had served at the court in Mainz and left only a few years before Leibniz's own service, started early. Already in his *Dissertatio de arte combinatoria* of 1666, Leibniz had rejected Becher's project for a universal language as impractical[1002]—something Becher would later dismiss in his own *Psychosophia* by stating that Leibniz had 'neither read nor understood' his work[1003]—and had read Becher's *Methodus Didactica* of 1668 with a mixture of approval and criticism.[1004] On the other he

[999] Smith (1994), p. 244.
[1000] Ibid.
[1001] Smith (1994), p. 171.
[1002] Leibniz, 'De arte combinatoria', 1666, A VI, 1: 201.
[1003] Becher (1678), p. 382.
[1004] Bredekamp (2004), p. 43.

was lastlingly inspired by and sought to improve on Becher's 'Theatre of Nature', which sought to link words with physical objects.[1005] In his *Närrische Weißheit und weise Narrheit,* Becher for his part satirized Leibniz's ideas for the possible improvements to wagons.

In 1669 Leibniz had mentioned Becher in the preface of his *Societas Philadelphica,* which resembled Becher's own project for a philosophical community.[1006] His first, gently mocking reference to Becher in his correspondence appears in a letter of September 1669 to Jakob Thomasius, his former teacher, where he describes Becher as 'a clever but meddlesome man' ('*homo ingeniosus*, *sed Πολυπραγμων*').[1007] With a mix of sarcasm and incredulity, Leibniz reports that Becher had 'persuaded the Count in Hanau that there exist[ed] some rich regions in another World, such that they produce everything divine, as it were, as if by a divine wand, and that colonies could be planted and a great empire established there, and from there gradually throughout the whole region of America'. Everything, apparently, had been set for this American voyage, prompting Becher to enter Hanau 'with a ridiculous procession as if celebrating an ovation'.[1008]

While Jakob Thomasius had preferred for his part to reserve judgement until after 'he had seen [Becher] and had had space to mull things over',[1009] Leibniz's curiosity had been piqued by 'this amazing dream'. His attitude to Becher was characterized by a marked ambivalence. To the doctor and Calvinist scholar Lambert van Velthuysen, Leibniz later described Becher as a 'man of the greatest talent, but a little more restless'.[1010] While he ranked among the 'very few men who instructed Germany' and 'from whom great things may be expected', he had also 'attracted resentment everywhere'.

[1005] Ibid.
[1006] Leibniz, 'Societas Philadelphica', 1669, A IV, 1: 552.
[1007] Leibniz to Jakob Thomasius, September 1669, A II, 1: 41.
[1008] Leibniz to Jakob Thomasius, September 1669, A II, 1: 41.
[1009] Jakob Thomasius to Leibniz, 22 November/2 December 1669, A II, 1: 43.
[1010] Leibniz to Lambert Van Velthuysen, 6/16 April 1670, A II, 1: 62.

Later, in the spring of 1671, reporting on recent scientific discoveries which included Guericke's Magdeburg hemispheres spheres and Helvetius's conic sections, Leibniz informed Henry Oldenburg that Becher 'had promised a chemical demonstration', later performed before the Elector of Mainz, that would help extract iron from the ground with 'the aid of the oil of the flax wood'.[1011]

While Leibniz seemed won over to some extent by Becher's new method, Oldenburg reserved his judgment until 'it [had been] examined.'[1012] Another manifestation of Leibniz's preoccupation was his attempt to probe the validity of Becher's method, exposed in the first book of his *Subterrana Physica*, of extracting metal from limestone: consulting various experts on the subject, Leibniz sought their opinion of Becher and inquired after the success of the manufactures he had set up in Bavaria.[1013] Leibniz also asked about the 'Subterreanea Physica of the certainly ingenious Becher' and this new process of 'making iron out of common lime and linen oil', by which 'nature as well as art had been able to make one reign pass into the next'.[1014] To his friend Johann Graevius, Leibniz described Becher, whom he had just met in Mainz, as 'a man thoroughly polished in every kind of select inquisitiveness of exquisite learning', who ranked among the *Εξωτερικα* whose work should be followed

[1011] Leibniz to Oldenburg, 9 Mai 1671, A II, I: 169: 'Our Germany is instructed by not exactly many men, as you may guess. Johann Ludwig Fabricius, the Theologian from Heidelberg, shows that he is of a more erect spirit than they usually are, certainly his Meditations bear enough testimony for this matter. Johann Joachim Becher, doctor at the Bavarian Elector (unless he has very recently changed) is a man of the greatest mind, but of a bit more restless one, which has brought him resentment everywhere. Hermann Conring is a man of solid learning in all areas, but is already weighed by age. We have very few from whom something great may seem to be hoped for: many literati, either few or no philosophers.'

[1012] Oldenburg to Leibniz, 8 October 1671, A II, 1: 256: 'Becher's experiment—the one about the method of making iron from tile clay and linseed oil, of course—has been printed and reached our coasts, and now already stands under examination; I will write down its outcome in due time.'

[1013] Leibniz to Oldenburg, 28 September 1670, A II, I: 102: 'Becher will issue an appendix of the first book of subterranean Physics, where he will teach in practice, if we believe him, how to produce metals from simple limestone, and also how to make Mercury solid. I would like very much to know through You or the Honourable Welsch what men learned in these matters think of this man, then what is the success of the Workshops in Bavaria which have been started at his impulse.'

[1014] Leibniz to Otto Tachenius, 4 Mai 1671, A II, 1: 101.

closely.[1015] While it was imperative to obtain as much information as possible on Becher's plans and activities, Leibniz was intent on keeping Becher in the dark about his own. Becher was not to be trusted, especially when it came to Leibniz's prospects at the Viennese court for the position of *Reichshofrat*.[1016]

Leibniz kept abreast of Becher's whereabouts and speculated as to his plans and possible chances of success, though at times he had to concede an absence of knowledge. Crafft regularly updated Leibniz with news about Becher, with whom he shared quarters for a period,[1017] and his activities—generally at Leibniz's request. When it came to Becher, nothing was unimportant, and Crafft would act as a key informant on his activities, confiding to Leibniz that Becher had scammed a monk in the process of making tincture[1018] or the latter's project for obtaining a million Reichsthaler credit for the emperor as early as 1671:

> I have a little piece of news about Dr. Becher's affairs in Holland… among which the principal is that he brought into being a million Reichsthaler for His Majesty, in such a way that His Majesty must pay 5 percent interest for forty years, after which time the capital will be his... I am still of the opinion that this million will be coined in the kingdom [in America] of the Count of Hanau. Or perhaps the need for money or his greed drove [Becher] to contrive such a work so he would be sent to Hamburg and Cologne… because he knows that besides a new deceit, he will have a rich allowance and respect from both places in carrying out his duties. The Emperor will have nothing but good words.[1019]

To be sure, this reporting on Becher throughout the 1670s did not prevent Crafft from collaborating with him on a number of projects, including an instrument in Haarlem that wound spools of wool, or admitting that he sought to turn to his own advantage the 'good credit [that Becher] enjoyed at the court of the Empire'.[1020] Crafft saw possibilities for

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[1015] Leibniz to Graevius, 7 June 1671, A I, 1: 154.

[1016] Ibid.: 'I ask that you recommend me to Hocher more and more on occasion. But knowledge of this by Lambecius, Becher, Schoter must be prevented. Please write if they do anything new and remarkable. But not Crafft if only he is warned not to share it. He will be useful and loyal if he is present.' See also Crafft to Leibniz, 24 May/2 June 1677, A I, 2: 272.

[1017] Crafft to Elers, 20 November 1677, A III, 2: 271: Crafft reported to Martin Elers that he 'lived in close friendship with Becher'.

[1018] Crafft to Leibniz, 20 December 1672, A I, 1: 407.

[1019] Crafft to Leibniz, 3/13 October 1671, A I, 1: 224-225.

[1020] Smith (1994), p. 186; Crafft to Leibniz,14/24 March 1673, A I, 1: 414.

himself in the glassmaking laboratory and workshop that Becher's had created in late 1672 in the *Kunst- und Werckhaus*:

> From Dresden I travel to Vienna to put in order the steel and glass furnaces erected by Dr Becher along with other things, from which several thousand yearly thalers are to be expected. Above all else, Dr Becher stands very well with His Majesty, and, because of certain uncommon suggestions that will bring in millions, so well loved and in good credit that my planned journey will prove most beneficial to me... In addition to these things, there is the subject that another good friend, who for a certain reason I will not name, has invited me to [code: make gold], which comes out of [code: silver], with [code: great profit]. I have reason to believe that the process is genuine, about which I will send further notice, my Very Learned Sir.[1021]

Overall, although his correspondents' opinion of Becher was overwhelmingly negative—with the notable exception of the Jesuit priest Adam Kochanski—Leibniz remained remarkably balanced in his appraisal of Becher,[1022] doubtful but open-minded, even if he perceived Becher as rather gullible and superficial. Leibniz's Paris trip, however, marked an interruption in his preoccupation with Becher, and in later years the 'ingenious' inventor lost some of his shine in Leibniz's eyes, especially as the latter increasingly grew to consider the former a potential rival for the post of *Reichshofsrat* at the Viennese court. Becher struck Leibniz as an ingenious man, albeit one who rather indiscriminately snapped up the ideas of others and then trumpeted them as his own. Becher would have made himself worthier of praise, Leibniz opined, had he not deployed his 'harmful wit through which he alienated friends and patrons'. Similarly, Becher 'show[ed] occasional cockiness, wastefulness, vanity' and drew on 'any means to freely make something up.'[1023] Leibniz had heard 'contradictory judgements' about him: 'those who were aware of his widely known shenanigans did not attach any value to him', while 'others held him as a great philosopher'.[1024]

[1021] Crafft to Leibniz,14/24 March 1673, A I, 1: 413-414.
[1022] Breger (1993), p. 35.
[1023] Prinzler (1993), p. 9.
[1024] Ibid.

Still, Leibniz's interest in Becher continued unabated, even after the latter had left the Viennese court. Before getting wind of Brand's secret and subsequently trying to recruit him, Becher had left for the Netherlands, where with others including Crafft he formed in February 1678 a company that would operate the instrument he invented to wind spools of raw silk.[1025] Over the course of that year too, Becher had undertaken a new venture in the Netherlands involving the extraction of gold from the seashore near Scheveningen. This project attracted attention and fuelled much speculation from his contemporaries, who then relayed the information back to Leibniz. Before he could even carry out a trial, however, Becher left for Hamburg where he came into in direct competition with Leibniz for Brand's knowledge (and for Brand himself) at the end of July 1678.[1026] In mid-June 1679, after learning that Becher's recent process for extracting gold from sand had succeeded in a small-scale trial, Leibniz wrote to Duke Johann Friedrich in the hope of being able to replicate Becher's process:

> I draw my Lord's attention to another matter: a man whom I think I already mentioned to His Majesty has offered to draw gold from sand. He advances that through this method there will be almost as much gain, all costs included, as in the mines of Hungary: his claims were disputed but I now learn from several letters that an experiment has succeeded in such a manner to give hope for greater successes. If this is indeed the case I will reveal to His Majesty something I dared not yet raise since I doubted its veracity; it is that I know this person's secret at least as it was when he submitted his proposal last year to the gentlemen of the Estates; if he has discovered something new since then I do not know nor do I believe it. One of his friends, who also happens to be mine, recopied it word for word and what he has copied does not amount to a mere recipe or process but a detailed account of experiments already carried out, as meticulously recorded by this person over the course of his work in order to memorize the materials, proportions and procedures. This has encouraged me to try and attempt the experiment one day especially since His Majesty disposes of a great advantage since his country offers the elements most necessary for this operation.[1027]

[1025] Smith (1994), p. 190.
[1026] Ibid.
[1027] Leibniz to Johann Friedrich, mid-June 1679, A I, 2: 176-78.

Leibniz even discussed Becher with his mentor Christiaan Huygens in Paris in September 1679, both parties expressing their cautious scepticism:[1028]

> You will no doubt have heard about Mr. Becher's endeavour in Holland to extract gold from sand. Some people seem to have been won over to this idea…. Mr. Becher says he also deals with the French. I would be grateful to know if you heard about this in Paris. On my part I doubt this venture's success for I believe to know more or less what his experiment consists of. There is a trace of gold: but I do not know if there is enough to produce anything. . . .[1029]

Having himself inquired about Becher's experiments and ascertained from his brother-in-law Philips Doublet that Becher had not as yet 'provided much satisfaction' and that 'even the most enthusiastic supporters of this projects were starting to lose faith',[1030] Huygens wrote back a few weeks later: 'As for Becherus's secret, I am informed that people's opinion of Becher has begun to decline, even among those who had been strongly advised in his favour. I would like to know if there is indeed gold hidden in the sand of our dunes, as implausible as this strikes me, irrespective of what chemists and even our Mr. du Clos. advance.'[1031] After reading his *Trifolium Hollandicum*,[1032] Leibniz had become aware of one very evident flaw in Becher's process for extracting gold from sand, as he reported in his next letter to Huygens in December 1679. Not only did Becher's essays fail to establish the validity of his proposition, namely that gold could indeed be extracted out of sand by melting silver with sand, but they also failed to show that the operation could be repeated with the same silver. Failing this, 'all the silver of Europe would have to pass through his furnace before he could gain the million per year that he promises'.[1033]

Another source of information on Becher was Christian Philipp, the Elector of Saxony's ambassador in Hamburg, who had played an instrumental role in helping to recruit Brand,

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[1028] Leibniz to Christiaan Huygens, 8 September 1679, A III, 2: 849.
[1029] Ibid.
[1030] See Doublet to Huygens, 5 October 1679, in Huygens (1888-1955), VIII, pp. 231-34, esp. 233.
[1031] Huygens to Leibniz, 22 November 1679, A III, 2: 888.
[1032] Becher (1679).
[1033] Christian Huygens to Leibniz, end of November/early December 1679, A III, 2: 902.

the 'real inventor of phosphorus' who had yet to achieve any public recognition comparable to Crafft's or even Becher's.[1034] Philipp was particularly unforgiving toward Becher, characterizing his projects (and in particular his venture for mining gold from sea sand) as mere 'chimeras' (*chimères*),[1035] and his *Psychosophie*—a copy of which Philipp had provided Leibniz at his request—as the most confused book in the world. According to Philipp, the 'Illustrious' Mr Becher's writings were full of 'nonsense'[1036] and 'boasts' (*rodomontades*), and his words 'subject to caution'.[1037] Whereas Leibniz took some interest in Becher's ventures and publications, including his *Psychosophie* and his *Politischer Diskurs*, and even praised his medical knowledge,[1038] Philipp remained thoroughly unimpressed and did not pull any punches, noting that he would only ever agree to being Becher's patient if he had grown tired of life:

> Mr Becher is always similar to himself in everything he does: all his ventures are so many paradoxes… and as he claims that his *Psychosophie* is his masterpiece, it must out of necessity also be the most confused thing in the world: his quarrel against reason shows that he doesn't have much of it, and what he says against marriage is in accordance with his others maxims: I would not want in the world to fall into his hands for anything, if I am ill, except if I had grown tired of living: what he states about his own pills on page 303 smacks of pure charlatanism: I believe that the money that was given to him to extract gold from sand, is not the first in his life that he has received in this manner, and he would doubtless be unable to return all the money amassed through these kinds of promises.[1039]

Surprisingly perhaps, Leibniz still did not dismiss Becher, instead asking Philipp to relay back to him further details about Becher's proposals, which 'would no doubt not fail

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[1034] Christian Philipp to Leibniz, 16/26 November 1678, A I, 2: 387. On Leibniz's defence of Brand's claim to have discovered phosphorus, see the section 'Johann Daniel Crafft and the Affair of the Phosphorus' above.
[1035] Ibid.
[1036] Christian Philipp to Leibniz, 26 October/ 5 November 1678, A I, 2: 378.
[1037] Ibid.
[1038] Leibniz to Christian Philipp, 22 April/ 2 Mai 1679, A I, 2: 469: 'I would like to know in what state lies the affair of the melting of sands. Because after receiving the money for it, he cannot fail to finish it without damaging his reputation.'
[1039] Christian Philipp, 26 April/6 Mai 1679, A I, 2: 472.

to be arduous'.[1040] Philip in turn continued to express his doubts[1041] as to the success of Becher's latest gold-extraction venture, noting that it remained inconclusive,[1042] and he even questioned the authenticity of Becher's claims,[1043] observing tartly that it 'would be impossible for him to pay back all he has gained by these kinds of promises'.[1044] After Becher had once again fallen out of view, it was Christian Philipp who informed Leibniz in early 1680 that 'the affairs of Mr. Becher in Holland had ended like all his previous undertakings, and they are yet to see a single effect of his grand promises'.[1045] A few months later, he could further inform Leibniz that Becher, 'notwithstanding the cunning spirit of the Dutch, ha[d] succeeded in extracting a good sum of money and then disappeared afterward, but they are searching for him everywhere and will treat him most rigorously if he allows himself to be found'. Phillip added that Becher had travelled to England, where he had 'found his dupes as always' but had begun to 'lose all his credit.'

Years later, Leibniz remembered Becher as an 'ingenuous man and knowledgeable in German writings, but who wrote too much, and discoursed on known and unknown topics with equal ease'.[1046] And yet Leibniz was more similar to Becher than he would probably have liked to admit. For both sought to validate their claims to superior expertise through the material production of various instruments and the realization of various technical

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[1040] Leibniz to Philipp, 30 November/10 December 1678, A I, 2: 385.
[1041] 'I am informed from Holland that Mr. Becher has tested his proposal on the sand, and that many are optimistic as to its success. For my part, I find it hard to believe that any good can come out of it.'
[1042] Christian Philipp to Leibniz, 24 September/4 October 1679, A I, 2: 519 : 'You will undoubtedly have read in the gazettes that Mr. Becher showed his great essay of transmutation into gold [*chrysopoeia*]; some say it is successful, but others disagree.'
[1043] Letter from Christian Philipp to Leibniz, 17 May 1679, A I, 2: 478 : 'Mr. Glauber wrote a long time ago of how to extract gold from sand, and a man who is versed in these sorts of things, told me that surely there is gold in almost all kinds of sand and pebbles, but that the costs incurred were higher than the profit derived, especially since the damage is much greater when the experiment is carried out on a large quantity than only on a little sand: it is therefore possible that the test, which Mr. Becher has done, will be found false over a large quantity.'
[1044] Christian Philipp to Leibniz, 26 April/6 May 1679, A I, 2: 472.
[1045] Christian Philipp to Leibniz, 26 April/6 May 1679, A I, 2: 472.
[1046] *Misc. Ber.*, pp. 102-8.

schemes, many of which failed. Crucially, both were liminal individuals with an interest in natural philosophy who sought to instrumentalize a state of pervasive doubt and epistemological uncertainty to explore the 'realm of possibilities', at a time when a more experimental approach prevailed over any static concept of 'truth'. In this context, only experience and successful reduction to practice showed that the seemingly impossible could be achieved. Placing themselves on a fault-line, Leibniz and Becher blurred the distinction between fact and fiction, sincerity and artifice, cultivating an interesting confusion of genres that contributed to the poetic of ambiguity characteristic of their age. And although Leibniz increasingly disparaged and mocked Becher over the years, his preoccupation with the projector betrayed the parallels between them. In obsessively tracking Becher's every movement across Europe, Leibniz was also holding up a mirror to himself, trying to clarify his own projects and self-perception. By means of another, he sought to gain a better understanding of himself.

Leibniz's double standards

While Leibniz felt that his own projects should be accepted at face value, he regarded his peers' ventures rather differently. For Leibniz, most projectors were charlatans who were not to be trusted and he remained particularly anxious not be exploited or taken advantage of by them. His correspondence is particularly instructive in this regard, testifying to radically different perspectives and understandings, for Leibniz's fellow-projectors rarely shared his view that he was treating them fairly. He repeatedly showed himself prepared to drive a hard bargain with them, holding their projects to a higher standard than he applied to his own.

One potential project was that advanced by Georg Schuller, Spinoza's physician and confidante, whom Leibniz had met through the mediation of Tschirnhaus during his stay in

Amsterdam in 1676 en route to Hanover. After returning to Germany, Leibniz would consult Schuller for information relating to the preparation of Spinoza's *Ethica and Opera Posthuma*[1047] as well as about procuring books from Amsterdam.[1048] They also discussed a wide range of topics, in particular relating to metallurgy and its transmutations and Becher's latest activities.[1049] Moreover, Schuller helped disseminate Leibniz's *Entretien de Philarète et d'Eugène* among the envoys at the peace congress in Nijmegen,[1050] and offered to collect and send information on various individuals' activities such as Peter Hartzing.[1051]

In mid-1678 Schuller offered to sell a process for gold transmutation that he assured was 'accurate and genuine',[1052] could be completed in 'three weeks', and would provide enough revenue 'for a lifetime'.[1053] Leibniz, however, remained sceptical on account of Schuller's vagueness (as he reported to Crafft)[1054] and requested more details.[1055] He seems to have remained adamant on insisting for the detailed description of the process, including the dosage and number of experiments involved, as well as the quantity produced and wasted, before proceeding to any payment.[1056] Despite Schuller's mounting frustration and protestations that the process had successfully been carried out 'without any magic or deceit',[1057] both Leibniz and Crafft seem to have lost confidence in its validity—with Crafft declaring in December 1678 that the 'matter [was] not above suspicion'[1058] and that Schuller

[1047] See Totaro (2013), pp. 465–76.
[1048] Leibniz to Schuller, 19 November 1677, A III, 2: 267.
[1049] Schuller to Leibniz, 19/29 March 1678, A III, 2: 150.
[1050] Leibniz to Schuller, 18 October 1677, A III, 2: 249.
[1051] Schuller to Leibniz, 27 August/6 September 1678, A III, 2: 487.
[1052] Schuller to Leibniz, 3/13 September 1678, A III, 2: 497.
[1053] Schuller to Leibniz, 15 October 1678, A III, 2: 522.
[1054] Leibniz to Crafft, 10 November 1678, A III, 2: 535.
[1055] Leibniz to Schuller, mid-November 1678: A III, 2: 538; Leibniz to Schuller, beginning of November 1678, A III, 2: 532.
[1056] Leibniz to Schuller, 26 November 1678, A III, 2: 552.
[1057] Schuller to Leibniz, 21 January 1679, A III, 2: 542-613.
[1058] Crafft to Leibniz, beginning of December 1678: A III, 2: 542.

was 'not worthy of being friendly with him.'[1059] Considering the lack of details and funds[1060] as well as the dubious prospective profitability of the venture,[1061] Leibniz finally declined participation in preference for Brand's process.[1062]

Another projector to find himself on the receiving end of Leibniz's implacable negotiating technique was the French engineer Noel Douceur, who had invented a method for increasing the elasticity of cast iron, a procedure with obvious military benefits, as Leibniz was quick to discern.[1063] Leibniz thus set out to acquire this secret on behalf of Duke Johann Friedrich, initiating a lengthy negotiation that was conducted partly in Paris by Edme Mariotte and Brosseau, who waited for Leibniz to assess Douceur's claim so that they could proceed with the rest of the payment.[1064] Testing, however, proved close to impossible in Germany, and although Douceur had communicated his secret,[1065] the rest of the payment was not forthcoming, prompting the French inventor, who was well aware of the value of this discovery, to request it repeatedly: 'I take comfort in the hope that I have that you will have enough kindness, to reward me, if by means of this secret, I give you the opportunity to make a considerable revenue outside France by obtaining a privilege from the prince, similar to the one that I hope to obtain soon from the King of France.'[1066] Douceur assured Leibniz of the 'quantity of people of honour, and quality with whom [he had] shared [his] process'—one that had been 'witnessed every day at home through experiments'—and he complained that he was 'greatly astonished' at the way he had been treated by Leibniz and at some of the 'impossible' requirements the latter had set him, including asking for

[1059] Crafft to Leibniz, 6/16 June 1679, A III, 2: 760.
[1060] Leibniz to Schuller, mid-January 1679, A III, 2: 598.
[1061] Leibniz to Schuller, January 1679, A III, 2: 585.
[1062] Leibniz to Crafft, mid-July 1677, A III, 2: 190.
[1063] Leibniz to Mariotte, 18 March 1678, A III, 2: 358. It is not known whether Douceur had already approached others to sell the idea or why Mariotte assisted with this negotiation.
[1064] Brosseau to Leibniz, 28 April 1679, A I, 2: 466.
[1065] Noel Douceur to Leibniz, 27 March 1679, A III, 2: 675-80.
[1066] Douceur to Leibniz, 25 February 1679, A III, 2: 633.

puncture-proof guns.[1067] His secret had been tested at the Académie[1068] and had 'succeeded in a hundred kinds of mine, and it [would] succeed when [Leibniz] want[ed] it'. Failing this, Douceur even promised a refund.[1069] Mariotte, who later support Douceur's claims in this venture,[1070] would also be able to verify that 'his cannon had resisted' when others had been destroyed.[1071]

Despairing at Leibniz's seeming failure to live up to his word,[1072] Douceur eventually threatened to sell his secret—which he had consented to give up for a 'modest present' for Mariotte's sake—to other bidders.[1073] Venting his frustration with the numerous difficulties that had plagued the negotiation, Douceur rebuked Leibniz for his failure to have had the process tested after Douceur himself had complied with all of the terms.[1074] Leibniz, it seems, did not take kindly to Douceur's plea not 'to refuse [him] what was right',[1075] and berated Douceur for his ingratitude:

> I received your letter, but I must admit that I am not too satisfied with your ways of writing. When one has done what I've done for you, one expects more to be thanked than to be quarrelled with. It is not me who owes you the money that is left and it is up to my master to pay you when He finds you have met his requirements or finds that your secret is good. I am not obliged to make enquiries for you at court, nor undertake trips or expenses to try it out, and to satisfy you, and I am even less obliged to answer for your secret. Finally I am very tempted not to get further involved in this matter in any way. For it does provides me neither profit nor honour, and I do not even see that my good intention is acknowledged by you.[1076]

[1067] Douceur to Leibniz, mid-December 1679, A III, 2: 912.
[1068] Douceur to Leibniz, 2 December 1678, A I, 2: 547.
[1069] Ibid.: 'I believe I am elected to God, to give you your money back if I do not faithfully give you all the means to succeed.'
[1070] Mariotte to Leibniz, May 1681, A III, 3: 434: 'In the matter of Mr Douceur, I believe he is entitled to complain.'
[1071] Douceur to Leibniz, 2 December 1678, A I, 2: 547.
[1072] Douceur to Leibniz, mid-December 1679, A, III, 2: 912.
[1073] Douceur to Leibniz, 2 December 1678, A I, 2: 546
[1074] Douceur to Leibniz, second half of November 1679, A, III, 2: 891.
[1075] Ibid.
[1076] Leibniz to Noel Douceur, mid-April/May 1681, A III, 3: 399.

Perhaps concerned that he would not appear as a man of his word,[1077] and after further difficulties at the court of Ernst August, Johann Friedrich's successor, Leibniz eventually relented, though the full amount would be paid only by 1685.[1078]

A final example consists in Leibniz's handling of Brand's repeated requests for money. Increasingly irked by them, Leibniz had asked Christian Philipp to intervene in order to reduce Brand's claims to 'something reasonable',[1079] now portraying Brand, whom he had previously praised, as someone who made 'extravagant requests' and advanced things to 'which one should pay no attention.'[1080] Leibniz did not make light of Brand's ingratitude, as a 'man who failed to appreciate all the good done for him': for promoting and helping 'procure him a considerable advantage with the duke' in exchange of the execution of phosphorus, Brand, who presently found himself in severe financial straits, had had the temerity to request more money. Leibniz remained inflexible to Brand's predicament, blaming his wife (who 'ate up all that he earned') and deriding 'these people's ridiculous pretensions'. Brand had failed to respond after being reprimanded by Leibniz, and Leibniz, concerned that this would reflect poorly on himself in the duke's eyes or that he would lose face with the latter if he pressed the duke for money, asked Philipp to intercede and try to 'reason' with that 'venerable fool' (*vénérable sot*) so that he live up to his promises.[1081] The alternating portrayals of Brand as a naïve victim who had fallen prey to the promises of impostors or simply an imbecile, and as charlatan himself[1082] shows the sheer instability and ambiguity at the heart of the concept of projector.[1083]

[1077] Mariotte to Leibniz, 29 November 1681, A III, 3: 520.
[1078] Introduction, A III, 3: xlii.
[1079] Leibniz to Christian Philipp, 17 December 1678, A I, 2: 395.
[1080] Ibid.
[1081] Leibniz to Christian Philipp, 17 December 1678, A I, 2: 394.
[1082] Wahl (2015), p. 233.
[1083] Christian Philipp to Leibniz, 10/20 April 1680, II, 3: 386: 'Mr Brand is a man without manners and who boasts of having knowledge of many things he does not: it is true that he finds his dupes, but these are stupid people who are even more ignorant than him.'

And yet, even as he treated Brand like an unreliable and ungrateful[1084] child led by his emotions, Leibniz praised Brand as an incredible worker who found ingenious solutions and would make a point in crediting him with the invention of phosphorus and according him what he felt was Brand's due. His was thus a fundamentally ambiguous approach to his fellow projectors: torn between seeking to treat them well while exploiting them, Leibniz admired projectors for their discoveries while lamenting their unreliability, lack of 'firmness of character' and pursuit of glory and money by practising 'dubious arts', over the common good.[1085]

Leibniz's correspondents invariably had their own side of the story obviously, Brand, for example, praising Becher as 'honest' (*ein ehrlicher Mann*) while disparaging Leibniz as 'fickle' (*ein unbestendiger mensch*)[1086]—and the truth probably lies somewhere in between. The project would come to nothing with funding running out, Brand leaving permanently after having fallen ill, Ernst August, duke Johann Friedrich's successor showing no interest in it and Leibniz now engaged in new projects. While it is difficult to assess the fairness of the situations, it is, however, undeniable that in his negotiations Leibniz held his correspondents to a more exacting standard than he applied to his own ventures, and his correspondence reveals that he repeatedly drove the other projectors with whom he dealt to desperation.

3) Establishing a European Network from Hanover

After his departure from Paris and over the course of the next three years, Leibniz cultivated an extensive correspondence with savants, theologians, diplomats, and others across the

[1084] 'He is a man who receives very badly the services that are rendered him'. Christian Philipp to Leibniz, I, 2: 393.
[1085] *Misc. Berl.*, p. 95.
[1086] Brand to Crafft, 26 November 1678, A III, 2: 553.

whole of Europe. Finding himself isolated in Hanover, Leibniz actively sought to mobilize his epistolary network to maintain a presence beyond Johann Friedrich's court by continuing many of the relationships he had forged in Paris. Having failed to secure a position in France's state-backed learning apparatus, Leibniz now discerned in the Republic of Letters an alternative path to advancing the cause of science, animated by savants driven less by the pursuit of glory but sincerely devoted to the search for truth and willing to 'open themselves to others'[1087] in what amounted to a communally impulsed vision of science, a practicable model of communal learning and scholarship. To this aim, Leibniz maintained contact with some of his old Parisian acquaintances, including Henri Justel, the natural philosopher Edme Mariotte, Christiaan Huygens, Jean Paul de la Roque (the editor of the *Journal des Sçavans*), Simon Foucher, Nicolas Malebranche (whose *Conversations Chrestiennes* Leibniz had received from the Countess Palatine Elisabeth), Pierre-Daniel Huet, and Jean Gallois. To this impressive number of correspondents he would add, while in Hanover, Georg Hermann Schuller, the Cartesian and former Rinteln professor Arnold Eckhard, and the philosopher Niels Stensen, who now held the office of Vicar Apostolic for the northern provinces of Europe after having giving up the study of natural sciences.[1088] The correspondents also included Bishop Ferdinand von Paderborn, the legal scholar Vincenz Placcius, Johann Eisenhardt (with whom Leibniz debated about credibility of historiography), and the doctor Johann Sigismund Elsholz (to whom Leibniz sent his programme for the organization of natural research).[1089] Leibniz's correspondence with four individuals in particular stands out

[1087] Leibniz, *Recommandation pour instituer la science générale*, April–May 1686, A VI, 4: 692–93, quoted by Laerke (2013), p. 21. Laerke notes, 'Leibniz thus envisaged an intellectual community where each member would contribute his modest part to the collective production of something useful, for the common good, the advantage God' (p. 20).

[1088] Leibniz regretted that such studies were now alien to Stensen: Leibniz to Conring, 3/13 January 1678, A II, 1: 579.

[1089] With Oldenburg's death in 1677 Leibniz lost his agent in London and would rely instead on the *Philosophical Transactions* to keep abreast of scientific news in England.

in significance: Christophe Brosseau, Adolf Hansen, Christian Philipp, and Hermann Conring.

Building the ducal library: Leibniz with Brosseau

The diplomat Christophe Brosseau was the Hanoverian court's resident at the French court. His correspondence with Leibniz, which spanned thirty years, stands out as a 'remarkable manifestation of humanity and civilisation in the turbulent reign of Louis XIV'.[1090] Brosseau's predecessor, the French politician and diplomat Louis de Verjus (1629-1709), had succeeded in convincing Duke Johann Friedrich to enter a contractual alliance with France, and later recommended Brosseau to the post of Resident in Paris. It was in this context that Leibniz's and Brosseau's paths crossed. Leibniz found in Brosseau a reliable helper and friend with whom he felt a certain kinship. This was perhaps due to their shared circumstances in early life: both had lost their fathers at a young age and had studied law before joining princely courts.[1091] Both, too, owed their successes to generous patrons, Louis de Verjus in Brosseau's case, Boineburg in Leibniz's. They were now in the employment of the same master, Duke Johann Friedrich, to whom Brosseau was most devoted. The duke, in return, declared himself 'content' with his employee's 'faithful application to his interests.'[1092] Unfortunately for Brosseau, these sentiments were not conveyed to Johann Friedrich's successor, Ernst August (1679-1698), who would end up branding him a 'quibbler' (*chicaneur*), especially when presented with the evidence of Brosseau's mounting money problems. Leibniz and Brosseau are known to have exchanged many letters during the years 1676-1679, of which thirty of Brosseau's letters survive but only one of Leibniz's,

[1090] Jurgens and Orzschig (1984), p. 102.
[1091] Jurgens and Orzschig (1984), p. 103.
[1092] Ibid.

from 13 March 1679, does.[1093] Brosseau's letters to Leibniz, subsequent to the latter's departure from Paris, are characterized by his own desire to help bring about the duke's satisfaction. Brosseau knew the duke well and understood his expectations and aims. For this reason, while entrusting Hansen with his more personal and philosophical tasks and projects, Leibniz generally relied on Brosseau for the execution of his courtly ones. Brosseau was more than happy to oblige: he played an instrumental role, for instance, in helping Leibniz to assemble the ducal library, and most of their correspondence bears on the purchase of books and the logistics of shipping them to Hanover via Hamburg. He also sent Leibniz's booksellers' catalogues,[1094] suggesting that a catalogue based on an inventory of the books already owned by the library be produced and then supplemented with a list of 'the best books [that were] missing on each subject or topic'.[1095] Some books were too big to be sent by overland post and required shipping.[1096] Despite his efforts, Brosseau was at times unable to procure all the requested books, either because a book has not yet entered circulation in France or because of censorship.[1097] Brosseau also made payments on Leibniz's behalf,[1098] delivered some of his letters,[1099] and checked on Hansen's progress, especially when Leibniz felt the latter to be slacking in his duties or to be insufficiently forthcoming about the execution of Leibniz's arithmetical machine.[1100] Another topic of the correspondence was the acquisition of scientific instruments for the Hanoverian court, a

[1093] For Leibniz's letter see A I, 2: 439–40. The complete list is available on *Die Leibniz-Connection* (2020).
[1094] Brosseau to Leibniz, 3 July 1670, A I, 1: 488 'This bookseller, as you will see from this same letter, must provide me every week with a notebook of Spanish, Italian, Latin, French as well as other books of which he has long since made a very curious collection; I will also send them to you so that you can choose the ones that will best please his Majesty.'
[1095] Brosseau to Leibniz, 10 March 1679, A I, 2: 435.
[1096] Leibniz to Brosseau, 13 March 1679, A I, 2: 440.
[1097] Brosseau to Leibniz, A I, 2: 28 April 1679, A I, 2: 466.
[1098] Brosseau to Leibniz, 26 March 1677, A I, 2: 261: 'I paid Mr Cassini the 12 écus that you owed him.'
[1099] Hansen to Leibniz, 19 June 1677, A I, 2: 276: 'Mr. Brosseau promised to take care of our correspondence.'
[1100] Ibid.

process that Brosseau offered to assist,[1101] at one point ordering new instruments to be produced to replace equipment deemed inadequate for the duke.[1102]

Leibniz's homme à tout faire*: Adolf Hansen*

After Leibniz's departure from Paris, Friedrich Adolf Hansen (1652-1711) became one of his most trusted agents there, ensuring Leibniz's continued presence by proxy. Little is known about him except that he was from Holstein, served as Swedish councillor in Greifswald, and would later act as master of ceremonies and court tutor (*Hofmeister*) to Count von Koenigsmarck in Oxford. In Paris, Hansen mainly looked after three young Danish nobles.[1103] Hansen's correspondence with Leibniz charts the former's hyperactivity in seeking to mobilize Leibniz's Parisian circle: constantly running errands, carrying letters and parcels, delivering letters to and collecting responses from various *savants* in Paris, making appointments,[1104] reminding people to write to Leibniz,[1105] and sometimes even helping rekindle correspondences that had gone cold (although he did not succeed in Jean Gallois's case). Much of Hansen's activities in Paris consisted in identifying various scholars' whereabouts and trying (often unsuccessfully) to chase them up.[1106] One letter in particular gives a sense of the the trials and tribulations involved in getting some of Leibniz's mail delivered:

[1101] Brosseau to Leibniz, 13 March 1679, A I, 2: 440: 'There is an English instrument maker called Butterfield who resides on the fauxbourg St Gemain… he make microscopes of the new factory, pedometers the size of a small pocket watch; new universal Astronomical quadrans, which mark the minutes; pantographs, gyroscopes, and more new instruments. So, Sir, you could buy them for His Royal Highness as long as the price is not excessive and they are not too big. The worker should add a description of their use.'
[1102] Brosseau to Leibniz, 28 April 1679, A I, 2: 466.
[1103] Hansen to Leibniz, 9 November 1676, A I, 2: 237.
[1104] Hansen to Leibniz, 10 July 1679, A I, 2: 494.
[1105] Hansen to Leibniz, 17 April 1679, A I, 2: 463.
[1106] Ibid: 'I went looking for M. l'Abbé Gallois on Tuesday and not finding him I returned to his house last Friday, but he had gone to court with M. Colbert, I am leaving in an hour to look for him for the 3rd time, and if I am fortunate to meet him, I will be able to know from him everything you want to know'; 'One rarely finds M. L'Abbé Mariotte at home; after several trips I had made to find him, I was finally forced to leave your letters with his servant.'

> You would not believe how touched I am by the answer M. Huet gave you: I have been looking for him several times, sometimes alone, sometimes with some of my friends; and the first one who took me there was a French Gentleman, a great friend of Msle le Fevre, then afterwards I spoke about this letter to Mr. Justel and to Mr. L'Abbé de la Rocque, the latter promising to let me know when Mr. Huet was at home. Not being informed, I took the letter to the Court on New Year's Day, and I asked for news of M. Huet from M. Milet, who told me that he was in Paris. On my return I went to look for him, and not finding him, I sent my valet there several times. In the end, seeing that there was no way to meet him, I put the letter into Mr L's hands….[1107]

Hansen was equally important to Leibniz in supplying him with French scholarly journals[1108] (such as the *Journal des Sçavans*)[1109] and other volumes (such as le Chevalier de Mère's *Petit Traité des Agréments*),[1110] and helping acquire books for the ducal library[1111] and have them sent from Paris to Hanover.[1112] Brosseau was also entrusted with parcels for Leibniz, including on at least one occasion a 'manuscript ... Messieurs de la Hire and Jolli's books, and the brief for [his] arithmetic machine.'[1113] Crucially, Hansen was an efficient and determined informant who kept Leibniz abreast of scientific developments,[1114] including news of publications in physics.[1115] He remained on the lookout for information, often

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[1107] Hansen to Leibniz, 10 July 1679, A I, 2: 494.

[1108] Christian Philipp to Leibniz, 28 September 1678, A, I, 2: 37.

[1109] Hansen to Leibniz, 19 June 1677, A I, 2: 276.

[1110] Hansen to Leibniz, 1/12 February 1677, A I, 2: 243

[1111] Ibid : 'I bought the Conical sections from M. de la Hire for M. Collins, as you ordered, but I could not locate Viviani's resolution of M. Comiers' problems. Mr. Leonard a l'Escu de Venis has promised me to get more copies of it along with other books from that country, and I have asked Mr. Amelot to buy a copy for me, which I intend for you.'

[1112] Hansen to Leibniz, A I, 2: 383 : 'Now that peace is established with Holland and there is no other danger to feared on the seas than that of storms, I can easily send you in future whatever you ask of me for the ducal library, for ships often leave the port of Rouen for that of Hamburg. The books of which you sent me memoranda are almost all purchased, and there remain only those that are noted in your last of the 28th of the other month. As soon as you send me the order for their release, I shall execute it, and I will include the surety that you left me in deposit.'

[1113] Hansen to Leibniz, 7 August 1679, A I, 2: 506.

[1114] Hansen to Leibniz, 28 February 1678, A I, 2: 321: 'The composition of artificial stones as hard as marble is still in the hands of Mr. Comiers, I hope to have it soon and send it to you without fail'; 'I will try to introduce myself in Mr. Lanker's home in the hope to obtaining some advantage, and if I learn anything from him, I will let you know'; Hansen to Leibniz, A I, 2: 323: 'As soon as I will be in Berlin I will try to get you to know those of whom you speak in your letter and will let you know either by letter or in person, next time I have the honour of seeing you.'

[1115] Hansen to Leibniz, 7 August 1679, A I, 2: 506: 'M. l'Abbé Mariotte tells me that he has answered you, he shows me many beautiful experiments, and the three parts of his *Physics*, his *Treatise on Colors* is

relaying to Leibniz accounts of 'practical commodities' (*commoditez de la vie*) and various spectacles and unusual sights, including diamonds that sparkled in the dark,[1116] Comiers's talking machine,[1117] and even an inventory of all items found in an Amsterdam cabinet of curiosities, including a table that 'changes colour according to its perspective', a giant globe, and a collection of skeletons belonging to various animals and 'monsters'.[1118]

Hansen also kept Leibniz abreast of French military and diplomatic developments and the latest Parisian cultural productions—on one occasion sending him a critique of *Phèdre*,[1119] a tragedy whose author, Racine, Leibniz particularly admired:

> For La Galanterie [i.e., Paris] things have been as usual; there are more bad books than good ones. There have been two exceptions, however, one of which is Racine, who is well known to you, and the other Pradon, who had previously had Pyrame and Thisbe performed at the Hotel de Bourgogne, and who gained much approval for a premiere. These two poets, I say, have worked on the same subject, namely Phedre and Hyppolite, but Pradon wins over Racine, although the latter has his play performed at the palace where the best actors are, and Pradon's is played at the Guenegaud palace, and even the best actors of the troupe do not appear in the theatre. We will soon have the Opera in Paris: the subject is Io, or Isis, whose story we have, as you know, in the first book of Metamorphoses. However, the author, who is always the same, departs from Ovid's thought. There are strong feelings about this piece, and if I may express mine, Music, Dance, and Machines must be enchanting to work well together.[1120]

The information Hansen sent Leibniz ranged from the mundane and the trivial, such as Le Brun's presentation at the Académie of how to 'represent passions',[1121] to the remarkable and even the cryptic.[1122] On one occasion, for instance, he wrote about the wife of the Commissaire Clavesaint, who was publicly hanged and burned after having had her husband

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progressing well, he has in his hands a treatise on salts composed by M. du Clos, and he must examine before it is printed.'

[1116] Ibid.

[1117] Hansen to Leibniz, 4 June 1677, A I, 2: 275.

[1118] Hansen to Leibniz, September (?) 1676, A, I, 1: 458–59.

[1119] Hansen to Leibniz, 30 April 1677, A I, 2: 270.

[1120] Hansen to Leibniz, 1/12 February 1677, A I, 2: 244.

[1121] Justel to Leibniz, 7 March 1678, A I, 2: 325.

[1122] Hansen to Leibniz, 17 April 1679, A, I, 2: 463: 'An important piece of news has started to spread; if it is true it cannot be hidden any longer.'

murdered.[1123] On another, Hansen, clearly rather mesmerized by the whole experience, devoted a whole paragraph to the description of an English fire-eater and his various ploys to perform his 'comedy' for the greatest pleasure of his audience.[1124]

Hansen laboured diligently to perform the tasks Leibniz assigned him. His devotion and loyalty to Leibniz were perhaps nowhere more tested than in the case of Olivier,[1125] the master-artisan tasked with the realization of Leibniz's arithmetical machine in Paris. Throughout the correspondence Olivier was a constant source of vexation. Before leaving for Hanover, Leibniz had entrusted Hansen with overseeing the final execution of the machine. The correspondence between Hansen and Leibniz up to Hansen's own departure from Paris recounts Olivier's perpetual delays, excuses, requests for money, and indefinite postponement of deadlines. Hansen sought repeatedly to press Olivier to finish the task he committed himself to undertaking while also maintaining its secrecy.[1126] Yet Olivier proved either unlocatable,[1127] or already committed to the Jesuit priest Nicolas d'Harouis, who wished to see his own machines completed.[1128] As Matthew L. Jones has observed, while Hansen persistently couched his exhortations in the language of a gentlemanly code of conduct, relying on Olivier's sense of 'honour', Olivier for his part deployed the language and negotiating skills of the world of mercantilism.[1129] Much of the correspondence thus

[1123] Hansen to Leibniz, 1 March 1677, A I, 1: 253.
[1124] Hansen to Leibniz, 2/12 February 1677, A I, 2: 243: 'There is here at the St Germain fair an Englishman who has found a secret to prevent the activity and action of fire: he can, without burning himself, nor even altering the skin of his lips or that of his tongue which is quite delicate, eat lit sulfur, and crush some in the shape of an egg, which he then places in an iron spoon.. which he then leaves to melt on the fire, and even ignite, and then swallow this drug as he would a broth: then a large piece of hot coal is placed in his mouth and a piece of raw flesh on it which remains there until it is cooked. Once it is cooked, he he crunches it with the charcoal. Once this is done, a steel bar, which has been heated over the fire, is brought to him with tweezers, and placed between his teeth which he holds until it has cooled off.'
[1125] On this see Jones (2016).
[1126] Hansen to Leibniz, 26 February 1677, A I, 2: 250: 'I will urge him as much as I can, to hurry, and I will not forget to remind him to keep the matter secret…'
[1127] Ibid: 'I looked for Mr. Olivier three times in his house without having had the good fortune of finding him there.'
[1128] Hansen to Leibniz, 5/15 March 1677, A I, 2: 259.
[1129] Jones (2016), pp. 76–80.

charts the gradual and very noticeable breakdown in the relationship between Hansen and Olivier, with impatience gradually giving way to exasperation. Hansen regularly vents his frustration and growing annoyance at Olivier's failure to honour his promises to Leibniz. According to Hansen, Olivier was 'lazier than ever' and constantly failed to fulfil his duties.[1130] Hansen finally exploded, urging Leibniz to send him a copy of Olivier's contract and evoking the possible need to enforce more strenuous measures in the face of Olivier's obstinacy:

> M. Olivier is really doing my head in [*me donne martel en tête*], having brought me neither brief, nor letter, nor machine, again this morning I sent my valet to his house who found him in bed, and for all answer he let me know that he was not working on our task and that he would send me a letter at some point: if you have made a contract with him, I beg you Monsieur to send me a copy, because if he does not want to live up to his duties we must think of other remedies. I assure you that this lazy idler or idlers gives me a very great mortification seeing that I cannot satisfy you as I wish with all my soul.[1131]

Hansen remained steadfastly committed to 'doing everything possible in the world' to 'come to grips with this man', an expression he uses several times in the correspondence. Branding Olivier as 'lazy', 'idle', 'dishonest', and finally 'strange',[1132] Hansen grew increasing anxious as the prospect of his departure for Germany via Rouen started to loom, and he requested that Leibniz send him assistance. Leibniz would try to have Olivier move to Hanover to no avail. In any event, Leibniz's calculating machine would be completed only forty years later.

In his devotion, Hansen often appeared—or presented himself—as Leibniz's surrogate. In Paris he acted zealously as Leibniz's representative and sought to relay information to him, offering, for instance, to send Leibniz—should Justel fail to do so—the process by which to 'grow metals in the shape of philosophical trees'.[1133] One such occasion involved

[1130] Hansen to Leibniz, 9 January 1679, A I, 2: 406.
[1131] Hansen to Leibniz, 7 November 1678, A I, 2: 380.
[1132] Hansen to Leibniz, A I, 2: 506.
[1133] Hansen to Leibniz, 4 October 1677, A I, 2: 295.

exploiting the inventor Comiers's vanity to find out that which 'could be useful' to Leibniz and 'better strike our goal'—note the plural pronoun.[1134] Hansen also brought certain proposals or potential assets to Leibniz's attention, as when he promoted a young scientist called Marcel: 'This same Mr. Marcel still has many other inventions to relieve the memory in Geography and in history, because it is his forte, and he who has seen all these experiences… assures that he is a great erudite, and that he promises to make his secret understood to another person in two hours of time.'[1135] Sometimes even he acted on his own initiative to seek to recruit assets for Leibniz's network. On 31 October 1678, for instance, Hansen addressed to a certain Francois Regnauld:

> The eagerness with which Monsieur de Leibniz seeks the knowledge of the most beautiful minds of Europe makes him desire yours with a very ardent passion... He asked me to assure you of the esteem he has for your profound knowledge and your rare merits, and would be very happy to one day maintain a correspondence with a man as enlightened as you are. But as I cannot yet have the honour to pay you my respects, I believed that you would not find it amiss if I took the liberty to send you these things in advance in the hope of giving you complete satisfaction when I send you news of this scientist who, as you may have learned, is universally accomplished in mathematics and the other sciences, and who at least is on par with all the greatest we have in Germany. You sir, who are an excellent connoisseur, know how to distinguish the solid from the falsely brilliant, and do justice to everyone, and the one thing I ask of you is to be convinced that there is no one who is with more submission and sincerity.[1136]

Hansen's enthusiasm can be ascribed to his desire to reframe his status from something akin to an agent to that of a fellow valued member of the Republic of Letters.[1137] Even though they were social equals, Leibninz and Hansen seem to have had a complex yet unequal relationship governed by a tacit arrangement whereby Hansen offered his services

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[1134] Hansen to Leibniz, 16 August 1677, A I, 2: 290.

[1135] Hansen to Leibniz, 14 November 1678, A I, 2: 382.

[1136] Hansen to Francois Regnauld, 31 October 1678, A I, 2: 521.

[1137] Hansen to Leibniz, 16 August 1677, A I, 2: 290: 'The debt that I owe you is greater than I can express it, because it is you, Sir, who provide me every day with new knowledge that I esteem more than all the inventions of Hermes'.

and information[1138] in exchange for Leibniz's recognition. Norms of polite correspondence notwithstanding, Hansen sought to establish a more equal intellectual and scientific footing with Leibniz frequently deploying the rhetoric of learned epistolarity. If there was an obligation, it was that binding two '*savans*' governed by honour, courtesy and mutual assistance.[1139] On the basis of this reciprocity, Hansen suggested a fully-fledged exchange of information on several occasions[1140] requesting that Leibniz share his designs with him,[1141] keep him abreast of the state of publications in Germany 'affecting the present state of Europe',[1142] or let him 'sometimes see what these gentlemen answer[ed] to such solid questions and extraordinary curiosities'.[1143] On one occasion, when handling a letter containing 'very beautiful remarks' intended for Justel, Hansen proposed to Leibniz a subterfuge whereby the latter would leave one end of his own letters open to be read by Hansen, who would then simply seal the edge with wax so that the intended recipient would never be the wiser. Such a device would enable Hansen to be 'kept informed' directly of Leibniz's answers to his various correspondents, and make Hansen himself the 'happiest of

[1138] Hansen to Leibniz, 2/12 February 1677, A I, 2: 242.
[1139] Hansen to Leibniz, 16 August 1677, A I, 2: 290: 'I would be grateful Sir if you could send me from time to time what you learn from the correspondence you cultivate with foreign countries, because I am certain that there are hardly any scholars who do not know how advantageous it is for them to have the honor of speaking with you: You make them languish to see their journals embellished with your curiosities which they hope to obtain after the letter you addressed to the Abbé de La Rocque which has given them hope that you will continue to communicating curious inventions both in physics and in other sciences. All the *curieux* are convinced of their solidity, and await them with the last impatience.'
[1140] Hansen to Leibniz, 8 March 1677, A I, 2: 255: 'I received your letter dated of the 21st of the past month last Monday, and I hope that my response to your previous letter will reassure you that I took care of your Commissions. I thank you for from the bottom of my heart for the offer you are making me, and as you will not object to be taken at your word, I beg you most humbly to let me know from time to time what is printed in Germany regarding the present state of Europe, and to send me the Catalog of Leipisic, and of Francfort when the season permits: please send me a message as well concerning the curious College in Germany, and its leader.'
[1141] Hansen to Leibniz, 17 April 1679, A I, 2: 463.
[1142] Hansen to Leibniz, 1 March 1677, A I, 2: 254: 'You will oblige me very much by sending me from time to time what goes on in matters of letters and affairs, of which you have a full knowledge, I promise you that ingratitude will never be my vice'; Hansen to Leibniz, 8 March 1677, A I, II: 255.
[1143] Hansen to Leibniz, 4 October 1677, A I, 2: 295.

all men in the world.'[1144] Although it remains doubtful that Leibniz acceded to Hansen's request to let him operate unseen in his shadow, it is strikingly audacious.

While remaining keen to depict himself throughout the correspondence as a diligent student worthy of and ever grateful for his tutor's intellectual supervision and 'instructions', Hansen thus sought to reframe their relationship. The Parisian intellectual and scientific scene had not failed to dazzle Hansen, who expressed delight at all the 'beautiful things' he had 'learned [at Gallois's house]'.[1145] Hansen clearly aspired to belong more fully to that world, and accordingly sought to exploit Leibniz's connections to widen his own circle of acquaintances: 'It seems to me that Mr Huet, whose acquaintance I have been promised, counts among your friends; please if you have something to talk to him do me the grace of employing me.'[1146] Pressing to be instructed particularly in mathematics,[1147] Hansen wrote to Leibniz, 'I begged you for a method to become a master of mathematics, think about it at your leisure I beg you, and have the kindness for me to mark me the most excellent authors and those who can serve me as the introduction, because I do not save anything in these kinds of things.'[1148] Hansen reported on his progress throughout their correspondence ('I still need three or four months for the work I have started, and then after that I will get down

[1144] Hansen to Leibniz, 30 July 1677, A I, 2: 282-83: 'A curious man like yourself knows the obligation that I have toward you after having again received from you a letter so ample and filled with very beautiful remarks: having read it, I delivered it immediately resealed to Mr. Justel, who was so charmed with it that he said with an open heart that your correspondence was the dearest thing to him in the world, having thereby acquired a favourable opportunity to concert his thoughts with the most enlightened man in Europe, and without seeking to incense you Sir, I can assure you that all good people share this feeling, which indeed only do you justice. I will be the happiest man on earth if you could continue to inform me from time to time … to know what you are sharing with your friends: you have only to seal your letters, as long as you are kind enough to leave one end end open, so that once I will have read the letter and placed it back in its envelope, all that will be left to do is to seal the letter with some wax and and no one will notice....'

[1145] Hansen to Leibniz, 17 April 1679, A I, 2: 463: 'I dare say that I have found few companies in Paris from where I left with more contentment, nor that I left with more regret, so many beautiful things are learned there.'

[1146] Hansen to Leibniz, 26 September 1678, A I, 2: 367.

[1147] Hansen to Leibniz, 4 June 1677, A I, 2: 275.

[1148] Hansen to Leibniz, 31 October 1678, A I, 2: 375.

to work on Mathematical sciences'),[1149] requesting Leibniz's opinion and advice on the matter of his instruction, thanking him for his efforts ('The trouble you have taken for me'), as well as suggesting 'study trips' for himself, notably to England where he would be able to hone his mathematical skills,[1150] and 'taking the liberty to submit various difficult points' to Leibniz.[1151] Leibniz for his part seems to have welcomed—and taken advantage of—Hansen's enthusiasm and assistance, but not in these years to have ever truly acknowledged Hansen's intellectual parity.

Leibniz with Christian Philipp

Much of Leibniz's correspondence occurred against a backdrop of European political conflicts. War appeared as a disruptive force that threatened the progress of science[1152] and the ideal of the free circulation of ideas promoted by the Republic of Letters.[1153] From Sweden the Danish nobleman Christian Albrecht Walter commented on his country's attacks on Denmark under the influence of the French and deplored that he found himself 'in a country where the terrible noise of weapons [left] no room for muses', ironizing that 'everyone [was] talking about peace' all the while 'getting ready for a vigorous campaign'.[1154] War had slowed down the progress of the *Ad Usum Delphini* series[1155] and had severely disrupted intellectual life, according to Henri Justel, preventing 'philosophizing' and 'disgust[ing] men of letters and the curious' to the extent that he 'did

[1149] Hansen to Leibniz, 10 July 1679, A I, 2: 495.
[1150] Ibid.: 'I have not yet read the books you were kind enough to mention to me, but I am preparing myself for it by reviewing the beautiful Philosophy that I would like master better. I still need at least 3 or 4 months for the work that I have begun, and then afterwards I will start working on Mathematical sciences, of which I nevertheless examine some parts from time to time.'
[1151] Hansen to Leibniz, 24 October 1678, A I, 2: 372.
[1152] Leibniz to De L'Hospital, 20/30 July 1696, A III, 7: 41.
[1153] See Borowski (2021c).
[1154] Christian Albrecht Walter to Leibniz, 17 February 1679, A I, 2: 637.
[1155] Justel to Leibniz, 22 July 1678, A I, 2: 354.

not have the heart to pick up anything'.[1156] The French savant, however, hoped that all such a state of affairs might 'dispose the minds of interested parties to its resolution.'[1157]

One correspondent in particular on whom Leibniz relied to verify or refute political or military rumours and to discuss European geopolitics more broadly was Christian Philipp. Though concentrated over the years 1676-1682 and terminated by Philipp's sudden death in 1682, their correspondence entailed 93 letters, with 29 extant letters by Leibniz and 64 by Philipp. In spite of their many differences, Leibniz and Philipp had much in common. Both were originally from Leipzig and had benefited from the support of eminent intellectuals, Oldenburg for Leibniz and Samuel Pufendorf for Philipp. Pufendorf had taken Philipp under his wing most probably through the mediation of Philipp's father in the late 1650s in Jena.[1158] Master and protégé would remain in close contact over the course of their lives, Philipp continuing to serve Pufendorf diligently.[1159] The latter, in a remark addressed to Gottfried Klinger in January 1676, would eventually recommend 'his old disciple and very good friend' for the position of Saxon envoy in Hamburg (to which Philipp was appointed). The similarities between Philipp and Leibniz, however, ran even deeper. During his time in Jena and before going on to pursue a course in jurisprudence, Philipp had stayed with Erhard Weigel,[1160] whose lectures Leibniz would attend in Jena. Though Philipp would in retrospect express a more reserved view than Leibniz of Weigel,[1161] he was, like Leibniz (who was his junior by seven years) exposed to Weigel's influence and intellectual openness, and was instilled by him with a love of chemistry, the natural sciences, and the urge to derive practical

[1156] Justel to Leibniz, 30 July 1677, A I, 2: 287-88.
[1157] Justel to Leibniz, 17 April 1677, A I, 2: 267.
[1158] Döring (1989), p. 104.
[1159] Delivering, for instance, a parcel to Adam Rechenberg in Lepizig: Pufendorf to Philipp, 27 May 1676: Meyer (1894), p. 15.
[1160] Döring (1989), p. 105.
[1161] Philipp to Leibniz, 16/26 March 1681, A I, 3: 467; Philipp to Leibniz, 21 April (1 May) 1682, A I, 3: 534.

applications from them. After his studies, Philipp had worked as a teacher before moving for a short period to Paris, where he lived in 1668–69 with Esaias Pufendorf, Samuel's brother, who at the time served as the representative of the Swedish crown in the absence of the ambassador. There Philipp was introduced to the Parisian scientific and cultural scene and came into contact with various intellectual currents; there too, as he would later report to Leibniz, he had been made aware of the contradictions inherent in Cartesian geometry.

Philipp had known of Leibniz before corresponding with him, as a letter written by Christian Habbeus from March 1676, when Leibniz was still in Paris, indicates. The first surviving piece of correspondence is a letter from Leibniz to Philipp dated 22 July 1678,[1162] during Leibniz's trip to Hamburg, where Philip was then stationed and where both attended a discussion on Cartesian philosophy held at Esaias Pufendorf's house and most likely met. In November 1679, prompted by the attacks of the inveterate German Cartesian Johann Rabel, Philipp wrote to Leibniz requesting a summary of the discussion that had then taken place,[1163] and the latter's arguments as to how Cartesianism led to atheism. This letter, and Leibniz's subsequent response in January 1680,[1164] was one of the rare occasions when the two discussed philosophy. After his stay in Paris and another brief stint in Sweden, Philipp finally took up the position of the Saxon court's representative in Hamburg, at the time a commercial, financial, and political hotspot in a context of mounting political friction. Against the backdrop of a fledgling diplomatic alliance between France and Sweden, Philipp was tasked with collecting information and reporting back on local political and military developments and more generally the 'special passion' (*sonder passion*) that had developed in the northern European theatre of war.[1165]

[1162] Leibniz to Philipp, 22 July/1 August 1678, A I, 2: 357.
[1163] Philipp to Leibniz, 22 November/2 December 1679, A I, 2: 524.
[1164] Leibniz to Philipp, end January 1680, A I, 3: 345-48.
[1165] Döring (1989), pp. 112-13.

By writing to Philipp, Leibniz decided to keep alive his connection with someone who, on account of his familarity with political and diplomatic activity in Hamburg and beyond, might prove to be a most useful contact. His letters to Philip often take the form of short paragraphs, each addressing a different issue in a matter-of-fact way: the emphasis seems to have been on efficiently exchanging information, in particular on diplomatic and political issues, rather than nurturing a friendship. In Hamburg, Christian Philipp had honed his skills as a political analyst and deployed his excellent knowledge of political events of the time, much of which he would share with Leibniz, regularly supplying him with the latest diplomatic developments, especially regarding the much-anticipated agreement of peace across Europe.[1166] This included keeping track of troop movements, sieges, the transit of diplomats through the region, and state of intergovernmental negotiations,[1167] as well as assessing the validity of rumours, some of which indeed he dismissed as 'fabulous'.[1168] In exchange for this, Philipp himself inquired about the movement of Hanoverian troops,[1169] and requested diplomatic information from Leibniz: 'Mr de Rebenac is presently here, who has orders from the king of France to reconcile the Hamburgers with the [French-allied] elector of Brandenburg, and I believe he is leaving for Berlin tomorrow.'[1170]

The exchange of political news formed a large part of the content of the exchanged letters. Throughout his correspondence with Leibniz, Philipp regularly outlined the danger presented by a wealthy and bellicose France and its ambitions for European expansion,[1171] which, according to him, would entail the further weakening of an already weak and

[1166] Christian Philipp to Leibniz, 28 January/ 7 February 1679, A I, 2: 417: writing that 'they awaited the conclusion of peace with impatience.'
[1167] Leibniz to Philipp, 25 February/7 March 1679, A I, 2: 432: 'I am told that M. le Comte de Revenac comes and goes to Zell, and that the negotiations are in advanced stages. You are undoubtedly better informed than me and I beg you to inform me, of what you know'.
[1168] Leibniz to Philipp, 14 March 1679, A I, 2: 445: 'I still doubt all the noises that are circulating about the marriage of the Dauphin and even that of the king of Spain.'
[1169] Christian Philipp to Leibniz, 26 March/5 April 1679, A I, 2: 456.
[1170] Christian Philipp to Leibniz, 13/23 August 1679, A I, 2: 513.
[1171] Christian Philipp to Leibniz, 12/22 November 1679, A I, 2: 522.

disunited Germany,[1172] many of whose leaders had already pledged allegiance to France.[1173] Despite his fleeting hope for an improvement in relations between France and the German states upon the accession of Johann Georg III in Saxony in 1680, Philip's outlook remained overwhelmingly bleak: 'I believe that all of Germany is mired in fatal blindness.' [1174] Responding to Leibniz's grave misgivings about France—whose 'mind', fuelled by 'hatred', was now set only on 'Germany's ruin', and especially its 'division and impoverishment'[1175]—Philipp depicted the French as warmongering, harbouring 'wicked news' (*des méchantes nouvelles*),[1176] and revelling in European division: 'if France is fortunate enough to see division in the house of Austria, she can say that she is on the eve of her greatest power.'[1177] He went on to venture that peace would already have been concluded had it not been for the petulant French: 'I believe that peace would already be concluded, if the Frenchmen wanted to have any regard to the honor and reputation of the Emperor. But they want peace to be received from them as a grace, and to beg them with joined hands to extend the term they have insolently set for certain days [*de proroguer le terme qu'ils ont l'insolence a fixer a de certains jours*].'[1178] Through French expansionism, war would persist despite its 'impossible' continuation, 'because if they want to have regard only to themselves, they must be delighted to have the pretext of continuing a war where there is nothing more to apprehend for them [*continuer une guerre ou il n'y a plus rien a apprehender pour eux*], and which could hardly inconvenience France since trade is free.'[1179] Philipp hoped for the conclusion of the peace treaty, but often despaired at the

[1172] Christian Philipp to Leibniz, 22 January/1 February 1679, A I, 2: 414.
[1173] Christian Philipp to Leibniz, 16/26 November 1678, A I, 2: 387; also 20/30 January 1682, A I, 3: 515.
[1174] Christian Philipp to Leibniz, 20/30 August 1681, A I, 3: 498; also Christian Philipp to Leibniz, 20/30 January 1682, A I, 3: 515: 'I believe that all of Germany is fatally blinded.'
[1175] Leibniz to Philipp, 12 November 1678, A I, 2: 386.
[1176] Philipp to Leibniz, 17/27 January/ 1679, A I, 2: 413.
[1177] Ibid.
[1178] Ibid.
[1179] Ibid.

trivial nature of certain obstacles placed in its path, such as one prince's reluctance to take up the position of general, or a duke's lack of diplomacy in times of great necessity.[1180] As he wrote in one letter, 'we take offense at trifles and neglect the essential.[1181] Still, on 1 February 1679 he reported the news of the Peace of Nijmegen, concluded earlier that month, and later himself requested news from Leibniz concerning the progress in negotiations[1182] and in the growing tensions between Sweden and Denmark:[1183] 'The peace between the Emperor, France and Sweden was concluded in Nijmegen on the 6th of this month … and the French project of April 5/15, 1678 was its foundation: accordingly, the Swedes will be compensated, and the Emperor will remain neutral: it is hoped that the affairs of the North will calm themselves without French intervention; this would be desirable, so that the great scandal that French arbitration would cause be avoided.'[1184]

Philipp remained in Hamburg until May 1681, when, his increasingly financially untenable position was terminated,[1185] as the Peace of Nijmegen in February 1679, followed by the peace treaties of St Germain and Lund, made a permanent presence in Hamburg unnecessary.[1186] After being recalled, Philipp had several months of uncertainty until, in a similar quirk of fate similar to Leibniz's, he was appointed court librarian in Dresden. This

[1180] Philipp to Leibniz, 28 January/7 February 1679, A I, 2: 417: 'This Prince is urged to accept the title of General of the Allied Armies on the Rhine Coast, but he refuses to do so until it is more apparent that everything necessary for him to carry out such a duty with dignity is in place. It is causing a stir in Regensburg that the Duke of Lorraine has summoned the neighbouring estates in rather strong terms to contribute to the upkeep of the garrison in Philipsburg.'
[1181] Philipp to Leibniz, 1/11 February 1679, A I, 2: 421.
[1182] Philipp to Leibniz, 26 February/8 March 1679, A I, 2: 432 : 'I am told that M. le Comte de Revenac is coming and going in Zell, and that the negotiations are in very advanced stages. You are undoubtedly better informed than I: and I beg you to share with me what you will come to know about it.'
[1183] Philipp to Leibniz, 13/23 August 1679, A I, 2: 514.
[1184] Philipp to Leibniz, 1/11 February 1679, A I, 2: 421. In the treaty signed in February 1679 between France and Sweden on the one side and the Holy Roman Empire on the other—part of the larger negotiations to end the Franco-Dutch War—Sweden regained German territory it had lost to the Prussian army, while France gained Freiburg im Breisgau and conceded Philippsburg to the Empire. No agreement was reached on the status of Alsace-Lorraine, which France continued to occupy. See Blanning (2007), pp. 534, 539.
[1185] Döring (1989), p. 114.
[1186] Döring (1989), p. 115.

proved to be a daunting task since no inventory of the library holdings had been carried out since 1595 and the library had been left in a state of relative neglect, prompting Philipp to request the more experienced librarian's advice regarding the best way to organize a library.[1187]

An impasse in Germany: Leibniz with Hermann Conring

Increasingly faced with the prospect of remaining permanently in Germany, Leibniz set out to cultivate a relationship with one of its most eminent scholars, Hermann Conring (1606-1681). With his groundbreaking work *De origine iuris Germanici* (1643), in which he set out to trace the history of laws in force in the German Reich in order to debunk the mythical belief that there existed a direct line of continuity between the ancient Roman Caesars and the contemporary holders of the throne of the Holy Roman Empire and with the aim of bolstering the claims to autonomy of Protestant territorial princes against those of Habsburg imperialism.[1188] Throughout his life Conring remained a favourite in European royal circles, including with the duke of Brunswick, the Swedish king, as well as other princes who valued his legal skills and sought his advice, for which they rewarded him with pensions and appointments. Indeed, Conring even found himself pensioned by the French state in relation to Colbert's attempt to install his state Republic of Letters,[1189] when Jean Chapelain, who had lauded[1190] the French statesman to Conring, suggested that the latter write a panegyrical

[1187] Philipp to Leibniz, 21 April/1 May 1682, A, I, 3: 535.
[1188] Conring helped to reorient the imperial idea from that of 'universal empire' to, according to Schmidt (1999), a 'complementary empire-state' a regime in which the emperor cooperated with the princes and estates in a complementary framework, rather than exercising supreme authority. For more on Conring, see Stolleis (1983a).
[1189] Collas (1912a), p. 432.
[1190] See Chapelain's praise of Conring to Colbert, 2 September 1666, in Collas (1912a), p. 432.

history for the king and scour German archives for legal and historical documents that could be used as state propaganda to bolster French dynastic claims against the Hapsburgs.[1191]

It is interesting, in this regard, to consider the similarities between Conring's and Leibniz's trajectories. Both were devoted to ending confessional disputes and helping to promote the scientific study of the past to this effect. Both were imbued with the same values, and driven by similar concerns, namely encouraging the political unity of the German state by resolving political, religious, legal, and other controversies in a rational way in the wake of the Thirty Years' War. And like Conring before him, Leibniz, despite his undeniable talents, was regularly confronted with the limits of his position, meaning that he could never take an active part in the politics of this time, despite his efforts, but had to resign himself to the role of an advisor with limited actual influence. Conring would enjoy a longstanding and remarkably fruitful collaboration with the French court over several years, defending France's right to the Spanish Netherlands in 1667 and Louis's right to be considered a candidate in the elections of the Emperor in 1668, composing an unpublished advisory statement on the Triple Alliance in 1670, again suggesting that Louis XIV might consider aspiring to the imperial crown in 1671, and writing a memorandum outlining a strategy for the French king to take control of the Mediterranean.

In *Consilium de maris mediterranei dominio et commerciis regi christianissimo vindicandis*[1192] Conring left questions of European politics or security concerns carefully untouched—as was clearly not the case with Leibniz—in order explicitly to embrace Colbert's commercial goals.[1193] The plan presented France as Europe's natural leader, the only power capable of saving Europe from the despotism of pure greed,[1194] France's gradual

[1191] Soll (2009).
[1192] Soll (2009), p. 417.
[1193] Soll (2009), p. 422.
[1194] Fasolt (2004), p. 38.

monopolization of the Mediterranean trade, could be achieved through friendly negotiations with the Gate, which would also help open the trade route to India and the Arabian Gulf. In another parallel with Leibniz, by the time Conring's project was conveyed to Paris, it had already been rendered superfluous by the resumption of French negotiations with the Gate.[1195] In any event, Conring's proposal would have made Colbert and Pomponne disinclined to entertain a similar one shortly after.

Boineburg actively recommended his protégé to Conring, his former professor at the Lutheran University of Helmstedt, sending him a copy of the *Nova Methodus* and writing to him on 26 April 1668 about the young man he knew 'very well': 'He is a twenty-two-year old doctor in law: very learned, a good philosopher, committed, able and prompt in speculative reasoning.... He is certainly a man of great knowledge, of disciplined judgement, and of great capacity for work. He lives now in Mainz, not without my support.' That summer Boineburg sent Conring three copies of the newly published *Ratio Corporis Juris Reconcinnandi*,[1196] paving the way for the stimulating epistolary exchange on judicial and historical questions between Leibniz and the famous jurist.[1197] When, two years later, Conring asked the baron for further information on his protégé, Boineburg sketched a second, still more detailed and appreciative intellectual profile of the young Leibniz:

> He is a young man, twenty-four years old, from Leipzig, a doctor of law, and a more learned one could scarcely be imagined. He understands the whole of philosophy thoroughly and is a productive thinker in both the old and the new. He is furnished above all with the ability to write. He is a mathematician, hard-working and ardent, who knows and loves natural philosophy, medicine, and mechanics. Of independent judgement in religion, he is a member of your [Lutheran] confession. He has mastered not only the philosophy of law but also, remarkably, legal practice[.][1198]

[1195] Soll (2009), p. 275.
[1196] Gruber (1745), pp. 1208-9.
[1197] Leibniz's first letter to Conring dates from 23 January 1670, the last one from February 1679. The nineteen extant letters exchanged between them are published in A II, I.
[1198] Boineburg to Conring, 22 April 1670 in Gruber (1745), pp. 1286-87.

Conring thus entered into communication with an evidently highly accomplished and promising young man who seemed as devoted as he was to the reconciliation of the Churches. Their correspondence, spanned a wide range of topics, including law and jurisprudence, theology, natural philosophy, and even medicine.[1199] While Conring's *New Discourse* had sought, through historical analysis, to delegitimize the claims of the Roman Emperor, which he believed had caused the Thirty Years War, and defend the rights and sovereignty of the state of Germany over the last remaining vestiges of the Empire,[1200] Leibniz was instead eyeing the broader reorganization of Europe and the strengthening of allied states, ideally under the guardianship of the Reich.[1201] Leibniz kept Conring abreast of new publications he had received,[1202] as well as of recent scientific discoveries.[1203] In return he requested news[1204] and sought Conring's opinion on matters of natural philosophy and medicine,[1205] and occasionally offered his own speculations for comments,[1206] especially in the realm of natural philosophy, for Conring was one who inspired 'that reverence… [which Leibniz felt was] owed to [Conring's] name by all connoisseurs of true learning'[1207] and whose 'ingenious mind extended to almost all kinds of studies'.[1208]

Conring's contributions to public science were invaluable, according to Leibniz, and the latter urged him on several occasions[1209] to collect and publish his 'manifold

[1199] See Mulvaney (1968).
[1200] Fasolt (2004), p. 274.
[1201] Fasolt (2004), p. 182.
[1202] Leibniz to Conring, April 1677, A II, I: 504
[1203] Leibniz to Conring, 8 February 1671, A II, 1: 133.
[1204] Ibid: 'Please indicate to me, when you have time, if Justel has written down anything new which concerns the republic of letters.'
[1205] Leibniz to Conring, 3 January 1678, A II, 1: 579
[1206] Leibniz to Conring, early May 1671, A II, 1: 152: 'That you may be able to judge precisely on the theories of motion, and [*sc.* judge] my results in the Hypothesis for unravelling the phenomena of nature, I send you my—whims.'
[1207] Leibniz to Conring, April 1677, A II, 1: 504.
[1208] Leibniz to Conring, 19/29 June 1677, A II, 1: 551: 'ingenious mind extended to almost all kinds of studies, and, also in the affair of religion and in the science of medicine itself or of physics, there can be said by you many things which are least of all mundane'.
[1209] Leibniz to Conring, 19 June 1677, A II, 1: 551.

observations'[1210] and 'praiseworthy findings' for the greatest public good[1211] and that of the Republic of Letters.[1212] He was eager to receive his approval[1213] and to present himself as emulating Conring—perhaps in the hope of appearing as the great master's intellectual heir and succeeding him as one of Germany's foremost savants.

Merging genuine admiration and self-fashioning in his effort to win Conring over, Leibniz described himself as a young man 'led not by ambition but by the desire to improve' and 'eager to learn' from Conring, 'before [he] establish[ed himself] in public.[1214] Such a prospect did not seem too far-fetched, especially because Conring seemed genuinely impressed by Leibniz; and while he was less effusive in the earlier years of their correspondence, he admired Leibniz's ambition and encouraged him to persist, even if he disagreed with Leibniz on certain points. In fact, Leibniz's letters conveyed 'a fiery and tireless talent, which [did] not limit itself within the confines of any discipline'. What is more, Conring sensed that Leibniz's studies did 'not content themselves with bare attempts, but that already then they [had] made progress in disciplines of all kinds, and this at a very early age.'[1215]

Leibniz's move to Hanover encouraged Conring to cultivate the young savant more intensely: his new position as head librarian at the court of Hanover was especially promising,[1216] and more particularly his proximity to Duke Johann Friedrich could prove beneficial, as Conring did not scruple to point out: 'Yet it will restore me not little, if the Excellent Prince will accompany me with pristine grace: that you procure this for me, I ask

[1210] Leibniz to Conring, 3 January 1678, A II, 1: 584.
[1211] Ibid.
[1212] Leibniz to Conring, 8 February 1671, A II, 1: 132.
[1213] Leibniz to Conring, 8 February 1671, A II, 1: 132.
[1214] Ibid.
[1215] Conring to Leibniz, 8 February 1671, A II, 1: 130.
[1216] Leibniz to Conring, 13/23 July 1677, A II, 1: 554.

you again and again.'[1217] For his part, Leibniz was determined to make himself useful to Conring, offering to act as his assistant and even volunteering his assessment of the current diplomatic and military situation in Europe.[1218] In return, he sought to engage Conring primarily in exchanges of a scientific nature, and he used these as a sounding board against which to develop his own ideas—albeit necessarily within limits.

Over time, however, a distinct ambivalence towards Leibniz, punctuated by a measure of reproach, had become palpable, and Leibniz's requests to Conring met with increasing cageyness. The correspondence eventually ran its course, especially as, in declining health, Conring preferred to focus his attentions on more 'useful' things.[1219]

Leibniz's idealistic inclinations, often far removed from practical needs or even bordering on delusion, may well have irritated Conring.[1220] And apart from acting as an intermediary, passing on letters and information, locating books in the ducal library, or helping promote Conring's works to Duke Johann Friedrich,[1221] Leibniz was, as Conring evidently came to realize, of limited use to him. Having established a solid reputation throughout Europe, Conring was in any event now much less dependent on personal patronage.[1222] Despite his encouragement to Leibniz to persevere in his research, then, he must have felt increasingly overwhelmed by and resentful of the young man's claims on his own time and expertise. By the spring of 1678, unable to conceal his frustration any further, Conring remarked that the 'variety and amount' of Leibniz's activities were such that there

[1217] Conring to Leibniz, 18/28 May 1677, A II, 1: 505.
[1218] Leibniz to Conring, 29 June/9 July 1677, A II, 1: 552.
[1219] Leibniz to Conring, 13/23 July 1677, A II, 1: 554: 'I will not negate that many things have been observed by me in Natural Philosophy and Medicine beyond those which I have released in edited books: but old age and a health less stable call me to much more useful things for human life. However, I will not neglect these, either, if my strength permits and my affairs suffer it.'
[1220] Leibniz to Conring, 19 March 1678, A II, 1. In his last letter to Conring before the latter decided to end their epistolary relationship, Leibniz characterized his tetragonism as that which mathematicians 'ought to desire' rather than what 'they usually [did]'.
[1221] Conring to Leibniz, 8/18 May 1678, A II, 1: 62.
[1222] Fasolt (2004), p. 152.

would be 'no time to spare for their treatment', not to mention that Leibniz's propositions struck him not only as 'new' but also, disappointingly, as 'very far from the truth'.[1223]

Finally, much to Leibniz's dismay,[1224] Conring drew the correspondence to a close[1225] by congratulating Leibniz for his new position in Hanover that would 'guide [his] mind towards useful thoughts for the republic, once he had left behind his paradoxical ideas and idle speculations' and allow him to apply himself to 'practical and useful matters'.[1226]

4) Setting up a scientific and intellectual network

Leibniz was particularly productive in the early years in Hanover as he harvested the benefits he had taken from the years in Paris and established a network of contacts who served both his needs as librarian, a courtier and an intellectual fascinated by what was happening all over Europe. He frequently asked his correspondents to send him letters and parcels, and inquired about or requested new books[1227] as well as booksellers' catalogues.[1228] In return, he himself sent them books and journals,[1229] and offered a range of services which we shall examine below. In his correspondence Leibniz combined professional duty with personal interest, thus enabling him to remain invested and active in the main intellectual and

[1223] Conring to Leibniz, 26 February/8 March 1678, A II, 1: 594.

[1224] Leibniz would draft two letters seeking to defend himself from some of Conring's claims by once again expounding his various discoveries which contributed to raising science rather than revelling paradoxical activities of little use. Perhaps resigned to Conring's uncompromising stance, however, Leibniz seems never sent these letters.

[1225] Conring to Leibniz, 8 May 1678, A II, 1: 620.

[1226] Conring to Leibniz, 8 May 1678, A II, 1: 620.

[1227] Hansen to Leibniz, 13 August 1677, A I, 2: 289.

[1228] Philipp to Leibniz, 1/11 February 1679, A I, 2: 421: 'It's been a while since I learned anything new from Paris or London: but that's partly my fault. Here are the books that Mr. Bulow brought me from England, I beg you to send me this catalog.'

[1229] In this respect Leibniz was abiding by one of the key principles of the Republic of Letters: *do ut des*, i.e. reciprocal exchange.

scientific debates of his time. Within this setting, too, Leibniz viewed others and their replies as 'living mirrors' on which he projected his temporary intellectual self-understanding, in this manner maintaining a constant correspondence with himself.[1230]

From Hanover, for instance, Leibniz pursued his historical research, responding to Eisenhart, a law professor at Helmstedt and a former pupil of Conring who had sent him a dissertation on *fides historica*, by setting out principles of the critique of testimony. Upon receiving an edition of *de moribus Germaniae* from Conring, Leibniz also sought to probe the origin of modern names and ancient peoples across Europe and to sketch out a Christian philosophy of History.[1231] Leibniz's interest in history was perhaps, as we have already seen, brought to the fore in his discussions with Huet. He also sought to oversee, albeit with great difficulty and through the tireless efforts of Soudry, Mariotte, and in particular Hansen, the efforts to bring his calculating machine to fruition. During this time, too, Leibniz refined his work on movement and collision, composing his dialogue *Pacidius Philalethi*, his 1678 work *De corporum concursu*, and a project for a universal language and an *ars inveniendi* that, using the mathematical training he had received in Paris, refined his *De arte combinatoria* of 1666.

Descartes and Cartesianism continued to constitute a major thread of discussion over this period with a number of correspondents, including Fabri, Berthet, Eckhard, Princess Elizabeth, and Christian Philipp, especially as far as physical questions such as the problem of movement and laws of collision were concerned. After having been able, with Tschirnhaus, to inspect Descartes's papers in Paris, Leibniz upon arriving Hanover renewed his critical engagement with Cartesianism, which he dismissed as 'the antechamber of true philosophy' and as 'paving the way to atheism.'[1232]

[1230] Ramati (1996), p. 443.
[1231] Davillé (1909), p. 14.
[1232] Christian Philipp to Leibniz, 22 November 1679, A II, 1: 766.

Encouraged by his work on motion, Leibniz was careful to distinguish his own conception of hypothesis, which adhered to a strictly hypothetico-deductive procedure, from the explanatory models of Descartes's physics. Descartes, for all his merits, had failed to substantiate his hypotheses through sufficient experimentation. While he had figured out 'many things… that [had come] to nobody's mind among the ancients',[1233] often reasoned 'splendidly' and 'perused everything so ingeniously and deeply',[1234] Descartes had erected fragile hypothetical constructions that threatened to collapse at any moment for their lack of empirical support and verification. While they were indeed 'marvellously ingenious', Descartes's hypotheses were thus, as they stood, often 'uncertain and sterile' and could be easily superseded according to Leibniz. Extending his criticism of Cartesian physics as a whole, Leibniz judged Cartesian methodology to be highly deficient:[1235]

> Descartes can without a doubt be compared to the greatest men of antiquity both in his power of judgment and his outright miraculous felicity in guessing; but he lacked a stock of content. For immersed in Mathematical and Metaphysical reflections, and later involved in disputes with the most learned men of his age—as usually happens to those who rather ambitiously strive to be considered originators of a school—he lost a great part of his time needed for more useful things, and could not overbuild his physics but with generally known experiments. But how much he could have accomplished, if his life had been longer, the little books about meteors, about the passions of the heart, about man do show.... His System of Physics is no doubt ingenious, but little investigated, because it can only be held as Hypothesis, as can be contrived many others, all suffice in whichever way for the common phenomena.[1236]

[1233] Leibniz to Conring, beginning May 1671, A II, 1: 153.

[1234] Leibniz to Conring, 3/13 January 1678, A II, 1: 581.

[1235] It is woth noting, however, that Leibniz was perhaps beginning to see his own philosophical system as in competition Descartes's, and would therefore have been keen to undermine Descartes.

[1236] Leibniz to Conring, 24 August 1677, A II, 1: 563. Still, not all was lost, for Cartesian assumptions could initiate the development of demonstrative arguments: 'Nevertheless I would always advise a lover of the truth to deepen it [the Cartesian system], because we see in it an admirable skill of mind, and his physics, uncertain as it is, can serve as a model for the true one, which must at the very least be as clear and as concerted as his; for a novel [*Roman*] can be beautiful enough to be imitated by a historiographer. To sum it up: Galilei excels at reducing mechanics to science; Descartes is admirable for explaining the reasons for the effects of nature by fine conjectures' (draft letter to unidentified recipient, n.d., in Leibniz (1875–90), I, 335–36).

With Craanen and Tschirnhaus, Leibniz criticized what he thought was Descartes's deficient proof of God as *Ens perfectissimum*, attempting in his correspondence with Arnold Eckhard to create his own logically flawless proof of God. He also criticized the voluntarist concept of God,[1237] and objected to the dangerous idea that matter could gradually take on all possible forms.[1238]

Many of Leibniz's correspondences were built on the mathematical discoveries that he had made in Paris.[1239] Topics of discussion included the search for general equations of all differentiable or integrable curves, the invention of the inverse tangent method, the investigation of transcendent and especially exponential equations, the further refinement of the method of series of functions and numerical quantities, the development of a general method for Diophantic arithmetic, and the projecting of a 'geometry of the situation' or a *Characteristica geometrica*.[1240] Leibniz also sought to develop further his *Hypothesis Physica Nova* in order to refine his method of scientific analysis, responding to Descartes's laws of motion and refraction debating 'geometric reason' with Simon de la Loubère, or sending a copy of his quadrature to La Roque.[1241] Such discussions of mathematics with a wide range of contacts, including Berthet, Gallois, Eckhard, Fabri, Hooke, Tschirnhaus, and Huygens would, however, take a backseat after Oldenburg's death.

Crucially, Leibniz requested information from his contacts, often inquiring about new inventions or curiosities or seeking information that he could draw on in his official capacity at court. There was often, in fact, an overlap between his official duties and his own intellectual pursuits and interests. Leibniz was keen to gather information for the purposes

[1237] Leibniz to Fabri, early 1677, A II, 1, 464: according to Descartes, everything was reduced to the blind arbitrariness of a world founder ('caecum arbitrium conditoris').
[1238] Leibniz to Philipp, end January 1680, A II, 1: 786.
[1239] See the Introduction to A III, 2.
[1240] Ibid.
[1241] Leibniz to la Rocque, 25 April 1678, A III, 2: 386-89.

of introducing reforms at the Hanoverian court, pumping both Hansen and Justel for a wide range of political, economic, and technical material. From Hansen, he requested information relating especially to the 'reform of the police, justice, finance, manufactures, commerce, navy… and other things necessary to know ancient and modern France, not only from the outside' but also to deepen [his] little knowledge of its Government and Policy, its Laws, Maxims, Alliances, and Pretensions', 'the State of the Church, Justice, Finance and Militia' as well, finally, as 'information relating to ceremonial, many of which he had witnessed over the course of the past couple of years' and 'a list of the prices of things in Paris'.[1242] From Justel, Leibniz requested 'all the changes that had occurred in France since the death of Cardinal Mazarin in government matters and other affairs', and a list of ordinances and regulations relating to 'commerce and navigation'.[1243] Furthermore, Leibniz sought technical works such as 'French dictionaries that contain terms of the arts of all kinds [*terminorum technicorum*]' and 'books that deal with all kinds of mechanical arts, and manufactures and commerce in French'.[1244] Justel's response, however, was not as positive as Leibniz might have hoped: there was no 'catalogue of the inventions of the French', and moreover the French, Justel continued, 'had [not] invented much' and 'did not have the gift of invention', being best suited to 'perfecting what others ha[d] sketched out', to the extent that they had to 'have recourse to the English who ha[d] written very well on [commerce]'. In short, the disenchanted Huguenot told Leibniz, there was 'no one here who [was] significant for his knowledge that you do not know.'[1245]

Sharing scientific and technical curiosities

[1242] Leibniz to Hansen, 7/17 July 1679, A I, 2: 497.
[1243] Justel to Leibniz, April 1678, A I, 2: 337.
[1244] Ibid.
[1245] Justel to Leibniz, 22 July 1678, A I, 2: 355.

Much of the correspondence, however, was of a broader scientific nature, and much of the information exchanged concerned the circulation of scientific or technical 'curiosities'. These ranged widely: particular drugs 'with marvellous effects' (which caused part of the mind to lose its senses),[1246] Leibniz's design for a frictionless new scale,[1247] the printing of geographical maps on silks,[1248] promises of 'a talking head', the publication of Mariotte's *Physical Treatise*[1249] and *Treatise on Plants*,[1250] a recipe for invisible ink (*encre de sympathie*).[1251] There was also discussion of various optical instruments, such as magnifying glasses and microscopes,[1252] and new works on dioptrics 'containing the construction of all kinds of glasses, new inventions to increase sight and the wonders that are created by broken rays',[1253] as well as Huygens's new treatise in which he attempted to explain the phenomenon of double refraction.'[1254] Huygens, Leibniz was informed, had recently 'returned from Holland having brought back with him small microscopes … with which one [could see] in the water an infinite number of small animals which move,' and from which it was possible to conclude that 'everything in nature [was] animated.'[1255] Microscopes were 'one of the most useful discoveries for the advancement of physics and medicine' and would, through play, allow for 'an infinity of considerable observations'.[1256] Good ones, however, were difficult to obtain prompting Leibniz to devise a manner of making microscope lenses 'in less than an hour':[1257]

> By this means you will dispose of a small theater of nature in miniature or a mine rich in delightful experiences. This is how we will be able to advance [science]

[1246] Christian Albrecht Walter to Leibniz, 20/30 January 1678, A III, 2: 334.
[1247] Leibniz to Jean Paul de la Rocque, December 1677, A III, 2: 298.
[1248] Christoph Pratisius to Leibniz, 29 June 1677, A III, 2: 465.
[1249] Edme Mariotte to Leibniz, 23 July 1679, A III, 2: 793.
[1250] Leibniz to Mariotte, 30 June 1679, A III, 2: 773.
[1251] Leibniz to Schuller, 2 October 1677, A III, 2: 240.
[1252] Christian Albrecht Walter to Leibniz, 20/30 January 1678, A III, 2: 334.
[1253] Hansen to Leibniz, 22 November 1677 A III, 2: 274.
[1254] Edme Mariotte to Leibniz, 23 July 1679, A III, 2: 794.
[1255] Edme Mariotte to Leibniz, 6 March 1678, A III, 2: 354.
[1256] Leibniz to Chevreuse, 19 December 1678, A III, 2: 295.
[1257] Leibniz to Jean Paul de la Rocque, end of1677, A III, 2: 259.

> marvelously in the space of a few years, now that not only philosophers and the curious, but also women and workers will be able to make microscopes immediately to closely examine the materials in which they are immersed since everyone will be able to have what was previously reserved to a few curious people for very little.[1258]

With Edme Mariotte, in particular, Leibniz discussed questions of physics and geometry, especially Jacques Ozanam's work on the quadrature of the circle and prime numbers.[1259] Both also shared news of experiments on air resistance[1260] and meteorological information obtained from barometers, thermometers, and hygrometers.

Of all the types of knowledge that were to be promoted, one stood out: the 'practicalities of life' (*commoditez de la vie*), as Henri Justel labelled them, namely practical matters and inventions that benefited the public good. These included such contraptions as a kind of pressure cooker invented by Denis Papin that could boil fish[1261] and caused quite a stir in London, a machine 'able to grind enough wheat for 1500 men in twelve hours', and Comiers's invention of a machine that could knead 'as much dough as one wishe[d]'.[1262] Others were of broader practical application, including new water lifting machines in Paris and Copenhagen, or of military application— Leibniz was always eager for information relating to 'artillery and firearms',[1263] such as a canon that could advance '300 paces farther than the enemy … without heating up or moving back'.[1264] A curious invention mentioned several times in Leibniz's correspondence with Justel is his infamous project for a 'coach-boat' (*carosse-bateau*), a coach that could be transformed into a tent and a boat and whose

[1258] Leibniz to Jean Paul de la Rocque, end of 1677, A III, 2: 261.
[1259] Edme Mariotte to Leibniz, 6 March 1678, A III, 2: 351.
[1260] Mariotte to Leibniz, 5 July 1680, A III, 3: 221.
[1261] Frederick Slare to Leibniz, 8 July 1680, A III, 3: 231.
[1262] Hansen to Leibniz, 20 December 1677, A I, 2: 296.
[1263] Leibniz an Noel Douceur, Summer 1680, A III, 3: 223.
[1264] Hansen to Leibniz, 20 December 1677, A I, 2: 296.

practicality and usefulness Leibniz sought to defend, not altogether successfully, against Justel's scepticism.[1265]

Leibniz assumed that progression towards truth from falsehood would only be possible by filling the gaps in existing knowledge, and he regularly mobilized his network to that effect, all the while remaining vigilant to distinguish the true from the false. Ideally, Henri Justel wrote to Leibniz, that an 'able man', in the likeness of the Roman historian and author Pliny, would undertake to record for posterity the 'useful and curious digressions on an infinity of rare things that had come to light' in their time, in such a manner as to constitute a 'genuine history of the world.'[1266] Leibniz's correspondence with the various members of his network offers a catalogue of the 'rare and the marvellous'[1267] replete with eight-foot men, an 'extraordinary' deer,[1268] diamonds that sparkle in the dark,[1269] oversized birds, and apples that ripen at Christmas. Remaining cautious about the various 'boasts'

[1265] Justel to Leibniz, 7 March 1678, A I, 2: 324-25: 'I really appreciate your kindness for sending me a drawing of the coach-boat which is a curious thing. We find that it would probably take a long time assembling and dismantling it, and that it would be difficult preventing water from entering it. Moreover it is difficult to imagine where the wheels of the coach would fit when the latter is turned into a boat… For these reasons which are only conjectures made on the basis of your drawing, we do not believe that this invention can be useful. I only care about machines when they are not very expensive, comfortable and convenient. You will be kind enough to answer me on these little difficulties and doubts which may be unfounded, since I have never seen the Machine.'

[1266] Justel to Leibniz, A I, 2: 317: 'I care very much about this volume on commodities of life, which is truly worthy of you and of this century. But I beg you not to spare us from useful and curious digressions on an infinite number of rare things which have come to your knowledge. It has been a long time that I have hoped that a clever man undertake to do for our century what Pliny did for his, because in Pliny we find an infinite number of observations on the origin of the arts, on the conveniences of life which men used at that time, and even touching on the corruptions that arose as a result of too many delights, whose knowledge is also useful. There are many things that without Pliny would be lost. This is why I would wish that a capable person wanted to leave a true portrait of our time in posterity; with regard to manners, customs, discoveries, coins, commerce, arts and manufactures; luxury, expense vices, corruption, diseases that reign, and their remedies. He would neglect what can be learned from history, and he would only focus on what is forgotten and yet deserves to be remembered, more so perhaps than what is ordinarily noticed. If so many other great designs prevent you from thinking of them, you will nevertheless be able to include in your volume on commodities a number of conveniences useful for that purpose. If we had such a Pliny in our century, posterity would follow its example and the continuation of this work would provide a true history of the world.'

[1267] Justel to Leibniz, 17 February 1677, A I, 2: 248.

[1268] Jean Paul de la Roque an Leibniz, Paris 10 Juli 1677, A III, 2, p. 189.

[1269] Ibid.

('*fanfaronnades*')[1270] and 'illusory promises' ('*propheties*')[1271] in circulation, Leibniz often expressed scepticism and asked for the confirmation (or refutation) of various rumours.[1272] A case in point concerned the manufacture of water-resistant cloth: 'There is a German who claims to have admirable prophecies and the secret to making Taffeta water-resistant. As he has a prophetic spirit, I do not place a lot of faith in what he offers.'[1273] In their discussion on the subject of the natural philosopher Comiers's 'talking head' (*tête parlante*) and broader research interests, Leibniz and Hansen articulated their epistemological methodology most clearly: it consisted in trying to distinguish the true from the false, the possible from the impossible, in a context of considerable uncertainty. Yet 'groping' was insufficient, for the truth should be self-evident even to a blind person. Establishing the 'solidity'[1274] of an assertion was key to 'delivering oneself from popular errors'.[1275]

Setting himself up as a master informer

Leibniz thus sought to carve out for himself a particular position not only at court, but also within the Republic of Letters, which, although mentioned explicitly few times,[1276] clearly

[1270] Leibniz to Philipp, 25 February/7 March 1679, A I, 2: 432.
[1271] Justel to Leibniz, 27 September 1677, A I, 2 : 294.
[1272] Leibniz to Philipp, 25 February/7 March 1679, A I, 2: 432: 'I beg you to recommend me to Mr. Gudius when the opportunity arises. I earnestly wish to enjoy his conversation, as well as yours. I have conceived such a high esteem for M. Gudius, that I put him on equal footing with the Scaligers and Saumaises: and I hold him above Mr. Vossius despite this man's great bluster. I recently leafed through his last book. What a marvelous speculator [*O le beau raisonneur*]. If he is as intrepid in history and fine literature, as he is in physics and mathematics, I would hardly trust what he says without having examined it well myself.'
[1273] Justel to Leibniz, 27 September 1677, A I, 2 : 294.
[1274] Ibid.
[1275] Ibid: 'I only study to free myself from popular errors and to believe only what I see concerning nature and art, and to make a compilation of the commodities of life. If you know any, please share them with me.'
[1276] Justel to Leibniz, 27 September 1677, A I, 2: 294: 'The current news among us in the Republic of Letters is that Mr Baluze has given us his Chapter in two folio volumes which cost 10 ecus. It is undoubtedly one of the most beautiful collections that we can have. The first volume of the monuments of the Greek Church by Mr Cotelier will be published soon. As for Mr Cotelier, he kisses your hands, and told me that there are in the Bibliothèque du Roy a lot of manuscripts on Mathematics; but these are not the books ... he had examined them very carefully and he was not sure whether there were any relating to the Analysis of the

forms the backdrop to many of his letters.[1277] Leibniz went beyond simple adhesion to its codes to strive to develop, from his outpost in Hanover, an information network that would serve both his professional and personal scientific pursuits. He proved to be particularly skilful at leveraging the precious commodity of information, positioning himself as someone who could 'tell you everything about what is happening in the republic of letters of this country here', mindful to calibrate his interactions with each member of a wide network of correspondents and seeking to be perceived as valuable and irreplaceable: he quickly became valued for his ability 'to fill journals with [his] curiosities' and other 'inventions ... whether in physics or other sciences… whose solidity remained uncontested'.[1278] As a key purveyor of information, Leibniz was regularly consulted by his various correspondents for his opinion or advice on a wide range matters, or to verify pieces of information or rumours, even of a political nature.[1279] On two occasions, for instance, Henri Justel asked Leibniz to confirm or deny whether 'trees [had been] planted in Germany by the head rather than by the root'[1280] and whether 'an artificial man with a lung and arteries' had been produced in Germany.[1281]

Bemoaning the dearth of publications in Germany,[1282] Leibniz in turn often asked Justel for news. Leibniz seems to have found in Justel, with whom he exchanged a dozen of letters over the period 1676 to 1679, an intellectual peer and a philosophical sparring partner. Their philosophical discussions included biblical criticism and Spinoza's posthumous

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Ancients. Mr Huet put his book on Religion in his hands.' Louis Ferrand to Leibniz, A I, 2: 260: with Oldenburg's death, 'the whole Republic of Letters has lost a good, enlightened, and well-intentioned subject'.

[1277] Abbé de la Rocque an Leibniz, A I, 2 : 290.

[1278] Ibid.

[1279] See, for example, Christian Albrecht Walter to Leibniz, A III, 2 : 338: 'I would only like to be two hours with you to hear your judgment on all this, and your opinion on the course we should take. Because I will never lose the confidence that I place in your great knowledge, nor the esteem and special passion…'

[1280] Justel to Leibniz, 27 September 1677, A I, 2: 293.

[1281] Justel to Leibniz, 31 January 1678, A I, 2: 316. Compare the 'strange reports' in the *Philosophical Transactions*, as discussed by Hoppen (1976a and 1976b).

[1282] Leibniz to Justel, A I, 2 : 481: 'What is printed in Germany is generally very little.'

works, Leibniz cautioning Justel against the dangerous 'paradoxes' in the Dutch philosopher's *Ethica.*[1283] Justel provided news on the progress on Huet's collection[1284] or his own encounters with *commodités* in exchange for notice of 'what has been rare at your court and what good books have recently been printed in Germany'.[1285] Leibniz also requested news about the Republic of Letters from Louis Ferrand,[1286] and he regularly updated the Abbé de la Rocque with new discoveries. From Christian Philipp he sought help in constructing a special compass that could discern the most subtle changes in position, and in obtaining a copy of Richard Simon's *Criticism of the Bible.* Through his network Leibniz hoped to receive 'the composition of artificial stones'[1287] (which Hansen hoped to extract from Mr Comiers), news from Tschirnhaus's trip to Italy,[1288] and of the progress made by the Abbé Mariotte with his *Logique*[1289] (which Leibniz would eventually praise as 'extraordinary')[1290] and his *Treatise on Colours.*[1291] Other pieces of information he received concerned the return of Vansleb to Paris,[1292] an extraordinary sighting of a lunar eclipse,[1293] the English royal physician's successful cure of Bossuet and the duke of Orleans's eldest daughter,[1294] and Vicquefort's escape from Zelle. Of course, this information network could also serve the purposes of control and surveillance at a distance, enabling Leibniz to

[1283] Leibniz to Justel, 4/14 February 1678, A II, 1: 154.
[1284] Letter from Justel to Leibniz, A I, 2: 337.
[1285] Ibid, 28 June 1677, A I, 2: 277.
[1286] Louis Ferrand an Leibniz, 23 March 1677, A I, 2: 260.
[1287] Hansen to Leibniz, 28 February 1678, A I, 2: 321.
[1288] Ehrenfried Walther von Tschirnhaus, 17 April 1677, A III, 2: 60.
[1289] Mariotte to Leibniz, 29 April 1677, A III, 2: 75.
[1290] Justel to Leibniz, 4 October 1677, A I, 2: 297.
[1291] Mariotte to Leibniz, 28 April 1678, A III, 2: 407.
[1292] La Rocque to Leibniz, April 1678, A III, 2: 385: 'Father Wansleb has abandoned his beard and his Darmenian habit to take back that of Jacobin. He is in a convent near Paris where he goes sometimes.'
[1293] Hansen to Leibniz, 31 October 1678, A I, 2: 375: 'The lunar eclipse that we randomly had on Saturday was very extraordinary, and we have not had one like it in four hundred years from what our scientists tell us.'
[1294] Mariotte to Leibniz, 13 July 1678, A III, 2: 468.

ascertain the location and activities of various key individuals,[1295] as in his use of Crafft to report on Becher and of Schuller to report on Crafft. And just as he himself was occasionally sought out by others, Leibniz remained alert for opportunities to establish new contacts, at times mobilizing his correspondents to extend his circle of correspondents, not least in Germany: 'As soon as I will be in Berlin I will try to introduce you to know those you refer to in your letters.'[1296] He requested Justel put him in contact with the French astronomer Adrien Auzout,[1297] and Philipp with the famous antiquarian and epigraphic collector Marquard Gudius, whose reputation Leibniz considered equal to that of the Scaligers and the Saumaises and 'whose conversation he sought ardently'.[1298]

Although he rebuked Père Cherubim, a natural philosopher and author of *La nature et presage des Cometes* (1665), for seeking falsely to claim credit for the invention of a telescope (actually invented by the German Capuchin Anton von Rheita),[1299] and he insisted on crediting the discovery of phosphorus to its true author, Brand,[1300] Leibniz himself was not immune to occasionally plagiarizing ideas for his own purposes, especially from practitioners he considered socially inferior to himself,[1301] nor to exaggerated self-praise, referring as early as 1675, when he had yet to make most of his discoveries, to 'the renown

[1295] Schuller to Leibniz, 19/29 March 1678, A III, 2: 539: 'Mr Mohr was recently said to be still living in France. Becher went to Osnabrück on account of matters not unkown to me.'
[1296] Heino Heinrich von Fleming to Leibniz, 22 February, A, I, 2: 323.
[1297] Leibniz to Justel, April 1678, A I, 2: 337: 'I wish to be known to Mons. Auzout by your recommendation.'
[1298] Leibniz to Philipp, 25 February/7 March 1679, A I, 2: 432.
[1299] See Hansen to Leibniz, 22 November 1677, A III, 2: 273.
[1300] Leibniz to La Rocque, mid-March 1678, A III, 2: 355: 'Krafft doesn't claim credit for what others have done. I have been assured that only he still has the real secret. I take no part in it, and I tell you this only because it is just to take care that no harm be done to whose who are fortunate enough to be successful in something considerable after having worked all their lives. I saw that it was a luminous matter.' Leibniz also made clear to Oldenburg as early as 1677 that Kunckel was not the discoverer of phosphorus: Leibniz to Oldenburg, 3/13 Mai 1677, A III, 2: 117.
[1301] See Wakefield (2010).

that I have acquired in the courts of Princes and among a good part of the learned and illustrious of Europe.'[1302]

Leibniz had a robust sense of his worth, and even after his departure from Paris he was keen to uphold a certain image of himself as enjoying special favours from and proximity to the duke in Hanover. This self-presentation may have contributed to the high esteem in which he was held by many of his correspondents. Justel, for instance, along with other *'curieux'* never failed to 'render justice to [his] merits[1303] and wrote in the autumn of 1677 that what Leibniz had conceived in the field of natural law, by providing definitions on which everyone could agree, 'exceeded anything that was available on the topic'.[1304] Thévenot for his part inquired after Leibniz's work in the hope of incorporating some of his findings into his own work: 'I would like to know which of your good and great designs you are working on now, what you have advanced in the knowledge of nature since you departed from here, if you have discovered a few findings that I could add to my own volume. This is the answer, the memory, and the compliment that I ask you.'[1305] The same Thévenot had also lavished praise on Leibniz on another occasion, praising to Hansen 'the strength of [his] genius, and of 'the surprising effects of [his] inventions, the most advantageous of which [would] undoubtedly be the execution of perpetual light.'[1306] Leibniz's erudition was widely celebrated, with Christian Walter 'having recourse to [him] a person in whom alone [he could find] what Italy and France produce[d] day by day that [was] rarer.'[1307] In his various correspondences, Leibniz was described as a 'generous' soul,[1308] disseminating 'tenderness'

[1302] Leibniz to Johann Friedrich, February 1677, A I, 2: 19.
[1303] Hansen to Leibniz, A I, 2: 272.
[1304] Justel to Leibniz, 4 October 1677, A I, 2: 297.
[1305] Thevenot to Leibniz, 12 January 1678, A I, 1: 309.
[1306] Hansen to Leibniz, 24 January 1678, A I, 2: 312.
[1307] Christian Walther to Leibniz, 28 June 1677, A III, 2: 184.
[1308] Christian Water to Leibniz, 20/30 January 1678, A III, 2: 334.

in his letters, a man 'of profound knowledge, and rare merits'[1309] who was remembered fondly.[1310]

While some of these statements should obviously be taken with a grain of salt and merely abide by the conventions of intellectual discourse, collectively they support the idea that Leibniz's correspondents' appreciation of his (real or perceived) position in Hanover seemed to coexist with genuine admiration for him as a valuable member of the Republic of Letters.

Some of Leibniz's correspondents were keen to point out that their letter writing went beyond the requirements of polite epistolarity remarking that 'if our letters were based only on a reciprocal exchange of fine curiosities, I confess to you in earnest that I would have abandoned it. For you have told me in your March 25 letter of various things, which I could not undertake to match without the greatest co-operation in the world. I undertake it however, with disappointment and confusion, with pleasure, to show you that this business proceeds from a sincere friendship, and on my side, from a deep reverence for your merit.'[1311]

As he entered the service of the duke of Hanover he acted as a counsellor advising him on various purveyors of knowledge and ventures. Leibniz henceforth positioned himself as a gatekeeper who would seek to recruit inventors in the service of his employer and induce them to 'discover' themselves—ironically, a position he had once occupied. From his place in the Republic of letters and at court, Leibniz was solicited to recommend and put people in contact. But by positioning himself as a gatekeeper at the court of Hanover, however unofficially, on scientific and technological matters, he also attracted demands and requests

[1309] Hansen to Leibniz, 10 July 1679, A I, 2: 494.
[1310] Hansen to Leibniz, 28 June 1677, A I, 2: 276.
[1311] Christian Walther to Leibniz, 27 April 1678, A III, 2: 411.

from a wide range of people, including Georg Schuller,[1312] to help them secure a position at court. When Eckhard was forced to leave the University of Rinteln in Lower Saxony in 1678, Leibniz was able to intervene with the duke to obtain for Eckhard the post of pastor and superintendent in Jeinsen.

The German medical physician Kornmann, for his part, had presented the duke with a list of inventions and remedies.[1313] He described himself to Leibniz as a 'curious man' who had 'invested much time and money' in his labours but 'expected nothing'; he would nonetheless happily serve the duke as his personal physician and provide the recipe for moxa, a Chinese technique, in exchange for an 'honorific title' and 'protection' as well as the freedom to 'travel to [continue] learn[ing] curiosities'.[1314] Crafft, some of whose research Leibniz had presented to the duke during the summer of 1677,[1315] hoped that the ruler would promote him on account of the growing 'esteem' in which Leibniz himself was held.[1316] Sometimes Leibniz on his own account promoted or sought to recruit various individuals who he believed would be assets to the Hanoverian court, one of the most significant examples being the mathematician Tschirnhaus:

> I have always considered you to be one of the most deserving of esteemed people I know whose genius is for things that are genuinely beautiful and solid, and who is capable of realizing them. This is why I wanted you to be in this country and I took it upon myself to tell my master about you in terms befitting your merits… and there is an appearance that having come here, and having made you known, you will be received as a gentleman of the court.[1317]

Leibniz touted the surprising benefits that Tschirnhaus would accrue from being in the service of a remarkable prince of 'great genius and sound judgment' with an inclination to 'delve into things to the fullest' and a 'taste for beautiful things', a range of 'sciences' such

[1312] Georg Schuller to Leibniz, 6 July 1678, A I, 2: 15.
[1313] Leibniz to Kornmann, 8 September 1678, A III, 2: 491.
[1314] Kornmann to Leibniz, 4 October 1678, A III, 2: 511.
[1315] Leibniz to Crafft, end of July 1677, A III, 2: 201.
[1316] Crafft to Leibniz, 7 December 1677, A III, 2: 289.
[1317] Leibniz to Tschirnhaus, January/February 1678, A III, 2: 340-41.

as mechanics and 'people of merit' and who had made time for the sciences: 'there is hardly any science or curiosity of which he has no knowledge.' It was not only because of the duke but the court as a whole, replete with able ministers and 'such skilled' persons of 'deep erudition' and learning such as Molanus, Fleming, Steno, and Hugo that Tschirnhaus would 'be glad to have come here'.[1318]

Leibniz regaled the editors of scholarly publications such as the *Journal des sçavants* with his discoveries, which were considered of great value at least in some quarters. He determined the value of each piece of information he received, and then repackaged and disseminated it back to the network as he deemed appropriate,[1319] thereby simultaneously advancing the public good and his private interests. According to the Abbé de la Roque, its editor, news of Leibniz's anomalous deer with an excrescence on its head seemed to have made a bit of a splash at court: 'I took it myself to Monseigneur the Dauphin who regularly reads my newspapers. . . . Never has a gift been more appropriate for making a splash since the prince was about to give an audience… or received with more marks of esteem. M. de Montausier and M. de Condom, one of whom is governor, as you know, and the other preceptor of this young prince have been charmed, and we still only speak of this deer at court.'[1320]

Leibniz's 'learned thoughts', which La Rocque requested he communicate 'from time to time in order to keep them informed in his journal',[1321] seem to have appeared to the latter as the perfect vehicle to gain access—and ingratiate himself to higher circles: 'The satisfaction that Mr l'abbé de la Roque testifies to me at having entered into a business with you is so great ... he paid court to Monseigneur le dauphin by presenting him with the story

[1318] Leibniz to Tschirnhaus, January/February 1678, A III, 2: 341.
[1319] Gädeke (2005), pp. 293, 297.
[1320] La Rocque to Leibniz, 10 July 1677, A III, 2: 188. See Ariew (1998).
[1321] Hansen to Leibniz, 12 July 1677, A I, 2: 279.

the deer'.[1322] Dedicating his article to 'such a great prince … greater than all the others … who … applies himself to perfecting and showing the wonders of physics and mechanics', the Abbé de la Roque seems to have been especially eager to cultivate a relationship with the duke and court of Hanover through Leibniz.[1323] Leibniz was all too happy to take advantage of La Roque's eagerness to ingratiate and render himself useful to the duke, in order to obtain '[the latter's] protection':[1324]

> You would however make the duke happy and oblige me greatly, if you would share from time to time, and more often than you deem appropriate, any curious piece of information from Paris or elsewhere. For you frequent people of the mind, among whom you hold such a considerable rank … and who offer you an infinite number of observations which do not find their way in your journal; I hope you will do us this special grace … and you will have reason to receive praise from us.[1325]

In addition to promoting Leibniz in his journal[1326] and sending the duke all his journals,[1327] La Roque kept Leibniz and the duke abreast of various news, including that which did not appear in his journal[1328] and reports of various French inventors or craftsmen,[1329] such as a skilled Parisian gentleman who had devised a 'mechanical dove that could fly thirty feet', a musket that operated 'without powder or air compression', and 'a machine to help the handicapped work', and had harnessed the principles of hydraulics for manufacturing purposes in ways that he was due to present at the Académie.[1330] In exchange, La Roque hoped to locate a bookseller in Frankfurt who could publish his journal through the mediation of Hansen and Leibniz.[1331] Such an 'advantageous commerce'[1332] was

[1322] Hansen to Leibniz, 12 July 1677, A I, 2: 279.
[1323] La Rocque to Leibniz, 10 July 1677, A III, 2: 188.
[1324] La Rocque to Johann Friedrich, end October 1678, A III, 2: 527.
[1325] La Rocque to Leibniz, 27 September 1677, A III, 2: 224.
[1326] Ibid.: 'I have not, however, failed to render you in the newspapers from time to time the justice which is due to you.'
[1327] Leibniz to Johann Friedrich, 29 March/8 April 1679, A I, 2: 157.
[1328] La Rocque to Leibniz, 9/19 December 1678, A III, 2: 561.
[1329] La Rocque to Leibniz, 3 June 1678, A III, 2 : 456.
[1330] Ibid.
[1331] Hansen to Leibniz, 16 August 1677, A, I, 2: 290.
[1332] La Rocque to Leibniz, 3 June 1678, A, III, 2 : 456.

obviously not disinterested and La Roque's aims and attempts to ingratiate himself with the duke through Leibniz struck the latter as transparent, leading him to deride them on at least on one occasion.[1333] Leibniz clearly had limited use for La Roque, even confiding that the latter was 'not as mentally powerful as Mons. L'Abbé Gallois who had since joined Colbert's service'.[1334] Still, in an economy of exchange and mutual use, Leibniz was happy to extract whatever he could from La Roque. Whether any of this would actually result in tangible collaborations or advancement was an altogether different matter, as Leibniz would himself soon find out.

Within this vision of learning, Leibniz ascribed a key role to rulers in the advancement of the sciences,[1335] particularly in financing and guiding inventors: 'The will of a monarch alone would be more effective than all our Methods and all our knowledge' and could 'enable us to obtain in a few years what would otherwise have taken several centuries'.[1336] Scientific improvement could be promoted through the beneficial alliance of inventors and dedicated princes under peace-time conditions.[1337] In this context Louis XIV appeared as a model for the patronage of learning: only he was in 'the state and mood' to advance the sciences,[1338] and this made Leibniz all the more determined to seek some kind of affiliation with the Académie des Sciences.

5) Facing dead-ends in France

Instrumentalizing phosphorus: an impasse in France

[1333] Leibniz to Johann Friedrich, November 1678, A, I, 2: 99: 'Here is the letter from the abbé de la Roque, author of the *Journal des savants*, for His Majesty. I add the one he sent me, so that You can better judge his intention. I find it quite pleasant that people defend themselves of desiring what they so obviously do, and every time this happens I am reminded of George Dandin's maid who held out her apron while pretending to refuse the money that her mistress's *galant* offered her.'
[1334] Leibniz to Christian Philipp, 6/16 December 1678, A I, 2: 393.
[1335] Wahl (2015), p. 238.
[1336] A VI, 4: p. 955 (no. 204).
[1337] Wahl (2015), p. 240.
[1338] Leibniz to Jean Gallois, mid-October, A III, 3: 726.

By late 1677 Leibniz had settled in his new role in Hanover and could not have been more content—or so he claimed. To Gallois he painted a rosy picture of his position and life at court, where, as a freshly appointed court counsellor,[1339] he was valued and benefited from several advantages, including a higher stipend than the one initially offered by the duke as well as accommodation and dining rights. Crucially, too, Leibniz boasted of the company of and close proximity to a prince 'whose extraordinary talents and great virtues caused a stir in the world', and of whose 'goodness and generosity' he was a beneficiary. This prince, contrary to rumours, had not 'deviated from the straight path' but demonstrated 'discernment that went beyond what one could expect'[1340] and was guided not by interest but 'the public good',[1341] which had led him to extend to Leibniz an unusual degree of freedom to attend to his own scientific pursuits.[1342]

It is, however, difficult to escape the impression that Leibniz had mixed feelings about his new life in Hanover. In his letters to Gallois, he looked back at his time in Paris nostalgically, conceding that he regretted having had to leave, his stay having been 'cut short before it had been possible to pick its fruits',[1343] but that he had had little other choice.[1344] Had he not grasped this opportunity in Hanover, he 'ran the risk of giving up the certain for that which still remained uncertain'.[1345] In Paris, Leibniz had had the 'honour of making the

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[1339] Leibniz to Jean Gallois, first half of December 1677, A, III, 2: 294.
[1340] Leibniz to Jean Gallois, September 1677, A III, 2: 226.
[1341] Ibid.
[1342] Leibniz to Jean Gallois, first half of December 1677, A III, 2: 294; Leibniz to Jean Gallois, first half of December 1677, A III, 2: 566.
[1343] Leibniz to Jean Gallois, first half of December 1677, A III, 2: 294.
[1344] Leibniz an Jean Gallois, September 1677, A III, 2: 226: 'In fact sir, I blush when I think of the pain I gave to Mons. the Duc de Chevreuse and you: and yet you were kind enough not only to favour me, but even to invite me to seek your assistance again. The whole mistake I made was that I did not do sooner what I had to do in the end, because I would not have bothered you so often, and I would not have wasted so much time…. Because the same retreat where I am now was already open to me a long time ago. But indeed I do not regret having stayed so long in Paris since I got to know a few people whose extraordinary merit I will always honor, among whom you are one of foremost, which one can say without without flattering you. Perhaps the time will come that your kindness will not be entirely without effect, that the goodwill I enjoyed will be recognized, and the damage that I suffered through my fault will be repaired.'
[1345] Leibniz to Jean Gallois, first half of December 1677, A III, 2: 293.

acquaintance of people of great merit, including [Gallois]', and this had brought him 'consolation' for a time that may otherwise have been considered 'lost',[1346] especially since his attempt to join the Académie on the strength of his mathematical merits and calculating machine had failed,[1347] despite Huygens's and Gallois's support. It was now all about getting back into conversation, especially with Jean-Baptiste Colbert via his intermediaries, and managing to wrest some kind of associate membership from the Académie. Leibniz had written to Duke Johann Friedrich that he had 'always carefully avoided any attachment other than that of the duke since [he] owe[d] everything to his goodness alone'.[1348] This statement, however, seems to be contradicted by Leibniz's zealous effort to maintain personal and working connections to the Parisian scientific and courtly circles, not only by pitching some of his own proposals but—in a series of letters to Gallois, Chevreuse, Huygens, and even Louis XIV's almighty minister Colbert—by positioning himself as a conveyor of promising and potentially lucrative ventures.

The discovery of phosphorus, whose news he also shared with the Duc de Chevreuse and on which he had published an article in the *Journal des Sçavans*, presented Leibniz with a perfect opportunity. This matter, Leibniz explained, emitted 'great sparks of light' at night, and was bound to yield an 'infinity of beautiful applications' given the correct 'encouragement' and the attribution of a 'reward commensurate with a discovery of this magnitude'.[1349] This 'new species of art', as Leibniz wrote to Gallois, was 'well worth the perpetual light sought for so many centuries', could 'compete with the most beautiful

[1346] Ibid.

[1347] Leibniz to Huygens, end of November/beginning of December 1679, A III, 2: 903: 'My arithmetic *quadrature* has been cleared up and demonstrated: I have kept it for the *académie*, in the eventuality that its author be somewhat placed in relation to it, or that this treaty be deemed worthy enough of being placed with more important ones.…'

[1348] Leibniz to Johann Friedrich, autumn 1678, A, I, 2: 85.

[1349] Leibniz to the duc de Chevreuse, 19 December 1678, A, III, 2: 578.

productions of nature'[1350] and would help reveal 'a new country for us', especially if placed in the hands of a king whom Leibniz perceived as directing the advancement of the sciences.[1351]

When vaunting the merits and potentialities of phosphorus for the French state in several letters to Gallois, Leibniz once again set out to establish himself as a potential asset to the court of France, where his research on motion[1352] and the quadrature[1353] as well as his project for a universal characteristic[1354] had been widely praised. Now he presented himself as a privileged purveyor of information, 'faithfully relaying back' to France, and ultimately for Colbert's consideration,[1355] news of various 'curiosities' from across Europe.[1356] This included news about a plant-based elixir (*eau vulnéraire*) that healed wounds in the promptest fashion,[1357] and the manufacturing technique (mentioned earlier) that allowed ten silk stockings to be produced for the price of one.[1358] In dioptrics too—a topic of particular interest to Colbert[1359]—Leibniz had been able to identify a man able to build microscopes 'in one day', thereby potentially rendering discoveries 'common and inexpensive', especially in the hands of a scientific academy.

[1350] Leibniz to Jean Gallois, September 1678, A, III, 2: 506.

[1351] 'In fact, it is the king's greatness to properly recognize beautiful discoveries, and to encourage the inventors of whatever country they may be, since his glory is for all countries and he has been entrusted with the welfare of mankind.' A III, 2: 580. Charlotte Wahl speaks of phosphorus's 'symbolic capital' in Wahl (2015), p. 234: 'Because of their sensational effects and the role played by light symbolism in the mythology and self-representation of the princes, phosphorus seemed ideally suited to inspire princes to science'.

[1352] Leibniz to Jean Gallois, September 1677, A III, 2: 230: 'I work sometimes in the field of movement, and I cannot find an author who has not enunciated faulty rules, as I can demonstrate, and even verify by experience.'

[1353] Leibniz to Gallois, first half of December 1677, A III, 2: 295: 'I left my Manuscript on the quadrature in Paris. Mons. Soudry, no doubt a clever man in Geometry and mechanics, promised to arrange its printing. I beg you to facilitate this.…'

[1354] Leibniz to Gallois, 21 July 1679, A II, 1: 733.

[1355] Leibniz to Gallois, first half of December 1677, A III, 2: 295: 'I do not know if Monsieur Colbert would consider this at the present moment.'

[1356] Leibniz to Gallois, 21 July 1679, A III, 2: 789.

[1357] Leibniz to Gallois, September 1677, A III, 2: 230 : 'A healing water ('*eau vulneraire'*) made in these countries, cures and soothes the pain with a marvelous speed.'

[1358] Leibniz to Gallois, first half of December 1677, A III, 2: 294.

[1359] Leibniz to Gallois, September 1677, A III, 2: 230.

Emboldened, as he stated, only because Gallois had led him to believe that he might in time be rewarded and recognized for his talents,[1360] Leibniz suggested that it was appropriate for the Académie to 'make an exception' in his case, since he had 'laboured with some success to deserve a post which he had been on the verge of securing' and for which he had been 'desired by its members', but had been deprived of only 'on account of the iniquity of the time'.[1361] Leibniz felt all the more entitled to such a 'special treatment'[1362] because the king had in the past 'honoured some individuals of repute in Germany with marks of his kindness', some of whom even 'had no such relation with the academy and did no work',[1363] were 'of the same strength' or 'as well known in Paris as [Leibniz himself], where [he] had distinguished [him]self with some applause'[1364]—not, he quickly interjected in a weak attempt to maintain a semblance of modesty, that he 'place[d] [himself] among the ranks of these gentlemen'. Having received no response to his letters, Leibniz renewed his claim a few months later, laying it even on thicker than before: he wrote in the hope of 'obtaining the abolition of the crime of silence and ingratitude to which [Gallois] may already have condemned [him]', and he thanked Gallois for 'suffering his importunities' and 'going to so much trouble for [his] sake'.[1365] Leibniz described himself as a 'stranger, a man who was of no use to [him]', redeemed solely by Gallois's opinion that he could 'contribute something to the advancement of science', an accomplishment that he had had unfortunately to leave unfinished in Paris.[1366] But he hoped, once again, that Gallois's kindness would 'find some favourable expedient' to make all of his efforts to support Leibniz finally

[1360] Leibniz to Gallois, September 1678, A III, 2: 505: 'You gave me to understand, when I left that there might one day present itself some opportunity which would turn to my honor and advantage even more than what was then resolved.'
[1361] Leibniz to Gallois, September 1678, A III, 2: 505.
[1362] Leibniz to Gallois, 21 July 1679, A III, 2: 789.
[1363] Leibniz to Gallois, 19 December 1678, A III, 2: 570.
[1364] Leibniz to Gallois, September 1678, A III, 2: 505.
[1365] Leibniz to Gallois, 19 December 1678, A III, 2: 570.
[1366] Ibid.

worthwhile.[1367] If permitted, Leibniz would 'immortalize' phosphorus, of which he had a sample and whose potential he could demonstrate to be one of the 'more important discoveries of the royal academy'.[1368] In the summer of 1679, having still received no reply in six months, Leibniz expressed yet more explicitly his aspiration to gain some kind of associate membership, from which position he would, like his peers, be able to 'celebrate the kindness and discernment' of the French king and his minister, especially now that 'serenity ha[d] returned to our hemisphere' and that there was 'reason to believe that the rays of benign care [would] revive the sciences'.[1369] Not receiving a royal pension would risk 'damaging [his] reputation'. Leibniz dared to trouble Gallois, who was in 'a position to promote beautiful things', only out of a 'sense of gratitude' and because, he claimed, he felt 'compelled to do so'.[1370] Despite his plea, Leibniz was careful to defer to Gallois's discretion and ability to 'judge things';[1371] Leibniz presented himself as a mere mouthpiece[1372] without any personal stake who simply relayed information, and whose sole interest consisted in serving the 'public good'.[1373] In fact, as with all the information he relayed back to Gallois and Colbert, Leibniz presented himself as an unambitious and disinterested messenger[1374] with little competence or relevant opinion[1375] of his own—so useless in fact that, were it not

[1367] Ibid.
[1368] Ibid.
[1369] Leibniz to Gallois, 21 July 1679, A III, 2: 789.
[1370] Leibniz to Gallois, 19 December 1678, A III, 2: 570.
[1371] Leibniz to Jean Gallois, first half of December 1677, A III, 2: 295: 'I'm sending you all this, sir, because I know you know what to judge these things.'
[1372] Leibniz to Jean Gallois, first half of December 1677, A III, 2: 295.
[1373] Ibid: 'For me, I have no other interest than that of public satisfaction.'
[1374] Ibid, 'The author has asked me to write to you, and I am serving him only as an interpreter.'
[1375] Leibniz to Gallois, first half of December 1677, A, III, 2: 294 : 'You may have seen, sir, in the paper which I wrote Mons de la Rocque of a material that has already shone for two years, and throws great bursts of light at night. I admire this phenomenon, and I hold that it is promises the perpetual light sought for so many centuries. It seems to me that he is discovering a new country for us, and that it is susceptible of an infinite number of wonderful applications. But it is only up to a great King to benefit the public, for the inventor needs to be encouraged. I do not know what one would do in another time to reward a discovery of this consequence. But today I recognize that we need more urgent care. However, I leave it to you to judge, Sir, whether we can still reflect on things of this nature. The author has asked me to write to you, and I am only serving as an interpreter.'

for these curiosities, the letter would have been 'left blank'. Leibniz calculated that he 'would be remembered' in Paris in this manner,[1376] and perhaps even invited to showcase 'the little knowledge he had'.[1377] Alternating between gratitude, deference, and self-abnegation, Leibniz sought to maintain his connection with Gallois[1378] and through him with Colbert—the real addressee of Leibniz's letters—in whose 'good graces' Leibniz begged Gallois to 'keep him'.[1379]

From 1679 onward, Leibniz's determination to find a position in, or at least some sort of connection to, France seems to have acquired greater urgency. Now that he had left Paris, Leibniz was desperate to maintain a connection to the Académie—despite his working for a foreign power—and phosphorus appeared to him as providing the ideal means of doing so. After failing to hear from Gallois or Chevreuse, and drafting a letter (not sent) in early September 1679 to the Académie in which he promoted phosphorus's remarkable qualities and promised its composition,[1380] Leibniz turned to his former teacher Christiaan Huygens in a last ditch attempt at gaining a foothold in the prestigious French institution.

Failing recognition of his mathematical innovations by the members of the Académie, Leibniz set out once again to instrumentalize the discovery of phosphorus, promptly sending Huygens a sample wrapped up in wax. 'Such a piece', Leibniz explained to his trusted mentor, would 'suffice for many experiences, for the least particle [was] capable of rendering things radiant' and 'glistening for several hours.'[1381] Phosphorus, too, presented

[1376] Leibniz to Gallois, September 1678, A III, 2: 506.
[1377] Leibniz to the duc de Chevreuse, 19 December 1678, A III, 2: 580.
[1378] On several occasions Leibniz reiterated his indebtedness for the 'goodness that [Gallois] lavished on him', which he hoped Gallois would not come to regret even though, because of Leibniz's departure, 'time had prevented them from seeing its fruits' (to Gallois, first half of December 1677, A III, 2: 295).
[1379] Ibid.
[1380] Leibniz to the Académie Royale des Sciences, first half of September 1679, A III, 2: 835.
[1381] Ibid: 'Such a piece can suffice for many experiences, for the smallest particle makes things radiant; and when handled with one's hands, they remain shiny for several hours, and yet there is nothing visible on them, which appears in the light of day.'

some promising military applications by lighting up gunpowder.[1382] Not only that, but this 'perpetual light' displayed unexpected and remarkable potentialities by helping to conceal handwriting, as it was 'possible to write with [it] in glossy letters' that appeared again after being rubbed a few hours after 'appearing dead'.[1383] Leibniz, who claimed to have begun production, 'beg[ged] Huygens to demonstrate [it] to Mons. Colbert, the Duc de Chevreuse, and at the academy'[1384] in the hope that the 'communication of the secret of perpetual light', which Leibniz offered, may serve to 'facilitate what [he had] reason to hope for one day'. In a later letter, Leibniz reiterated his plea for Huygens's intercession on his behalf in re-establishing some sort of connection with the Académie, even remotely from Germany, either on the basis of his mathematical merits or as a kind of scientific informant who would relay useful information in a timely fashion: 'Without even speaking of some mathematical discoveries of my own (in particular of my quadrature whose proof I have completed, as well as many other significant propositions, and which the Académie will be able to adopt), I am perhaps able to send you … what is most important happening in the sciences in Germany, and which you would otherwise discover too late or not at all.' Such a 'regulated correspondence' (*correspondence réglée*) would help initiate a new kind of rapport with the Académie whereby Leibniz 'could inform [it] from time to time of things that deserve[d] to be known'[1385]—including, he still hoped, of his new theory of a relational space, the *analysis situs*,[1386] that he had conjured up and would 'one day produce extraordinary consequences',

[1382] Leibniz to Huygens, end of November/early December, A III, 2: 893: 'Gunpowder is easily lit in the sun and by movement with a little of this phosphorus; to ignite gunpowder, all you have to do is take a piece the size of a pinhead or less… mix this little piece with crushed powder and grind the whole using a knife for example… and the powder will soon ignite.'
[1383] Ibid.
[1384] Leibniz to Huygens, 8 September 1679, A III, 2: 848: 'I beg you to show the effect to Mons. Colbert, the Duc de Chevreuse and at the academy. If you find that it is well received, I am happy to communicate the composition to the academy, even if obtaining it was very difficult for me.'
[1385] Leibniz to Huygens, 8 September 1679, A III, 2: 848.
[1386] On this see De Risi (2014).

as well as various other 'considerable experiments.'[1387] In this manner, Leibniz would be able to 'belong to the Académie in some sense whilst not being physically present.'

Huygens answered Leibniz a few days later and seemed better disposed to assist him than Gallois had. After apologizing for his silence, he explained that he had been writing to Colbert, who was then out of town,[1388] and actively engaged trying to promote Leibniz at the Académie, where he had not only broken the news of phosphorus just a few days after receiving the sample, but had even demonstrated it publicly.[1389] Like Leibniz, Huygens also recognized phosphorus's possible military applications, which were bound to attract Colbert's interest. All of this, however, was strictly contingent on Leibniz's set of instructions being accurate and the demonstration before members of the Académie and Colbert succeeding: 'I have a great desire to experiment with gunpowder, but I hold this matter to be so precious that before having another sample I cannot resolve myself to consume what I have. Besides wanting to perform this experiment before Mr Colbert, I would like to be sure that it will not fail. And to this effect, I beg you to explain to me more particularly the way.'[1390]

After several failed attempts and dashed promises, Leibniz's supposed discovery was greeted with considerable enthusiasm by the members of the Académie,[1391] especially since Leibniz possessed its 'true composition and had even experimented with it' and only he

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[1387] Leibniz to Huygens, 8 September 1679, A III, 2: 850. Leibniz was explicit in his ambitions: 'It may well be that what I have done in other subjects might still seem appropriate to count, one day, among the things which belong to the academy and particularly my arithmetic quadrature of which I even left the manuscript in Paris, in this consideration in which it is demonstrated in the manner of geometers, with a number of considerable propositions, which are connected to it.'

[1388] Huygens to Leibniz, 22 November 1679, A, III, 2: 887.

[1389] Ibid.: 'I have placed the shiny piece as you have told me in a small flask with a little water, and have shown the effect to many curious people, as well as last Wednesday to the gentlemen of our academy, who assembled for a first time since I possessed this rarity, having ceased because of the holidays… I also gave them an account of the phenomena I had observed, the first of which was that, having opened your package, I found that the little bladder where the matter had been enclosed…'

[1390] Ibid.

[1391] Ibid.: 'When I told these gentlemen that you were offering me the recipe for the composition of this fire, they all begged me to assure you that they wished it well and would be much obliged.'

currently seemed in a position to be able 'fully to satisfy [their] curiosity and ensure the success of the operation'.[1392] As the prospect of demonstration before Colbert and the Académie drew nearer, however, Leibniz made a curious suggestion as to how Huygens should proceed, namely by performing the experiment without revealing Leibniz's name, in the interest of not making the latter's renewed request for membership too obtrusive. Another, more plausible explanation is that Leibniz did not wish this new venture to risk being tainted by his past series of failed promises, hoping instead that it would benefit from Huygens's authority and in the process eventually help rehabilitate him:

> If you find it convenient to show the experience of this new fire to Mr. Colbert, and if you find it appropriate to take this opportunity to raise my interests, I would like that, without mentioning my name, you indicate that this curiosity comes from a German well versed in such matters, as well as geometry and mechanics, who offers to communicate their composition; and that he offers to maintain correspondence with the Academy, and to tell them of several beautiful curiosities, which are discovered from time to time in Germany, and which he has the opportunity to learn; so long as they extend him the honour of considering him in some way part of the Royal Academy with some appointment.[1393]

It was imperative that Leibniz's name be mentioned only once the experiment had succeeded, he explained, so that Colbert, who had already heard about Leibniz (as well as his various, unevenly successful schemes) and frequently received requests from him, not be prejudiced against it. Crucially, it was necessary not to let this novelty's potential be dashed by 'some disgust' at hearing the same proposal again.[1394] 'For [Monsieur Colbert] having often heard my name in times not suited to it and grown tired of it, will be repelled if he remembers it. Because great men having initially had difficulties with one particular matter do not give up their opinion easily and in those cases one succeeds only by proposing it as brand new. I hope that if the Duc de Chevreuse and the Abbé Gallois take up this matter,

[1392] Huygens to Leibniz, 22 November 1679, A III, 2: 888.
[1393] Leibniz to Huygens, end of November/beginning of December, A III, 2: 894.
[1394] Ibid.

they also be warned to refrain from presenting Colbert with an old request.'[1395] In his final letter to Huygens on this matter, sensing Huygens's uneasiness, Leibniz laid out the reasoning behind his previous comment and, recognizing perhaps that he had overstepped the mark, qualified it, ultimately leaving the matter up to Huygens's best judgement—and hoping, too, that the latter would overlook his somewhat embarrassing previous misstep:

> With regard to my last note You remain at liberty to act as you see fit. I thought that a new solicitation would be more welcome than an old one, and that it would be easier to sound out their intentions… If it is possible to refrain from mentioning my name and to speak in general terms, it would good to do so: but if this turns out to be impossible, it is better to be honest if the name is indeed requested. Please dear Sir, have the kindness to keep this opinion to yourself: my confidence in your benevolence has allowed me to raise this point.[1396]

Huygens did in fact go on to experiment with phosphorus before the Académie, but without being able to reproduce the effects described by Leibniz,[1397] whose attempts to become affiliated with the Académie remained unsuccessful, at least until 1699. After Leibniz's letter of 26 January 1680, an eight-year hiatus in his correspondence with Huygens followed, mainly on account of Huygens's illness.[1398] In fact, despite his letters to Leibniz, an analysis of Huygens's voluminous correspondence in the following weeks and months does not reveal a single mention of Leibniz or his work: perhaps Leibniz was not as important to Huygens as he thought himself to be. Leibniz's eagerness and insistence—and one dares say his presumption and the pressure he may have placed on Huygens to assist him—compounded with the often unintelligible and unrealizable projects he submitted to Huygens,[1399] not to mention the increasingly dubious pretexts invoked by Leibniz, is likely finally to have exhausted both parties. Moreover, the unsuccessful demonstration of

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[1395] Leibniz to Huygens, end of November/beginning of December, A III, 2: 901.
[1396] Leibniz to Huygens, 1/11 December 1679, A III, 2: 909.
[1397] Leibniz to Huygens, 8 September 1679, A III, 2: 847–50; end November/beginning December, A III, 2: 899-902; Leibniz to Huygens, 11 Januar 1689, A III, 3: 48.
[1398] It is interesting to note however that Huygens barely mentions Leibniz in his correspondence with others during those years.
[1399] Salomon-Bayet (1978), p. 169, speaks of a 'laborious dialogue' and of Leibniz being 'clumsily skilled' (*habile malhabile*).

phosphorus at the Académie may have led Leibniz to retreat from the correspondence in embarrassment.[1400] Their correspondence would only resume in 1688—when they were on more equal terms—after Huygens's solution to the problem of isochromic curves was published in the *Nouvelles de la République des Lettres*. From this point they exchanged letters on a number of scientific themes, including the integral calculus, the problem of the structure of the universe, and the theory of light.[1401]

That his successive failures with Gallois and Huygens did not deter Leibniz from going to the very top reveals much about his personality. Far from being discouraged, Leibniz, possibly in a mix of desperation and extreme tenacity, in December 1679 addressed directly to Colbert a letter that may have been intended to coincide with Huygens's presentation of phosphorus at the Académie and was certainly intended to remind the minister of Leibniz's merits.[1402] His discoveries, including offering his 'quadrature of the circle' to this century-long problem,[1403] which had 'fructified' since being 'born during his time in France', had 'been received and acknowledged as legitimate by some outstanding savants'. Thus he had, he told Colbert pointedly, 'earned the right not to be abandoned'.[1404] Geometry being the 'spirit of the Sciences', it was 'of vital interest to the Republic that Geometry not be neglected, for it sharpen[ed] the minds and [taught] to argue strictly'. France had done much for the sciences: 'the Century owe[d] the renaissance of Geometry to [it], since your Viète and Descartes have resurrected the art of inventing itself, hidden by the ancients like a holy fire' and it took great care to 'preserve this glory' by 'request[ing], 'prais[ing]', and 'support[ing] so many excellent specimen of ingenious minds'.[1405]

[1400] Heinekamp (1981), p. 100.
[1401] Ibid.
[1402] Leibniz to Colbert, first half of October 1682, A, III, 3: 718-21. I was unable to find any reference to Leibniz in Colbert's private papers.
[1403] On Leibniz's *De quadratura arithemetica* (1676; text in A VII, 6: 520–626), see Crippa (2019), pp. 93–156.
[1404] Leibniz to Colbert, December 1679, A III, 2: 919.
[1405] Ibid.

Colbert's lack of response did not discourage Leibniz permanently, but merely prompted him to draft another letter three years later. This time Leibniz opted for a different approach: he now undertook, with Colbert's permission, to expand the bounds of knowledge with a study of soils and stones, plants and animals—objects of which man had only had a superficial grasp and whose comprehension yet 'naturally preceded' all other forms of knowledge. Such an 'up-close' examination of the material, something he was then ideally positioned to undertake, would help grasp 'mechanical generation' and 'the principles' from which everything else derived.[1406] From his favourable position in Germany, Leibniz offered himself as an instrument towards the accomplishment of Louis XIV's metaphysical destiny, in the advancement of the sciences and the general welfare of mankind, to which all 'civilized peoples on earth and rational centuries to come' were indebted and on which knowledge otherwise 'impenetrable to men'—including 'the secret of the heavens, the magnitude of the earth, and the measure of time'—had been bestowed.

Leibniz would not gain admittance to the Académie—in fact, it is uncertain that he received replies to any of his letters to either Gallois or Huygens. A mere two years later, however, Ehrenfried Walther von Tschirnhaus would be admitted to the Académie on the strength of Colbert's recommendation and his recipe for the composition of phosphorus, which he had requested from Leibniz.[1407] The Académie's decision not to grant Leibniz membership has traditionally been ascribed to his Protestant faith or German nationality.[1408] While these explanations are both perfectly plausible, I would like to suggest that, at this stage in his life and career, Leibniz, with his various unsuccessful schemes, lack of an outstanding track record in the sciences, suspicious loyalties, and unorthodox ways of

[1406] Leibniz to Colbert, first half of 1682, A III, 3: 721.
[1407] Prinzler (1993), p. 12.
[1408] For example, Antognazza (2009), p. 174. He was eventually elected in 1700.

proceeding, was perhaps not the most desirable candidate in the eyes of the prickly and demanding Colbert, but rather someone to be used but ultimately kept at a distance.

The period of remarkable innovation that had characterized Leibniz's life since his return from Paris came to a close with the death of Johann Friedrich in December 1679 and the accession of his brother Ernst August (1629–1698). In January 1680, Leibniz drafted a memorandum proposing a new range of enterprises, including a princely printing company, laboratories, and an archive that, ideally, he himself would be called upon to supervise. But all of these projects, as well as his scheme for an imperial society devoted to the study of natural sciences[1409]—within a decentralized Germany—were to remain unrealized. Although he sought to adapt his projects to the requirements and conventions of the court and to spearhead reform from within it, the transnational communication and collaboration he advocated remained largely anathema to court culture.[1410]

[1409] Klopp (1864–84), III, p. 329; cf. pp. 308-9.

[1410] See Ramati (1996), p. 451: 'Thus Leibniz's simultaneous professional socialization in the officialdom of princely courts and in the Republic of Letters prevented him from becoming a more successful participant in either community.'

CONCLUSION

Leibniz arrived in Paris in early March 1672 on a diplomatic mission on behalf of his patron, Johann Christian von Boineburg, aiming with his infamous 'Egyptian plan' to divert Louis XIV's plans for military expansion in Europe. Although ultimately unsuccessful, this mission allowed Leibniz to remain in Paris and take full advantage of the city's blossoming intellectual and scientific life. Leibniz's sojourn in Paris, at the time the most sophisticated and advanced centre of European culture, was a revelatory experience for him. There, he invented the calculus, took an active interest in the debates of his time, whether they concerned Orientalism, Cartesianism, or even the ongoing *Querelle des anciens et des modernes*. During his time in Paris, Leibniz revealed himself to be a veritable social animal, butterflying from one savant and project to the next and encountering a unique environment, his status as an outsider affording him a privileged vantage point on the Parisian intellectual scene and courtly circles, and especially on Jean-Baptiste Colbert's fledgling 'state Republic of Letters'. Both Leibniz and Colbert were administrators who thought in systems - the first as a savant, the second as a merchant - and Leibniz was a prime witness to Colbert's newly fashioned absolutist and centralized vision of *académies* as institutions of learning. Although Leibniz was not central to Colbert, he understood Colbert's project better than most at the time, hoping in fact to secure for himself a position in this network, ideally at the Académie des Sciences, from where, he was convinced, he would be able to implement his projects.

Leibniz's hope was disappointed, but his Paris period nonetheless acted as a catalyst, increasing his renown in the scholarly world. Furthermore, he and his ideas were so to speak, 'transmuted', helping spawn a period of remarkable innovation upon his return to Hanover. In this sense, Leibniz's return to Germany spelled his passage from theory to practice,

experimentation, and implementation, building on the knowledge and know-how he had acquired during his Parisian stay. In Paris and later in Hanover, Leibniz was very socially mobile, moving in and out of multiple intellectual and scientific circles, assessing the validity of 'curiosities', advocating his scientific agenda, and promoting technical and commercial ventures—always steered by a vision of reform and seeking practical applications from theoretical knowledge, even though this was not always possible. Leibniz was a liminal individual with an interest in natural philosophy who firmly believed in the power of new philosophers to realize the productive potential of science and sought to validate his own claims to superior expertise by his schemes put into practice. In Hanover, in particular, he emerged as a technological and commercial projector who competed in a marketplace of new schemes and inventions for the attention of powerful patrons who in their turn competed for fame, reputation, and power. This often required couching his proposals and inventions in terms of 'reason of state' and utility as well as careful strategizing and no small artifice and intrigue. The staggering range of Leibniz's activities[1411] included publishing articles, promoting scientific and philosophical societies as well as a universal language, inventing a calculating machine, and advocating engineering projects as well as seeking to acquire the secret of phosphorus. All these, he hoped, would accrue great benefits to Johann Friedrich, and grant him access to the highest realms of power, from which he would then be able to carry out even greater schemes for the benefit of mankind. As Leibniz understood, his idealism could be sustained only by a certain dose of realism: once inside powerful political structures, he hoped to deploy them towards the implementation of his own vision.

[1411] Ohnsorge (1966) notes that Leibniz's mind could not content itself with only one activity and it was always seeking to disperse itself in various directions.

In Paris and Hanover, Leibniz met a group of people who influenced him and who in turn were influenced by him, including Huygens, Huet, Crafft, and Conring. He acted as an intermediary between different worlds, that of artisans and that of scholars, that of inventors and that of patrons, often linking the holders of productive knowledge and the court. Crucially, he hoped to create a place for himself within the Republic of Letters and to establish his own brand of knowledge and sphere of influence. In person and especially through correspondence, he established the relationships and networks that would sustain him as a savant for many years to come, and he amassed a significant symbolic capital by gathering information that he sought to leverage into a position at court. But if his efforts were generally sucessful within the Republic of Letters, they were rather less well received at court.

Leibniz aspired to live an 'amphibious' existence in which he would be able to combine scientific and philosophical with political, legal, and diplomatic roles. His activities as a savant, a philosopher, a projector, and a theologian often doubled with his legal, political, and diplomatic activities as he passed seamlessly from one function and register to another. In the face of Louis XIV's aggressive and expansionistic foreign politics, the German savant aspired to a key political role which would see him implement reforms, reconcile Catholicism and Protestantism within the Empire, mediate conflicts, and broker peace in the hope of helping create a new defensive alliance of German states under the leadership of the Holy Roman Empire. Leibniz's case goes beyond the mere self-fashioning postulated by Mario Biagioli:[1412] he was simultaneously one and multiple figures, whose various identities did not exclude each other but often overlapped and fundamentally, cannot be disentangled from one another: as a client concerned with securing a stable position and pleading for recognition, a young scientist eager to develop his mathematical skills, a

[1412] See Biagioli (1993); Meyer (2010).

'trouble-shooter' for his employers, a self-effacing advisor, a skilled agent and negotiator always on the lookout for new information and finally, a young optimist moved by dreams of religious reconciliation and projects of a universal characteristic and the promotion of the public good. Personal ambition and the genuine desire to improve the condition of mankind and advance the cause of science went hand in hand.

More generally, the framework in which Leibniz operated was made up of interesting paradoxes. Leibniz's correspondence brings to light a courtier and scholar keen to evolve within established models of power and science while attempting to effect change from within. In this regard, a paradox of his correspondence is particularly striking: the coexistence of various 'performances of transparency' and an adherence to the canons of epistolarity with an obsession with secrecy. In 1710 the German scholar Zacharias von Uffenbach visited Leibniz in Hanover and later reported that, although the librarian was eager to show books and manuscripts from the ducal library, he was very reluctant do so from his own, behaving 'secretively' (*geheimnisvoll*) about books Uffenbach asked to see.[1413] From early in his career, Leibniz developed an acute sense of observation, which he refined through his constant collection of information. He was always moving in and out of circles, on the lookout for or himself possessing new information which he was then keen to keep secret. Through his hyperactivity and his omnipresence, Leibniz hoped to always remain in control, and be, so to speak, one step ahead. Calculating, always weighing his options, probing different avenues of maximizing his chances of realizing his plans, Leibniz sought to impose his will on events in the face of conditions that he understood to be precarious and highly mutable.[1414]

[1413] Uffenbach (1753–54), I, p. 409–11; see also Bertram (1906/7), pp. 196–98.

[1414] Pocock (1975) in this regard offers a useful lens through which to read Leibniz's trial and tribulations. See also Buchenau (2010), p. 199, who argues that every political problem became a 'game that could be solved like a mathematical equation'.

And yet, while Leibniz was in certain respects luckier than most, benefitting early on from powerful patrons, a cursory survey of his life between 1672 and 1679 reveals surprisingly mixed results. Ultimately, his prospects were limited and he inevitably encountered hard limits, especially so early on in life when he had yet to make a significant intellectual impact. Despite his undeniable talent and energy, Leibniz suffered from the considerable disadvantage of not being of noble extraction, a fact that would have limited his entrée into courtly circles. Much as he was admired, Leibniz also regulary left perplexed or dismayed some of his interlocutors. He was an audacious young man, eager to proclaim his great ideas and implement his schemes, but his overconfident language and lack of disclosure of information sometimes left even his best-inclined correspondents, such as Carcavy, frustrated and unimpressed. He had a habit for promising much but delivering little, and many of his projects failed. And despite his best efforts, Leibniz remained at the mercy of events and circumstances, which at times he misread.

Leibniz often enjoyed testing the norms of his time, and his particular skill here lay in simultaneously embodying and transgressing them. He was perceptive, quick to discern networks, circles, power dynamics, and to seek to place them in his service. This exemplary exceptionality served to assert Leibniz's particular place within a system of norms while also signalling his position as a favourite. However, his behaviour could come across as arrogant and capricious and, if it often succeded, it sometimes backfired spectacularly. Back in Hanover, Leibniz wanted success at court, but only on his terms. Ultimately, one concern drove him: how to make the establishment and structures in place work for him and his projects, while always maintaining a foot firmly outside of them. Yet, as he discovered, despite his attempts to exercise an influence well above his official station, Leibniz could bend the rules only so far, especially in such tightly controlled settings as Colbert's state

Republic of Letters. In his zeal, he sometimes failed to grasp that his vision and way of doing things did not necessarily align with those of his employers or potential patrons.

Crucially, as he set out to navigate their codes in the hope of gleaning information and making useful contacts, he was not always the accomplished operator he thought himself to be, and he was himself aware that he often failed to produce a favourable first impression. This proved to be a significant problem in a context in which social realities always remained hierarchical, and in a culture in which the rhetorical dance of patronage and clientelism constituted the very oxygen that sustained learned and courtly life. Leibniz's failure to master certain social norms sometimes made him appear gauche and insincere, while his doggedness and even brashness, especially in the face of difficulties, were bound to make him appear ambiguous at the very least. Personal missteps, too, may even have alienated potential patrons, as in his unfortunate correspondence with the Duke of Mecklenburg. Leibniz's impatience and tendency to seek to bypass hierarchies and conventions of courtly behaviour, on account of his belief in his own exceptionality, would have made him an undesirable recruit. Ironically, his very dedication to reform and the felicity of mankind could leave him looking like a dubious character.

In France, Leibniz's mobility[1415]—especially as a foreign agent eager to collect information and offer his services in exchange of powerful patronage—his tendency to associate with everyone and anyone, would have cast doubt on the strength of his loyalty, for which reason the French establishment preferred to confine him to rendering particular and limited services. For many at the time—and indeed later—Leibniz was difficult to pin down. Similarly, in Germany he seems not to have been perceived as a fully reliable political agent, and consequently to have remained confined to the antechambers of power, acting as

[1415] Salomon-Bayet (1978), p. 170, characterizes Leibniz as first and foremost 'a man of movement'.

an informant and advisor only in an unofficial capacity, at times exaggerating his involvement in political matters.

The years 1672-1679 were perhaps the most important years of Leibniz's life, laying the epistolary and courtly foundations for his future intellectual work. But for all their catalyzing effect, these were hard years, and his trajectory was anything but uniformly unpward. Ironically, Leibniz's very drive and fluidity also proved to be his Achilles heel, hampering his progress. Though undeniably seen as promising and talented by some in these years, Leibniz would truly consolidate his reputation as a savant only later, especially with the dissemination of his calculus in the early 1680s.

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