

After the Revolution: scientific language and French politics, 1795–1802

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As Charles Webster has shown, important intellectual factions within the constellation of the pro-Parliamentary and Cromwellian intelligentsia saw the question of language – its foundation, nature, the possibility of establishing universal languages, and the key importance of a pedagogical effort to teach modern European languages to tradesmen and citizens – as an integral part of the cultural and moral reform they wished to promote. He has also reconstructed the short-lived, albeit intense debate on the proposals to reform weights and measures, and to introduce a decimal system.¹ A century and a half later, in revolutionary France, the two issues were again at the forefront of heated epistemological, linguistic and political debates. Many of the solutions proposed, such as the adoption of the metric system on a decimal base, or the criteria to be followed in order to reform the language of science, are still with us today. Yet, if the difficulties faced by the adoption of the metric system are well known and easy to understand – local resistance to worrying novelties, and the unpalatable connection with the revolutionary fervour that had launched the project – the reform of scientific language has almost been taken for granted.

In particular, the close connection between the debate on the language of science and the rapidly changing political situation during the decade 1795–1805 still awaits clarification. In other words, although from the beginning of the nineteenth century it has been a commonly accepted practice to forge new names in science by using mostly Greek or Latin words (a choice that would have horrified Webster's heroes), French scientists at the turn of the century had to work hard to make contemporaries overlook the attitudes and arguments used to establish this principle. The need for a new language for science, as well as for philosophy, and politics, was vociferously advocated and theorized by several actors of the revolutionary decades. These included Antoine-Laurent Lavoisier (1743–1794) and his followers, the young Georges Cuvier (1769–1832) and, surprisingly, Jean-Baptiste Lamarck (1744–1829). Though a stern opponent of the neologisms introduced into the vocabulary of chemistry by Lavoisier and his followers, and of contemporary proposals for reforming the language of science in general, between 1800 and 1802 Lamarck did

¹ Charles Webster, *The Great Instauration: Science, Medicine, and Reform 1626–1660* (London, 1975), pp. 411–420 and *passim*.

not hesitate to propose new “Greek” terms such as hydrogeology or biology. In the realms of philosophy and politics, the innovative linguistic fervor of the “Idéologues” has been closely studied, and a recent study of Emmanuel-Joseph Sieyès (1748–1836) has pointed out the terminological preoccupations underlying his meditations on the reform of politics, which, in his eyes, required a reform of political language.²

As is well known, in France the debate on the language most appropriate to science long preceded the revolutionary storm. This point was explicitly acknowledged by key protagonists of this debate during the 1790s, who referred to works by John Locke (1632–1704), Etienne Bonnot de Condillac (1715–1780), and Carl Linnaeus (1707–1778), or to the *Méthode de nomenclature chimique* published by Lavoisier and his followers in 1787, as the authoritative foundation for their proposals.³ What was new was the intense and openly political dimension that the debate took on during the last decade of the eighteenth century, as well as the normative proposals that many participants hoped would be endorsed by educational and administrative authorities.⁴ Moreover, it has rarely been mentioned that after 1795, in the space of five to seven years, public discussion on the most appropriate language to be adopted in science quickly reached a peak and rapidly faded away. By 1802–1804, the fashion for neologisms had become an object of acrimonious derision from conservative writers on science.

² Harry B. Acton, ‘The Philosophy of Language in Revolutionary France’, *Proceedings of the British Academy*, 14 (1959), 199–221; Maurice Crosland, *Historical Aspects of the Language of Chemistry* (London, 1962); Sergio Moravia, *Il pensiero degli Idéologues: scienza e filosofia in Francia (1780–1815)* (Florence, 1974); Geroge Gusdorf, *La conscience révolutionnaire, les Idéologues* (Paris, 1978); Olivia Smith, *The Politics of Language, 1791–1819* (Oxford, 1984); François Azouvi, ed., *L’institution de la raison. La révolution culturelle de Thermidor* (Paris, 1992); Jacques Guilhaumou, *Sieyès et l’ordre de la langue: l’invention de la politique moderne* (Paris, 2002). For the revival, and criticism, of the French debate on language and science in early nineteenth-century England, see Pietro Corsi, ‘The Heritage of Dugald Stewart: Oxford Philosophy and the Method of Political Economy, 1809–1832’, *Nuncius*, 2 (1987), 89–144.

³ Lia Formigari, *Signs, science and politics: philosophies of language in Europe 1700–1830* (Amsterdam, 1993); Wilda Anderson, *Between the library and the laboratory: the language of chemistry in eighteenth-century France* (Baltimore, 1984) and ‘Scientific nomenclature and revolutionary rhetoric’, *Rhetorica*, 7 (1989), 45–53. Umberto Eco, *Kant and the Platypus: essays on language and cognition* (London, 1999); Marco Beretta, *The Enlightenment of Matter. The Definition of Chemistry from Agricola to Lavoisier* (Canton, MA, 1993). For a recent, penetrating survey of the literature, see Jessica Riskin, ‘Rival idioms for a revolutionized science and a republican citizenry’, *Isis*, 89 (1998), 203–232.

⁴ See for instance W. Randall Albury, ‘The Order of Ideas: Condillac’s method of analysis as a political instrument in the French Revolution’, in John A. Schuster and Richard R. Yeo, ed., *The Politics and Rhetoric of Scientific Method. Historical Studies* (Dordrecht and Boston, 1986), pp. 203–225 and Jessica Riskin, *Science in the Age of Sensibility. The Sentimental Empiricists of the French Enlightenment* (Chicago, 2002), ch. 7. See Beretta, *The Enlightenment of Matter*, and Riskin for the issue of the language of science and its political dimension before the period here examined.

It is appropriate to emphasize at this point that the purpose of this paper is not to reconstruct in detail the debate on science and language during the last decades of the eighteenth century, an issue historians of several disciplines and intellectual practices have dwelt upon; nor to cover again the ground of the political debate on science, its utility and indeed essential ideological role for the political authorities emerging after the fall of Robespierre in July 1794. The seminal work by Roger Hahn on the Académie des sciences, an institution suppressed in 1793, the equally important work on Cuvier's early career by Dorinda Outram, and, most recently, Jean-Luc Chappey's masterly reconstruction of the political tight-rope on which the founders and supporters of the "Société des Observateurs de l'Homme" had to balance themselves during the short life of their association (1800–1804), have done much to highlight the political and institutional background to this essay.⁵ It will be our task to show how political considerations were also responsible for the embarrassed silence on the issue of the relationship between linguistic and scientific innovation that followed the consolidation of Napoleon's power after 1800.

After the storm: scientific expectations

A passage in an unpublished letter from Antoine-François Fourcroy (1755–1809) to the pharmacist and entrepreneur Henri-Albert Gosse (1753–1816) in Geneva will at once plunge us into the charged atmosphere of the months following the fall of Robespierre. As a member of the "Comité d'instruction publique" (he had taken the seat left vacant by Jean-Paul Marat), Fourcroy had been an eminent representative of the revolutionary Republic. He was now in charge of the complex institutional engineering meant to provide a meritocratic justification for the regime in power after 1794, intent on steering a difficult route between the dangers of an ultra-democratic resurgence and menacing attempts at pro-monarchical armed insurrection. Scientific achievements and proficiency were to guarantee the public and the private good. The republican hierarchies, solidly empowered by their intellectual merit, were going to ensure the prosperity of the state through a systematic exploitation of scientific practices and a massive effort at scientific and technological education:

⁵ Roger Hahn, *The Anatomy of a Scientific Institution: The Paris Academy of Sciences, 1666–1803* (Berkeley, 1971); Dorinda Outram, 'Politics and Vocation: French Science 1793–1830', *British Journal for the History of Science* 13 (1980), 27–43, 'The Ordeal of Vocation: The Paris Academy of Sciences and the Terror, 1793–95', *History of Science*, 21 (1983), 251–73, *Georges Cuvier: Vocation, Science and Authority in Post-Revolutionary France* (Manchester, 1984); Jean-Luc Chappey, *La Société des Observateurs de l'Homme (1799–1804). Des anthropologues au temps de Bonaparte* (Paris, 2002). See also Janis Langins, *La République avait besoin des savants* (Paris, 1987) and Nicole and Jean Dhombres, *Naissance d'un pouvoir: sciences et savants en France, 1793–1824* (Paris, 1989).

You will learn with pleasure that we are giving a great impulsion to the sciences, the arts, to public education, to industry and agriculture, with a force and urgency equal to the ones vandalism had deployed to destroy them. Schools of health, of public works, a special school to train teachers are being established this very moment. We take care of arts and sciences everywhere, we help, call upon, encourage all educated men; the Convention honours and repays them, with money, of the losses and the shameful neglect they were subjected to for too long. Long live the republics where Knowledge and virtue are valued. Within a few years, France will no longer be recognizable.⁶

In spite of Fourcroy's optimism, times remained hard. Career, and indeed, life prospects were dramatically uncertain, and good intentions were severely hampered by economic difficulties. As late as December 1796, the witty Déodat de Gratet de Dolomieu (1750–1801) still complained to Marc-Auguste Pictet (1752–1825) that “nothing new happens in science; those who cultivate it are slowing down this winter. *Knowledge freezes without money*, one could say. This lack of money introduces a pronounced lethargy in any undertaking that requires some activity.”⁷ Though the economic situation improved over the following months, and publishing activity slowly regained momentum, the livelihoods of independent scientific practitioners remained under severe threat. Those who received regular salaries, albeit irregularly paid, did not receive hard currency, but paper money, the infamous and highly inflationary *assignats*. This forced them to compete for resources with colleagues left

⁶ Henri-Albert Gosse, ‘Lettres adressées à Henri Albert Gosse’, Genève, Bibliothèque universitaire, Ms. 2628, Fourcroy to Gosse, 26 January 1795, fol. 138v : ‘Tu apprendras avec plaisir que nous donnons avec autant de force et d’empressement que le vandalisme n’avait mis à la détruire, une grande impulsion aux sciences, aux arts, à l’instruction publique, aux manufactures et à l’agriculture. Des Écoles de santé, des travaux publics, une école normale pour former des Professeurs sont établis en ce moment. On s’occupe partout des arts et des sciences, on soigne, on appelle, on encourage les hommes instruits; la Convention les honore et les indemnise par des sommes des pertes et de l’oubli honteux qu’on leur a fait trop long temps subir. Vive les républiques où l’on prise le Savoir et les vertus. La France ne sera pas reconnoissable dans quelques années.’ See Danielle Plan, *Un genevois d’autrefois : Henri-Albert Gosse (1753–1816). D’après des lettres et des documents inédits* (Paris and Geneva, 1909). Bruno Belhoste, *La formation d’une technocratie. L’Ecole Polytechnique et ses élèves, de la Révolution au Second Empire* (Paris, 2003).

⁷ Marc-Auguste Pictet, *Correspondance: science et technique*, René Sigrist, ed. (Genève, 1998), 2, Dolomieu to Pictet, 16 December 1796, p. 344: ‘Nous n’avons rien de nouveau dans les sciences; ceux qui les cultivent se ralentissent un peu cet hiver. On pourrait dire, *sine pecunia friget scientia*. Ce manque d’argent porte sur tout ce qui exige quelque activité un bien grand engourdissement’. Six months later, the situation had improved: ‘Les sciences on repris ici une grande activité, et ceux qui les cultivent montrent une grande émulation. Le gouvernement ne fait pas encore des choses bien importantes pour elles et pour eux; mais la considération est indépendante de l’état de nos finances, et quoiqu’elle n’échauffe pas la cuisine, elle aide au moins à supporter les privations’, in Alfred Lacroix, *Déodat Dolomieu* (2 vols, Paris, 1921), 2, p. 153, Dolomieu to the Ch. de Fay, 25 May 1797. See also Thèrese Charles-Vallin, *Les aventures du chevalier géologue Déodat de Dolomieu* (Grenoble, 2003).

out of state employment, whose survival depended on their medical practice, the sale of specimens, or their pen. Waiting for a post that never came in the Directoire central administration, Louis-Augustin-Guillaume Bosc d'Antic (1759–1828) did not complain too loudly about his economic situation: “I am quietly waiting for when it will please the Directoire to chase away those who are shadowing me. By working at Olivier’s [Gauillaume-Antoine, 1756–1814] entomology, I am gaining ten times more in real money, than my colleagues get in current *assignats*.”⁸ Today’s cliché “publish or perish” was never truer. Getting into print meant to acquire visibility, money and friends, as well as the possibility of further employment. It also helped to slight enemies and competitors by making oblique reference to their dangerous past or by adopting a language contemporaries were immediately capable of decoding for its political significance. Thus, for instance, when in 1802 Charles-Nicholas-Sigisbert Sonnini de Manoncourt (1751–1812), editor of a highly successful edition of Buffon’s works, called Cuvier “un homme nouveau,” an authoritarian “instituteur” who had had the good fortune of getting a job at the Muséum nationale d’histoire naturelle, readers well understood the innuendoes.⁹ Cuvier was where he was thanks to the Revolution: he had lost the cap but not the manners of a hard-line Jacobin. The truth or falsehood of the allegation is of course beside the point. In Jean-Claude Delamétherie’s (1743–1817) editorship of the *Journal de physique*, which recommenced publication in 1798, after a forced break of almost five years, political aims were not far from the surface. In his eyes, the new chemists, their arrogant proposal of a completely new language for their discipline, and their politics were one and the same thing. The *Journal de physique* was there to oppose them, even though Delamétherie was increasingly aware that the battle had been lost: “This coalition of people, *fatigued by blood but not satiated*, will make sure that whatever is contrary to their opinion and could do harm to their self-respect will never enter our country. They have cut the throat of their boss, Lavoisier, as they have done with the chief of the Nation, because they wanted to become the masters.”¹⁰

⁸ Gosse, ‘Lettres adressées à Henri-Albert Gosse’, Genève, Bibliothèque universitaire, Ms. 2628, Bosc to Gosse, 9 Germinal an IV (25 March 1796), fol. 137v : ‘J’attends en silence qu’il plaise enfin au Directoire de chasser les gens qui m’offusquent. Je gagne, en travaillant à l’entomologie d’Olivier, dix fois plus en numéraire, que n’en gagnent mes collègues en assignats au cours.’

⁹ Charles-Nicholas-Sigisbert Sonnini de Manoncourt, ed., *Histoire naturelle, générale et particulière, par Leclerc de Buffon* (127 vols, Paris, 1798–1808), 65 (an XI, 1802), p. 37. On Sonnini and the Buffonians after the Revolution, see Pietro Corsi, *Lamarck. Genèse et enjeux du transformisme, 1770–1830* (Paris, 2001), new expanded edition of *The Age of Lamarck. Evolutionary Theories in France, 1790–1830* (Berkeley, 1988). Sonnini was a protégé of Lapepède, rising star of the Napoleonic regime, a naturalist and politician who considered himself as Buffon’s literary and scientific heir.

¹⁰ Jean Senebier, ‘Lettres adressées à Jean Senebier’, Ms. Supp. 1039, Genève, Bibliothèque Universitaire, Jean-Clude de la Métherie à Senebier, 18 January 1796, fol. 253v : ‘et [cette] coalition de gens, lassati sanguinis sed non satiati, empêchera de pénétrer dans ce pays tout ce qui est contraire à

A close reconstruction of the shifting political situations and alliances, and of the different and, at times, divergent meaning an epistemological standpoint could take in different political contexts, still remains a desideratum of studies on French science after 1794, up to the consolidation of the Napoleonic regime. To my knowledge, the only example is Chappey's study of the "Société des Observateurs de l'Homme". Attitudes towards Buffon, his work, his style of natural history and his literary style *tout court*, as well as the debate on the language of science are considered below in some detail. They constitute two interesting examples of the complex situation prevailing after 1794, and its equally complex interpretative framework.

Changing views of Buffon

Positively disliked by representatives of the Enlightenment such as d'Alembert and Condorcet, and subjected to an exercise in character assassination in the latter's academic eulogy, Buffon was seen as standing for everything natural history and science in general should not and could not be: rhetorical and moralistic, based on imagination rather than on reason, undertaken to please the readers rather than to convince the experts, better suited for the salon than for the academy. The famous naturalist was also portrayed as the prototype of the court savant, using his power to prevent criticism of his own works, distributing favours and jobs, relegating Linnaean taxonomical reform to the provinces or the margins of institutional science. Needless to say, not all the naturalists or the intellectuals undergoing the experience of the Revolution and its aftermath shared this attitude. And if it would be wrong to claim that everyone in favour of political and intellectual change was opposed to Buffon, it would be equally wrong to maintain that since Buffon was highly respected by some influential representatives of the Enlightenment or the Assemblée nationale, he was immune from criticism from that quarter. It would also be wrong to assert, as it has been by some, that criticism of Buffon amounts to irrelevance. Once again, the key issue is that it remains difficult to generalize so far as to claim that there was a Jacobin natural history or science, one totally devoted to the theme of utility, and contrary to all forms of academic speculation and theorizing, that could accommodate Buffon's moral overtones and pedagogical objectives. Similarly, it is difficult to claim that the real issue was specialization versus encyclopaedic curiosity, a conflict settled once and for all in favour of better defined and often rigid disciplinary boundaries.

leurs opinions et puisse choquer leur amour propre. Ils ont égorgé leur chef, Lavoisier, comme ils ont égorgé celui de la nation, parce qu'ils vouloient être les maîtres.' De la Métherie announced in 1793 his intention to adopt the more democratic 'Delamétherie' spelling of his name, with which he signed all his subsequent works. Riskin, *Science in the Age of Sensibility*, pp. 269–279. Wilda Anderson, 'Scientific Nomenclature and Revolutionary Rhetoric', *Rhetorica*, 7 (1989), 45–53.

Those who proclaim “the end of natural history” in its broadest sense have to explain why Buffonian “natural history” survived well into the nineteenth century. One might assume it was to please millions of readers who were not informed of the death of the discipline or of the disrepute Buffon had supposedly fallen into. Reformulated in Humboldtian, romantic, Darwinian or Haeckelian terms, the idea (one that Buffon shared with many representatives of the “histoire naturelle”) that disciplinary specialization had to be subservient to the higher goal of understanding nature as a whole, remained a constant within western natural sciences during the nineteenth and for much of the twentieth centuries.¹¹

To return to the issue of the political nature of many scientific or epistemological views expressed during the revolutionary decade, it should be emphasized that different individuals, at different times, expressed different views of Buffon, often very contradictory ones. To take only one case, and a very distinguished one, it would be difficult to summarize in a coherent framework Cuvier’s attitude towards Buffon, as expressed throughout his career, from the cruelty of his youthful enthusiasm at the news of the death of the naturalist in 1787 (“The naturalists have finally lost their leader. This time, the Comte of Buffon is dead and buried”) to his signing an edition of Buffon’s works in 1830. In a patently self-contradictory and fascinating eulogy of Jean-Guillaume Bruguières (1750–1799), published in 1799, Cuvier declared that before the Revolution the only place where natural history had been taught in France at advanced (i.e., Linnaean) level was at Montpellier: “Through his lectures and his example, the respectable Gouan [Antoine, 1738–1821] disseminated Linnaeus’ austere method, which in Paris and elsewhere was eclipsed by the success of Buffon’s works: I do not mean to say that Buffon was not an accurate naturalist; on the contrary, I know that his works are even more true, factually more precise than those by Linnaeus: but in those times uneducated readers did not possess enough knowledge to be able to recognize this type of merit.”¹² In 1804, in the brochure announcing the

¹¹ See the classic study by Charles C. Gillispie, ‘The Encyclopédie and Jacobin Philosophy of Science: A Study in Ideas and Consequences’, in Marshall Clagett, ed., *Critical Problems in the History of Science* (Madison, 1959), pp. 255–289 and *Science and Polity in France: the Revolutionary and Napoleonic Years* (Princeton, 2004). Emma C. Spary, *Utopia’s Garden. French Natural History from Old Regime to Revolution* (Chicago, 2000), denies that Buffon was subjected to criticism during the period under discussion; Wolf Lepenis, *Das Ende der Naturgeschichte. Wandel kultureller Selbstverständlichkeiten in den Wissenschaften des 18. und 19. Jahrhunderts* (München, 1976).

¹² Georges Cuvier, ‘Extrait d’une notice biographique sur Bruguières, lue à la Société Philomatique, dans sa séance générale du 30 nivôse an 7’, *Magasin encyclopédique*, V année, 3 (an VII, 1799), 42–57: p. 43 : ‘Le respectable Gouan y propagea, par ses leçons et par son exemple, la méthode sévère de Linné, qui se trouvait éclipée à Paris et ailleurs par l’éclat des ouvrages de Buffon: non pas que je veuille dire par là que Buffon n’étoit pas un naturaliste exact; je sais, au contraire, que ses ouvrages sont même plus vrais, plus soignée sur les faits que celles de Linné: mais le vulgaire ne possédoit pas alors assez de connoissances pour y distinguer ce genre de mérite.’

launching of the still-born first edition of the *Dictionnaire des sciences naturelles* (1804–1805), under the editorship of his brother Frédéric (1773–1838), Cuvier blasted the highly successful rival *Nouveau Dictionnaire d'histoire naturelle* published in 24 volumes by a team of avowed hard-line Buffonians in the space of two years (1803–1804). By 1804, in the increasingly conservative political climate of the early Napoleonic regime, Buffon and Linnaeus were represented by Cuvier as sharing the merit of having taken natural history out of the chaos, which inconsiderate and ignorant Buffonians were now trying to recreate with their empty rhetorical exercises and their boundless thirst for speculation. No mercy for the Buffonians, then, but the master could regain his place in the Pantheon of natural history.¹³ It is worth mentioning that the complete edition of Buffon's work edited by Sonnini de Manoncourt, which Cuvier disliked so much, found a place in the library Napoleon took with him to the loneliness of St Helena. Finally, Cuvier's seemingly favourable biographical sketch of Buffon, published in 1812 in the highly popular *Biographie universelle* edited by Louis-Guillaume Michaud (1773–1858), reaches extraordinary levels of ambiguity. Every criticism or anecdote unfavourable to Buffon is related in sharp and concise detail. It culminates in a parting shot in the very last sentence of the article: a reference to the slanderous *Voyage à Montbard* by Marie-Jean Hérault de Séchelles (1759–1794), followed by the comment that Hérault had violated basic rules of hospitality by indulging in juicy scandalous remarks. An irresistible invitation to read the pamphlet, one might say.¹⁴

Cuvier's scientific and methodological priorities were diametrically opposed to the concept of natural history that Buffon had advocated and promoted. The very idea of a systematic comparative anatomy was inconceivable to Buffon, for whom nature takes a step in every direction with every successive animate and inanimate being, whereas men can see only one thing at a time.¹⁵ True, Buffon also argued that nature had probably created only one single animal or plant type, a concept Etienne Geoffroy Saint-Hilaire (1772–1844) took up and used against the idea, about which Cuvier

¹³ For what I have called 'the war of dictionaries', see Corsi, *Lamarck*, pp. 37–39 and 270.

¹⁴ Georges Cuvier, 'Buffon', in Louis-Guillaume Michaud, ed., *Biographie universelle, ancienne et moderne*, (45 vols [1812] 1843 edn), 6, pp 117–121: p. 121: 'Il est fâcheux que les détails où il entre soient en partie calomnieux, ou doivent au moins être considérés comme une violation manifeste de l'hospitalité'; Marie-Jean Hérault de Séchelles, *Voyage à Montbard : contenant des détails très-intéressantes sur le caractère, la personne et les écrits de Buffon* (Paris, 1801), new edn, in Yann Gaillard, *Buffon. Biographie imaginaire et réelle* (Paris, 1977), pp. 141–174. The 1801 edition of the pamphlet, originally printed in 1787, had been edited by Aubin-Louis Millin. It is to be noted that Hérault even hinted that Buffon indulged in scandalous relationships with very young girls: a classic of anti-aristocratic rhetoric.

¹⁵ Thierry Hoquet, 'Buffon : histoire naturelle et philosophie', unpublished Paris University Paris X Doctoral dissertation (2002).

became increasingly dogmatic, of well-defined structural plans characterizing different “embranchements”. Yet, it was Geoffroy Saint-Hilaire who added comparative anatomy to a concept Buffon had hinted at in order to proclaim, using different words, the impossibility of any taxonomy and of Linnaean taxonomy in particular. Cuvier’s insistence on the need to overcome the literary natural history Buffon and his followers cherished, and his repeated advocacy of a “stile sevère” as an antidote to their excesses, could never be mistaken for a sign of respect, let alone sympathy, for the author of the *Histoire naturelle*. Thus, it is fair to conclude that Cuvier simply adapted his judgment to the current cultural and political climate, and to the behaviour of readers, who continued to buy edition after edition of Buffon’s works, to the point that Cuvier himself, as already mentioned, decided to endorse yet another edition, nominally put under his care.¹⁶

The language of science: a public debate

The question of the rapid emergence of an intense public debate on the language of science around 1795 and its equally rapid disappearance from the pages of monographs, encyclopaedias and periodicals in 1802–1804 will contribute to a deeper appreciation of the role of politics in contemporary scientific debates. As already pointed out, the issue was far from being a new one. To some extent, it was Buffon who had given the debate its polemical edge and public appeal with his repeated assaults on Linnaeus and his followers. He disparagingly labeled the latter “nomenclateurs”, and accused them of giving away the language of tradition, of trades and pleasure in favour of telegraphic Latin binomial definitions, pathetically (in his eyes) meant to exhaust all that had to be known of a plant or an animal. In turn, his own luxuriant, colorful digressions on the animal world were vulnerable to sarcastic comment, the most famous (related by Cuvier) being d’Alembert’s ironic remark that the horse had been defined by Buffon as “man’s noblest conquest”.¹⁷

Without doubt, the 1782 essay by Louis-Bernard Guyton de Morveau (1737–1816), “Sur les dénominations chimiques”, and the *Méthode de nomenclature chimique* (1787), had contributed powerfully to the idea, inspired by Condillac, that a science was “a well-organized language,” and that the degree of maturity of a

¹⁶ The complex relationship between Lacepède and Cuvier, and the possibility that much of Cuvier’s ambiguity with respect to Buffon was in part the effect of his desire not to antagonize Lacepède, is currently being investigated.

¹⁷ Cuvier, ‘Buffon’: ‘Ne me parlez pas de votre Buffon, de ce comte de Tuffière, qui au lieu de nommer simplement le cheval, dit : La plus noble conquête que l’homme ait jamais faite est celle de ce fier et fougueux animal.’

discipline could be measured by the logical consistence and perspicuity of its language.¹⁸ If Buffon had criticized Linnaean terminology for its betrayal of vernacular names, the new “nomenclators” argued that vernacular names had to be abandoned altogether. Yet, before 1795, this debate did not appear to concern the educated public. Indeed, apart from the great popular success of Buffon’s work, contemporaries such as the young Cuvier or the experienced Delamétherie did not consider France a country characterized by vigorous scientific production and debates. Before reading the anatomical treatise by Felix Vicq d’Azyr (1748–1794), the *Traité élémentaire de chimie* by Lavoisier, and the *Genera Plantarum* by Antoine-Laurent de Jussieu (1748–1836), which fired his enthusiasm, Cuvier, still writing in German (and Latin) to his friend Christoph Heinrich Pfaff (1773–1852), complained that “the sciences possess today very few worthy priests in France, and this scarcity is all the more painful, when one recalls the brilliancy that country was once shining for.”¹⁹ In 1793, sketching in the *Journal de physique* a general view of the geographical distribution of intellectual pursuits in Europe, Delamétherie accorded to France the primacy in philosophical writings, whereas anatomy flourished in Italy, natural history, chemistry and mineralogy in Germany and Sweden, geometry and moral philosophy in England.²⁰

For the reasons Roger Hahn has well illustrated and which we have alluded to, Cuvier’s and Delamétherie’s remarks would have sounded strange only a few years later, as, to some extent, they do sound strange today. Yet, it is undeniable that for a variety of reasons the debate on science, its foundations, public utility and prospects had become one of the key features of Parisian and French culture, high and low, only after the dark months of the Terror. Scientific proficiency helped those with connections to the previous administration to mark their distance from it, as was the case with Fourcroy, one of the first proponents of the charge of scientific “vandalism”

¹⁸ Louis Bernard Guyton de Morveau, ‘Sur les dénominations chimiques, la nécessité d’en perfectionner le système, et les règles pour y parvenir’, *Observations et mémoires sur la physique*, 19 (1782), 370–382 ; Louis Bernard Guyton de Morveau, Antoine-François Lavoisier, Claude Louis Berthollet, Antoine-François Fourcroy, *Méthode de nomenclature chimique [...] on y a joint un nouveau système de caractères chimiques adaptés à cette nomenclature, par MM. Hassenfratz et Adet* (Paris, 1787). See Beretta, *The Enlightenment of Matter*, on the intense debate inside Lavoisier’s circle, leading up to the writing of the *Méthode*.

¹⁹ Christoph Heinrich Pfaff, *Lettres de Georges Cuvier*, L. Marchant, ed. (Paris, 1858), p. 78, 31 December 1788 : ‘Les sciences ont aujourd’hui peu de dignes prêtres en France, et cette pauvreté est d’autant plus pénible, que l’on se souvient encore de l’ancien éclat dont elles ont brillé.’

²⁰ Jean-Claude Delamétherie, ‘Discours préliminaire’, *Journal de Physique*, 42 (January 1793), 3–34 : p. 7. The ‘Discours préliminaires’ Delamétherie contributed to the *Journal de Physique* over a period of more than twenty years are available at the address <http://www.crhst.cnrs.fr/i-corpus/science1800/>, Pietro Corsi, ed. They should be read as a partisan counterpoint to the equally partisan reports Cuvier wrote on the state of contemporary science.

brought against a regime he himself had been part of. Though Fourcroy could quote his cautious interventions against “patriotic” vandalism exercised against artistic or architectonic emblems of the monarchy in the early 1790s, opponents did not forget his role in the abolition of the Académie des sciences, or, as was also the case with Delamétherie, his lack of determination to save Lavoisier’s life.²¹ Young and ambitious provincial amateurs flocked to Paris in the hope of taking advantage of the temporary disruption of old networks and institutions, as well as of the need for trained personnel in the medical and pharmaceutical services of the growing republican army. Journals like the *Décade philosophique*, the *Annales des mines*, and, with systematic dedication, the *Magasin encyclopédique*, constantly reported on scientific publications, on private lecture courses being offered in natural history or mineralogy, and on the public meetings held at the Institut, the new form the ancient Académie had been given in late 1795.

The case of the *Magasin encyclopédique*

It is to periodicals that one has to turn in order to appreciate the extent, and the chronological limits of the post-1795 debate on science and language. We will once again focus on one single example, the *Magasin encyclopédique*, established (briefly) in 1792, and successfully re-launched in 1795. Its editor, Aubin-Louis Millin (1759–1818), who contributed scores of articles, reviews and short news on institutional and private science, made no mystery of his determination to introduce rigour and disciplinary specialization within traditional natural history. Personally linked to the Girondins and the Roland family, Millin had been one of the founders of the Société Linnéenne, and of the Société d’histoire naturelle. A polyglot, classicist and Germanist, archaeologist, lover of theatre and one of the first directors of the Bibliothèque nationale, Millin is a figure strangely overlooked by historians of the period.²² He gathered around him an impressive cohort of contributors, ranging from Jean-Louis Alibert (1768–1837), Philippe Pinel (1745–1826), Cuvier, Charles-Louis Dumas (1765–1813), Antoine-Nicholas Duchesne (1747–1827) and the very young André-Marie Constant Duméril (1774–1860). They argued for the need of a radical reform of natural history, in order to transform a literary exercise into a well-founded, epistemologically rigorous, disciplinary domain. The road to follow was already well established by an illustrious philosophical and scientific tradition:

²¹Edouard Pommier, *L’art de la liberté. Doctrines et débats de la Révolution française* (Paris, 1991), pp. 123–124. Joseph Fayet, *La Révolution française et la science, 1789–1795* (Paris, 1960), ch. 6.

²² Chappey, *Société des Observateurs de l’Homme*, deals with selected features of Millin’s career.

After Locke and Condillac have reformed the theory of sensations and of ideas, after in particular the latter has demonstrated the need and advantages of analysis in the search for truth, the sciences of observations have improved with prodigious speed, and all obstacles subside under the efforts of human ingenuity.²³

Linnaeus himself had employed the analytical method when he isolated the sexual organs as the foundation for a taxonomy that was logically, as well as ontologically, reliable. Analysis again was at the basis of the experimental work undertaken by Lavoisier and his collaborators; in the *Méthode de nomenclature chimique* they had publicly acknowledged their debt to Condillac, and proved that a mature science was, and ought to be, a well-organized language. Analysis, conducted through observation and experimentation, was seen as capable of reducing natural objects to their ultimate components, and of establishing their spatial and temporal relationships. The choice of appropriate names for each element identified through analysis opened the way to the possibility of reconstituting the structure and properties of the object under investigation through the very definition employed to describe it. In the well-ordered language of science, the sentence became the representation of an ontological structure. Thus, if names could and indeed often were by necessity arbitrary and conventional, the language of science, that is the succession of definitions and descriptions of space-temporal relationships, was not.²⁴ From these premises, Duméril deduced a conclusion he chose to express in the form of a rhetorical question: “Is there a science more in urgent need of a methodical nomenclature than natural history? How to apply to the immense series of beings it embraces, names capable, in our judgment, of representing to us the objects they are meant to represent?”²⁵

Duméril had no doubt that the chemical nomenclature first suggested by Guyton de Morveau, then perfected by Lavoisier and his collaborators, constituted the model

²³ Jean-Louis Alibert, ‘Compte-rendu de Philippe Pinel, *Nosographie philosophique, ou la méthode de l’analyse appliquée à la médecine*’, *Magasin encyclopédique*, IV année, 3 (an VII, 1798), 1–21 : 1 ‘Depuis que Locke et Condillac ont refait la théorie des sensations et des idées, depuis que ce dernier sur-tout a démontré les avantages et la nécessité de l’analyse dans la recherche de la vérité, les sciences d’observations se perfectionnent avec une rapidité qui tient du prodige, et tous les obstacles s’aplanissent devant les efforts de l’esprit humain.’ There is no need to stress that opinions expressed in the periodical literature often lacked philosophical discrimination. Thus, crucial differences between Locke and Condillac were almost regularly overlooked.

²⁴ See Riskin, *Science in the Age of Sensibility*, for a discussion of conventionalist *versus* ontological views of the language of chemistry and of science in general.

²⁵ André-Marie-Constant Duméril, ‘Projet d’une nomenclature anatomique basée sur la terminaison’, *Magasin Encyclopédique*, II année, 2 (an IV, 1796), 452–463 : 454 : ‘Étoit-il une science pour laquelle une nomenclature méthodique se trouvait plus indispensablement nécessaire que l’histoire naturelle? Comment appliquer à l’immense série des êtres qu’elle embrasse de noms qui rapportassent, à notre jugement, les objets qu’ils représentent? Où trouver cette langue nouvelle?’

to be followed. As far as the choice of words was concerned, Linnaeus's *Philosophia botanica* had taught naturalists to mistrust names handed down by custom and tradition: "orphans of whim and prejudice, they are the adopted children of habit." Linnaeus was therefore to be taken as an example of rigour and of verbal parsimony, though doubts were expressed as to the preference the Swedish naturalist had accorded to Latin. Duméril, referring again to the new chemical nomenclature, gave preference to Greek names, or, even better, to Greek roots, capable of being combined with prepositions, or entered into the composition of other names.

Young Cuvier, still an obscure "instituteur" in Normandy, had preceded Duméril in this choice, as, with elegance and false modesty, he wrote to his friend Pfaff in the early summer of 1790:

I have taken the new names for genera, in preference, from Greek rather than from Latin, not so much to make a show of vain erudition, since I consider myself less proficient than it is decent in the Greek language, but because the Latin expression dislikes composite names, as Horace once remarked."²⁶

In some extreme cases, innovation came to the point of dispensing with the new "philosophical language" grounded on Greek roots, and made authors opt for algebraic formulae, thus ushering a discipline of natural history into the empire of applied mathematics. In the *Journal des mines*, René-Juste Haüy (1743–1822) announced

the idea of translating in a very concise language, analogous to the language of algebraic analysis, the expression of the various laws determining secondary crystals, and to compose in this way some kind of formulae representing these very crystals. It will be sufficient, in order to achieve this, to indicate with letters the angles and the edges of the primitive form, and to accompany these letters with numbers indicating the law of decrease this angle or that edge is subjected to, the result of which being that particular secondary form.²⁷

²⁶ Pfaff, *Lettres de Georges Cuvier*, p. 163, 25 June 1790: 'Nomina generica nova, e graeco potius desumpsi, quam e latino sermone, non ad vanam eruditionem ostentationem, nam me graecarum litterarum radiorem quam deceret esse fateor, sed quia voces compositae latini sermonis indoli repugnant, uti jamdudum observavit Horatius.'

²⁷ René-Just Haüy, 'Exposé d'une méthode simple et facile pour représenter les différentes formes cristallines par des signes très-abrégés, qui expriment les lois de décroissement auxquelles est soumise la structure', *Journal des mines*, 4 (1796), 15–36: 15–16 '[l]'idée de traduire, dans une langue très-abrégée, analogue à celle de l'analyse algébrique, l'énoncé des diverses lois qui déterminent les cristaux secondaires, et de composer ainsi des espèces de formules représentatives de ces mêmes cristaux. Il suffit, pour y parvenir, de désigner, par des lettres, les angles et les arêtes de la forme primitive, et d'accompagner ces lettres de chiffres qui indiqueront les lois de décroissement qui subit

Returning to the *Magasin encyclopédique*, several contributors expressed the view that Jussieu's *Genera Plantarum*, Vic d'Azyr's comparative anatomy, Dumas' and Duméril's human anatomy, Haüy's crystallography, Pinel's philosophical nosography, or Alibert's dermatology represented the last results obtained in the march of specialization so spectacularly under way.

As with objects or phenomena, disciplines too had to be submitted to a critical analysis capable of distinguishing the useful from the futile, the rhetorical turn of phrase from the well-established fact. Analysis and new nomenclature would dissipate the declamatory haze characterizing traditional natural history, ever more ready to expand lyrically upon its objects than carefully to dissect them, logically and physically. Disciplines, like objects, were given new names, to indicate their emancipation from the all-encompassing "histoire naturelle": crystallography and crystallotechnics, ichthyology and herpetology, nosography and pasigraphy, biology and hydrogeology, technology and biotechnology, organology and phrenology: and, last but not least, ideology, a term which first appeared in 1797, and rarely to be pronounced in public after 1803.²⁸

It is, of course, an essential part of our thesis to stress the danger of drawing general conclusions from this rapid excursus of positions defended in the *Magasin encyclopédique*, as if this periodical was unanimously consecrated to the cause of reform, or that the word « reform » did not admit of a plurality of often contradictory meanings. Thus, for instance, Jacques-Louis Moreau de la Sarthe (1771–1826) could not agree on the superiority of Linnaeus over Buffon :

I only knew parts of his [Linnaeus'] works, those where, though admiring the width and variety of his knowledge, the precision of his language and the exactness of his distributions, one could search in vain for that warmth of style, that eloquent and picturesque turn so typical with Buffon, which are in my view inseparable from the art of observing the phenomena of nature, more inspiring than the marvelous of fables.²⁹

tel angle ou telle arête, et dont le résultat est telle forme secondaire.' Peter J. Stevens, 'Hauy and A. P. de Candolle: Crystallography in the Development of Botanical Systematics and Comparative Morphology, 1780–1840', *Journal of the History of Biology*, 17 (1984), 49–82.

²⁸ For a critical discussion of the introduction of the term 'idéologie', see Chappey, *Société des Observateurs de l'Homme*, p. 61. As mentioned below, 1803 was the year in which the First Consul Bonaparte disbanded the Moral and Political Sciences Class of the Institut dominated by the *idéologues*.

²⁹ Jacques-Louis Moreau de la Sarthe, 'Considérations philosophiques sur l'histoire naturelle en général, et en particulier sur celle des Insectes, adressées au C. Millin', *Magasin Encyclopédique*, IV année, 4 (an VII, 1798), 7–23 : 7–8 'Je ne connoissois qu'une partie de ses [Linné] ouvrages, ceux où, en admirant l'étendue et la variété des connoissances, la précision du langage et l'exactitude des distributions, on cherche en vain cette chaleur de style, cette manière éloquent et pittoresque qui

Moreover, even naturalists who were fiercely opposed to the new chemistry, and deeply disliked the upper hand the “nomenclators” had gained in contemporary institutions, made their own terminological proposals. Thus, Lamarck, an author the *Magasin encyclopédique* repeatedly invited not to meddle with matters outside his botanical expertise, announced in 1802 his intention to launch an ambitious research program centered on three new disciplines: meteorology (certainly not a newcomer), hydrogeology and biology. Slightly too late, as we shall argue below.

Fading enthusiasm

The Parisian scientific and philosophical scene between 1795 and 1800–1802 was characterized by the simultaneous presence of a plurality of actors and of theoretical standpoints, of styles of research and of scientific writing, and of individuals in need of patrons and allies. Some were intent in renewing old friendships, especially if they had emerged from prison or re-emerged from hiding and returned from exile. Those new to Paris were often in search of good contacts, as was the case with the Cuvier brothers, Duméril, Duvernoy, Julien-Joseph Viery (1775–1847) or Pierre-André Latreille (1762–1833), Sonnini de Manoncourt, Bosc d’Antic, to name just a few. The effect of living in uncertain times, which explains more or less sudden changes of views, and the plurality of actors and of positions to be considered, should not exempt us from hazarding an interpretative framework that might open new lines of research. It will be therefore our task to offer a convincing explanation for the fact that the self-assured proclamations identifying (new) science with the reform of language progressively lost momentum, and by 1803–1804 they had almost completely disappeared. Which did not imply, needless to say, that the question of botanical, anatomical, geological or mineralogical nomenclature had disappeared: what was gone was the announcement of the unbounded progress Duméril had promised, the programmatic – if not epiphanic – value attributed to the reform of scientific language.

Cuvier will once again help us illustrate this key change of emphasis. We have already heard the young “instituteur” calling upon Horace to convince his friend Pfaff that Latin was not as flexible as Greek, as far as compound names were concerned: the names, that is, useful in science. In his early days, still under the influence of his German mentors, Carl Friedrich Kielmeyer (1765–1844) in particular, Cuvier dreamt of a science of everything, which would move from the study of chemical elements in order to ascend, law after law, to life, man and

caractérisent Buffon, et qui me paroissent inséparables de l’art d’observer les phénomènes de la nature, plus inspirans que les merveilleux des fables.’

intelligence; a project Lamarck, Delamétherie or Bernard-Germain-Etienne de la Ville, count Lacèpede (1756–1825) would have found appealing, if the one they had already developed had not been, in their eyes, clearly the better.³⁰

Upon his arrival in Paris, in 1795, Cuvier was admired and feared for his proficiency in comparative anatomy; the death of Vic d’Azyr in 1794 left him free scope, and a wealth of notes his predecessor had accumulated. Not without a certain degree of arrogance and aggressiveness, he advocated the adoption of a “stile sévère” in natural history, criticized the followers of Buffon with devastating irony, denied legitimacy to all forms of “roman philosophique”, including the then fashionable “theories of the earth”, and unfavourably compared France with Germany, where, he claimed, there were specialized natural history periodicals in every major town. Yet, despite all his accomplishments Cuvier needed help from other sources to further his career. He had to turn to bribery to get the post of assistant to Mertrud at the Muséum, and then all the political support he could muster to secure a permanent position. It was only in 1802, when his position was politically established, that he finally got his full chair at the Muséum. With the help, it should be added, of the ultra-Buffonian Lacepède.

In the meantime, his youthful sympathy for Bernardin de Saint-Pierre, and the Germanic dream of an all-encompassing science, had gone. His ardour for the Greek language and the new nomenclature cooled down increasingly from one text to the next. Many terms in science, he wrote in 1796, were indeed “children of habit”, but habits were difficult to change. To impose a brand new language to domains of knowledge embedded in the culture of the country meant to sacrifice the national idiom, and names familiar to tradesmen, amateurs, and artisans. The compromise he proposed was to adopt new terms, possibly based on Greek roots, to indicate species newly discovered or new taxonomical propositions. For instance, “gastropods” was a good descriptive term for the class of molluscs he had established, within which old species could continue to be indicated as tradition had chosen.

In 1800, at the end of the preface to the first volume of his *Leçons d’anatomie comparée*, Cuvier, not known for his generosity, generously acknowledged that the new anatomical nomenclature proposed in the book had been elaborated by Duméril, the editor of the first two volumes of his five-volume course. Generosity, then, or a way to mark a distance?³¹ A few years later, with a full chair at the

³⁰ Robert J. Richards, *The Romantic Conception of Life. Science and Philosophy in the Age of Goethe* (Chicago, 2002).

³¹ André-Marie-Constant Duméril, ed., *Leçons d’anatomie comparée de G. Cuvier, recueillies et publiées sous ses yeux* (2 vols, Paris, 1800). Vols. 3–5 were edited by Georges-Louis Duvernoy

Muséum, the position of perpetual secretary of the first class of the Institut, the favour of Lapeyrou, Président of the Senate, and of Napoleon himself on his side, Cuvier came to the rescue of his friend Fourcroy, when he protested vigorously against the widespread notion that the chemical nomenclature represented the best example of what the reform of the language could do for a science, “as a modern school had pretended.”³² Contemporaries could not miss the political point: the new chemistry had nothing to do with the “modern school” of the *idéologues*, who, on the contrary, had tried to exploit the experimental results of the chemists, their discovery and subsequent naming of new elements and compounds, for their own philosophical and “ideological” ends.

How do we explain Cuvier’s change of view concerning the relationship between science and language? Was it the result of an epistemological reflection or the consequence of the repeated attacks, scientific as well as political, that the proposal for a “linguistic” reform of science was subjected to? I have discussed elsewhere the spectrum of positions concerning the reform of the “histoire naturelle”, the slow and difficult ascent of Cuvier in the Parisian scientific scene, and his strategy to maintain power in the event of a change of regime.³³ In fact, opposition to Cuvier’s institutional as well as scientific leadership was constant and at times dangerously effective, in particular towards the end of his life. In the early 1800s, attacks concentrated on his opposition to geological theories, and on the neologisms he had introduced in natural history. Not surprisingly, the Buffonians gathered around Sonnini de Manoncourt, who had always condemned the linguistic novelties introduced by Linnaeus, Lavoisier, Haüy and their followers, did not miss a chance to remind readers that it was Cuvier who had dared to propose terms as barbarous as “gastropods”.

By 1802, when Pierre Denys de Montfort (1768–1820) made fun of Cuvier for having proposed such a word, no one could mistake the political edge of the polemic.³⁴ Indeed, after the return of the political *émigrés* in 1799, and the promise

(1777–1855). Vol 1, p. xxi: ‘Le citoyen Duméril a inséré presque partout sa nouvelle nomenclature, qui est analogue à celle qu’avoit proposée le citoyen Chaussier, et qu’ont modifiée, chacun à leur manière, les citoyens Dumas et Girard. Sans attacher à cet objet une grande importance, il sera cependant intéressant que les anatomistes conviennent de quelque fixation dans leur idiome’.

³² Georges Cuvier, ‘Rapport’, *Magasin Encyclopédique*, IV année, 7 (an IV, 1796), 161–164. The rapport concerned a memoir by Antoine-Nicholas Duchesne, ‘Sur l’établissement d’une nomenclature européenne d’histoire naturelle’, *ibidem*, pp. 147–160; the expression ‘nomenclature radicale’, that is, established on Greek roots, was by Duchesne. See also Georges Cuvier, *Histoire des progrès des sciences naturelles depuis 1789 jusqu’à ce jour*, (2 vols, Paris, 1827), 1, pp. 13–16 and 71–79.

³³ Corsi, *Lamarck*, and the English language edition, *The Age of Lamarck*, ch. 1.

³⁴ Pierre Denys de Montfort, in Sonnini de Manoncourt, ed., *Histoire naturelle*, 87 (an X, 1802), p. 35: ‘On ne voit chez Buffon ni mammaux, ni plantigrades, ni gasteropodes’; pp. 22–23: ‘Quand on

of pacification made by Bonaparte, the project of disciplinary specialization so loudly extolled during the previous five years, and in particular the connection between analysis, language and specialization, posed serious problems.

The language of science and of politics

In a very direct, almost trivial way, the new language of science was embarrassingly similar to other linguistic reforms the Jacobin republic and the Directoire had imposed, impinging upon the daily life of all French citizens, even the illiterates: the calendar, weights and measures, cities and streets, departments and festivities. As years later Chateaubriand reminded his conservative admirers, “This habit of latinizing and Hellenizing our language is not new [...] In our time it has been revived by science; our revolutionaries, great Greeks by nature, have compelled our merchants and farmers to calculate in hectares, hectoliters, kilometers, millimeters, decagrams.”³⁵

After 1795, key protagonists of the reform of weights and measures, for the most part well known scientists, had indeed to fight hard against the accusation of introducing barbarous terms into the French language, as has been well documented by Isabelle Laboulais-Lesage.³⁶ Not only were traditional forms of trade going to be disrupted, critics argued, but the basic form of national identity the common language represented was also demolished. Political vandals, the Jacobins, had proposed to change the names of days, months, weights and measures; they had found powerful allies in the scientific barbarians wishing to change every word the French people used to describe nature and its wonders; they even tried to dispense with traditional philosophical reflections on man’s intellectual and moral attributes

écrit pour la société, on doit lui parler son langage, et ne point affecter d’être étranger au milieu d’elle; on doit désirer se faire entendre de tous et abandonner une nomenclature greco-gothique qui ne peut qu’embrouiller toute chose.’ Cf. Corsi, *Lamarck*, pp. 207–208.

³⁵ René de Chateaubriand, *The memoirs of François René vicomte de Chateaubriand sometimes Ambassador to England, being a Translation by Alexander Teixeira de Mattos of the Mémoires d’Outre-Tombe*, (6 vols, London, 1902), 1, p. 133; R. de Chateaubriand, *Mémoires d’outre-tombe*, (2 vols, Paris, [1951] 2000), 1, p. 142 : ‘Cette manie de gréciser et de latiniser notre langue n’est pas nouvelle [...] De nos jours elle a ressuscité par la science; nos révolutionnaires grands Grecs par nature, ont obligé nos marchands et nos paysans à apprendre les hectares, les hectolitres, les kilomètres, les millimètres, les décagrammes’.

³⁶ Isabelle Laboulais-Lesage, *Lectures et pratiques de l’espace. L’itinéraire de Coquebert de Montbret, savant et commis d’Etat (1755–1831)* (Paris, 1999), pp. 288–296 ; Witold Kula, *Les mesures et les hommes* (Paris, 1984); Bernard Garnier and Jean Claude Hocquet, eds, *Genèse et diffusion du système métrique*, Actes du Colloque ‘La naissance du système métrique’ (Caen, 1990); Denis Guedj, *Le mètre du monde* (Paris, 2000); Ken Adler, ‘A Revolution to Measure : The Political Economy of the Metric System in France’, in M. Norton Wise, ed., *The Values of Precision* (Princeton, 1995), pp. 39–71 and *The Measure of All Things: the Seven Years Odyssey that Transformed the World* (London, 2002).

by establishing “idéologie”. More than that, it was the scientists who had suggested the reforms and the bizarre names to be adopted. They were key members of the various agencies and commissions that had formulated and tried without much success to implement the new system. In the sentence by Chateaubriand – a biased witness, no doubt, but an influential and representative one – we have quoted, revolutionaries and scientists were one and the same thing. It is not irrelevant to our argument to point out that in November 1800 the First Consul Napoleon decided to allow people to go back to traditional names, though preserving the decimal norm, and that in February 1812 old measures were reintroduced for commerce and local trade. The metric system was finally abolished at the Restoration, in February 1816.³⁷ Furthermore it need only be recalled that General Bonaparte considered the “*idéologues*” – a term he used with sarcasm – as the only intellectual opposition to his monarchic ambitions. Between December 1802 and January 1803 he dissolved the Moral and Political Sciences Class of the Institut, dominated by his philosophical opponents, after having suppressed in May 1802 the “Ecoles Centrales” the *idéologues* hoped would have reformed the cultural climate of the country. Last but not least, contemporaries commented on the First Consul’s deep dislike for the Greek language: a linguistic, or a political hydiosincrazy?³⁸ For different reasons, Chateaubriand and, as we have seen, Delamétherie, agreed with Bonaparte: scientists and philosophers radically innovating the language of their discipline were hard-line revolutionaries. To the eyes of Catholics and monarchists, of moderates of all political factions, vandals and barbarians in general had destroyed the language of commerce and exchange, the names of towns, days and months, the names of plants and animals. They had almost drowned the country in a bath of words: and of blood.

It was a difficult task, then, to use science to acquire wealth and power as Cuvier had managed to do, when the word “science” could constantly evoke dramatic and dangerous memories. For Cuvier, the task remained difficult throughout his career, having first to justify himself for his substantial as well as linguistic contributions to comparative anatomy and taxonomy, and in later life for his conservative standpoint regarding philosophical anatomy, embryology, and evolutionary theories. Cuvier had to fight off criticisms from the practitioners of

³⁷ For the chronology, legislation and debates concerning the metric system see the website <http://smdsi.quartier-rural.org>.

³⁸ Johann-Friedrich Reichardt, *Un hiver à Paris sous le Consulat (1802–1803)*, Thierry Lentz, ed. (Paris, 2003), p. 198. Commenting on the curriculum for the newly created Lycées, Reichardt pointed out that the study of Greek had been omitted at Napoleon’s request. Even private institutions offering classes in Greek were told to conform to the rule: ‘Bonaparte paraît, en effet, avoir une antipathie décidée contre ce qui vient de la Grèce.’

traditional natural history – verbose and moralistic lovers of systems of the universe and all-encompassing theories -, from old-fashioned chemists opposing the new chemical nomenclature and the new “nomenklatur” running institutional chemistry, and from mineralogists and geologists debating theories of the earth. In addition, Cuvier had to take measures to counteract the successful editorial enterprises launched by his enemies. Specialization and austerity of style could be presented as a good antidote against literary natural history only if one could persuade contemporaries to forget the arguments used for the intellectual justification of specialization in the years following the fall of Robespierre. After 1800, the rhetoric justifying specialization concentrated on the anti-materialistic and anti-atheistic virtues of well-defined fields of investigation, respectful of the division of intellectual labour, incapable of invading territories of higher generality and importance to man. In a popular course given in 1805 to a fashionable audience, Cuvier went so far as to suggest that the book of Genesis was always in agreement with the findings of geology. Paleontology was a rigorous science, well aware of its limits, whereas current geological speculations on the antiquity of the earth and on the history of life were not.³⁹

Conclusion: scientists at Napoleon’s court

More generally, the reasons of public and ideological order that made science useful to the Directoire authorities disappeared when order was finally assured by Napoleon, and traditional religious values were once again called upon to provide their support to the throne. Scientists, who had gained posts, influence and relative wealth thanks to the political uncertainties of the 1790s, had to demonstrate their usefulness to the new ruler, in order to receive much needed protection. The reasons they had advanced earlier on to forward their interests could be turned against them, as indeed they were. This line of interpretation is suggested by a fascinating passage in Stendhal’s autobiographical sketch, where he denounced the role of scientists in the rise of Napoleon:

The Emperor then [1797] began to raise up the throne of the Bourbons and was seconded by the extreme and boundless baseness of M. de Laplace. It's a strange thing that poets are courageous, and learned people, so-called, are base and servile. What servility, what abasement towards authority did M. Cuvier display! It horrified even the sensible Sutton

³⁹ Corsi, *Lamarck*, pp. 221–225.

Sharpe. At the Council of State M. le Baron Cuvier always supported the meanest policy.

When the order of the Reunion was instituted, I was in the innermost Court circles; he came *weeping*, there's no other word, to try and get it. I'll tell the Emperor's reply in due course. Bacon, Laplace, Cuvier, all sold themselves out of cowardice. [...]. Secure of glory through their writings, these gentlemen hope their scientific reputations will cover up their political conduct; whether it's a question of money or of favours, they rush to feather their own nests. The celebrated Legendre, a geometrician of the first rank, on receiving the Cross of the Legion of Honour, fastened it to his coat, looked at himself in the glass and jumped for joy. The room was low, he hit the ceiling with his head and fell down half dead. What a worthy death for this successor of Archimedes! What despicable things have they not done in the Academy of Sciences from 1815 to 1830 and since then, to get themselves decorated!⁴⁰

Stendhal's caricature contains an important hint: scientists who retained their political power after 1800 did so because they had become political figures performing political functions. As far as the others were concerned – those who had not acquired political power, or were not capable of maintaining it in the difficult environment of an imperial court – they had to face the hard consequences of an increasingly conservative political and intellectual climate in which scientific prominence was, if anything, a source of danger. Between 1796 and 1802, engaging in science, publishing scientific works, attending lectures at the Muséum and at the Collège de France, or the meetings of scientific societies, attested one's moderate patriotism, one's aspiration to occupy the position justified by one's merits. It also meant actively opposing the revolutionary vandalism responsible for prosecuting science and scientists – even though those who took this line had often themselves

⁴⁰ Stendhal, *The Life of Henry Brulard*, translated and with an introduction by Jean Stewart and Bert C.J.G. Knight (London, 1958), p. 180; Stendhal, *Vie de Henry Brulard* (Paris, [1973] 2002), p. 237: 'L'Empereur commença alors [1797] à élever le trône des Bourbons et fut secondé par la lâcheté sans bornes ni mesure de M. de Laplace. Chose singulière, les poètes ont du cœur, les savants proprement dits sont serviles et lâches. Quelle n'a pas été la servilité et la bassesse envers le pouvoir de M. Cuvier! Elle faisait horreur même au sage Sutton Sharpe. Au Conseil d'État M. le baron Cuvier était toujours de l'avis le plus lâche. Lors de la création de l'ordre de la Réunion j'étais dans le plus intime de la cour, il vint *pleurer*, c'est le mot, pour l'avoir. Je rapporterai en son temps la réponse de l'Empereur. Rentés pour la lâcheté : Bacon, Laplace, Cuvier. M. Lagrange fut moins plat, ça me semble. Sûrs de leur gloire par leurs écrits, ces Messieurs espèrent que le savant couvrira l'homme d'État ; en affaires d'argent, comme en faveurs, ils courent à l'utile. Le célèbre Legendre, géomètre de premier ordre, recevant la croix de la Légion d'Honneur, l'attacha à son habit, se regarda au miroir et sauta de joie. L'appartement était bas, sa tête heurta le plafond, il tomba à moitié assommé. Digne mort c'eût été pour ce successeur d'Archimède ! Que de bassesses n'ont pas faites à l'Académie des sciences de 1815 à 1830 et depuis, pour s'escamoter des croix !'

been active members of the “vandalistic” administration. Bonaparte’s election to the Institut in 1797, favoured by Laplace, his former teacher, illustrates his political shrewdness, more than his scientific accomplishments. After 1800–1802, politics did not need science any more, and conservatives could question the reliability of scientists who claimed they had been persecuted, but had in fact emerged from the storm with jobs and increased influence. At all events, public scientific activities decreased dramatically. Scientific publishing, it has rightly been argued, suffered the general crisis of publishing, and the vagaries of a protracted war economy. True, but why did attendance at free science lectures decrease as well? Data emerging from the study of the audiences attending Lamarck’s lectures from 1795 to 1823 show a sharp decline in numbers after the record year 1802 (131 subscriptions); politicians, military men, bureaucrats and senior members of the public had already deserted his classroom as from 1798.⁴¹ Notably, 1802 was the year, in which Lamarck announced his ambitious plan to establish a new terrestrial physics, articulated in three main disciplines: meteorology, hydrogeology and biology. This was also the year in which Chaptal, a fellow scientist and Minister of the Interior, decided to help Lamarck in setting up a meteorological correspondence involving scores of provincial amateurs, with the support of “*préfets*” and local authorities. From 1803 to 1809, no more mention was made of this ambitious research and institutional program. No more mention was made of hydrogeology either, and as far as biology was concerned, Lamarck stated in 1809 that for his part the project would not be undertaken. Lamarck’s main publications were limited to a series of memoirs on the fossil shells of the Parisian basin, published in the *Annales du Muséum*, and to his successful meteorological almanacs. Used to having to print books at his own expense, Lamarck was probably discouraged by having to talk to an audience of only 7 members in 1805, not a very promising basis for sales.

Examples could be multiplied, attesting the sharp decline in publishing by authors as diverse as Gaspard Monge and Geoffroy Saint-Hilaire, Fourcroy and Laplace (among the two most powerful scientist-politicians of the time).⁴² As from 1800–

⁴¹ For the prosopographic database concerning the 973 pupils attending Lamarck’s lectures from 1795 to 1823, see Pietro Corsi, ed., www.Lamarck.net, and the statistical evaluation by Raphaël Bange, *ibidem*. See also Pietro Corsi, ‘Les élèves de Lamarck: un projet de recherche’, in Goulven Laurent, ed., *Jean-Baptiste Lamarck 1744–1829* (Paris, 1997), pp. 515–526. The website contains all the theoretical works by Lamarck, in word format and searchable by word, for a total of 7200 pages

⁴² Jérôme Laurentin, ‘Fidélités et reconstructions, l’exemple de l’école géométrique française de Gaspard Monge (1771–1816)’, Paris E.H.E.S.S. unpublished Doctoral dissertation (3 vols, 2000), offers interesting statistics on the decline of mathematical publications after 1800, and their resumption after the fall of Napoleon. The decline in publications has been called in question by historians of the period: a crucial distinction to be kept in mind is between journal articles – which did not decrease – and books and pamphlets - which did.

1802, the pretence that science was going to contribute to the happiness of mankind was increasingly put in question, in Europe as well as in France, where Chateaubriand led a powerful counter-attack with his *Génie du Christianisme* (1802). The idea that nature, man, society and politics could be amenable to final scientific assessment and managed scientifically was seen as one of the main intellectual components (if not the most important) of the arrogance that had led to the revolutionary drama. Thus, scientists who had risen to power during the Revolution, the Directoire and the Consulate, needed all the political support they could get in order to preserve and possibly expand their privileges: in the highly partisan words of Chateaubriand, “the Laplaces, the Lagranges, the Monges, the Chaptals, the Berthollets, all the prodigies, once haughty democrats, became Napoleon's most obsequious servants.” This was the case, he might have added, with Cuvier and Lacepède as well, who had never been ultra-democrats, but needed Napoleon all the same. And had to mark their distance from the intellectual and epistemological values that had characterized the aggressive reform proposals put forward during and immediately after the Jacobin Republic.⁴³

The new republican calendar did not survive long after the consolidation of the Empire, nor did the new weights and measures; some new scientific terms or the names of new disciplines were kept, though it would be interesting to draw up a list of those that were not. What was abandoned, as we have already seen, was the epistemological foundation of the radical linguistic programme that had been argued about in periodicals, dictionary articles and books during the crucial years following the Terror.

⁴³ Chateaubriand, *Mémoires*, ii, pp. 187–8 ; French edition, 1, p. 467: ‘Les La Place, les Lagrange, les Monge, les Chaptal, les Berthollet, tous ces prodiges, jadis fiers démocrates, devinrent les plus obséquieux serviteurs de Napoléon. Il faut le dire à l’honneur des lettres: la littérature nouvelle fut libre, la science servile; le caractère ne répondit point au génie, et ceux dont la pensée était montée au plus haut du ciel, ne purent élever leur âme au-dessus des pieds de Bonaparte: ils prétendaient n’avoir pas besoin de Dieu, c’est pourquoi ils avaient besoin d’un tyran.’ Chateaubriand’s strictures against Lacepède were particularly severe.