BJHS **43**(4): 557–571, December, 2010. © British Society for the History of Science 2010
doi:10.1017/S0007087410001251 First published online 11 October 2010

Locating the sciences in eighteenth-century Egypt

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Abstract. In the last years of the eighteenth century, Egypt famously witnessed the practice of European sciences as embodied in the members of Bonaparte's Commission des sciences et des arts and the newly founded Institut d'Egypte. Less well known are the activities of local eighteenth-century Cairene religious scholars and military elites who were both patrons and practitioners of scientific expertise and producers of hundreds upon hundreds of manuscripts. Through the writings of the French naturalist Etienne Geoffroy Saint-Hilaire (1772–1844) and those of the Cairene scholar and chronicler ʿAbd al-Raḥmān al-Jabartī (1753–1825), I explore Egypt as a site for the practice of the sciences in the late eighteenth century, the palatial urban houses which the French made home to the Institut d'Egypte and their role before the French invasion, and the conception of the relationship between the sciences and social politics that each man sought. Ultimately, I argue that Geoffroy's struggle to create scientific neutrality in the midst of intensely tumultuous political realities came to a surprising head with his fixation on Paris as *the* site for the practice of natural history, while al-Jabartī's embrace of this entanglement of knowledge and power led to a vision of scientific expertise that was specifically located in his Cairene society, but which – as Geoffroy himself demonstrated – could be readily adapted almost anywhere.

Bonaparte's invasion of Egypt in 1798 figures dramatically in large-scale oil paintings and in a broad historical imagination. The significance of the invasion might seem to lie in the juxtaposition of France, Europe and Bonaparte on the ascendant and an Ottoman Empire in decline.[1] The question of its relative strength vis-à-vis Europe has long been at the heart of critiques of the eighteenth-century Ottoman Empire, starting with the Ottomans themselves and including the influential and largely negative assessment of eighteenth-century Ottoman society by Hamilton Gibb and Harold Bowen in 1954.[2] Ottomans and Europeans had been variously allies and enemies for centuries, so acute awareness of their respective realms was not new. However, European expansion in the eighteenth and early nineteenth centuries focused new attention on the relationship

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This paper first took shape for the Circulation and Locality in Early Modern Science workshop, W.A. Clark Memorial Library, UCLA, Los Angeles, 19–20 October 2007, organized by Mary Terrall and Kapil Raj, and was revised for presentation in a related panel at the 3 Societies Meeting in Oxford in 2008. I am delighted to publicly thank them both for facilitating such a lively workshop and including my work in the mix. This revised and expanded essay has benefited from their work and comments, the work and reflections of my fellow participants at both events, and the particularly helpful remarks of the anonymous reviewer.

1 For a stark assessment see Bernard Lewis, *The Arabs in History*, New York: Harper & Row, 1967, pp. 166–167: 'By the easy victory which they won the French shattered the illusion of the unchallengeable superiority of the Islamic world to the infidel West, thus posing a profound problem of readjustment to a new relationship. *The psychological disorders thus engendered have not yet been resolved*' (emphasis added).

2 Hamilton Gibb and Harold Bowen, *Islamic Society and the West: A Study of the Impact of Western Civilization on Moslem Culture in the Near East*, London: Oxford University Press, 1950.

https://doi.org/10.1017/S0007087410001251 Published online by Cambridge University Press

between intellectual production, particularly scientific and technical production, and political and military strength.

Historians continue to tease out this relationship between science and empire, but of course thinkers in Bonaparte's day also grappled with such issues at both abstract and deeply personal levels. Through the stories of two such men, both working in Egypt at the end of the eighteenth century, I argue that significant similarities can be seen across French and Ottoman Egyptian societies if we suspend, for a bit, our focus on their differences. These men both valued overlapping sorts of scientific investigation and for both the social setting of such investigations proved vital to their possibility. Ultimately, in the early nineteenth century, both figures came to question the proper role of the sciences in shaping their own society.

In the first months of the occupation, French scholars established the Institut d'Egypte in the commandeered palace of one of the members of the local ruling military elite who, like most of his fellow Mamluks, had fled the city after defeat at the hands of the French. In letters and memoirs, many of the French savants described these sumptuous grounds as particularly well suited to scientific life, and praised the rooms for their library, weekly meetings and mechanical and chemical workshops. This palace was also the setting for evening entertainment with an audience of specially invited Cairenes. Members of the French contingent presented electrical and chemical marvels, seeking to quite literally shock the local religious elites into admiration.

The first vignette features the young French naturalist and member of Bonaparte's Egyptian Expedition, Etienne Geoffroy Saint-Hilaire (1772–1844), and his letters from Egypt back to friends and family in France.[3] The second vignette looks at a contemporary witness, the Cairene scholar and chronicler, ᶜAbd al-Raḥmān al-Jabartī (1753–1825), who left several accounts of the French invasion and occupation. He also wrote a larger multivolume work, *Marvelous Remnants of Lives and Events*, integrating biographies of other prominent members of the scholarly religious class (the *ᶜulamāᵓ*), Ottoman governors and local elites from the Mamluk military class which effectively ruled Egypt, and the occasional merchant or craftsman, with a chronicle of the political and social history of Egypt over a long eighteenth century.[4]

3 E. Geoffroy Saint-Hilaire, *Lettres écrites d'Egypte à Cuvier, Jussieu, Lacépède, Monge, Desgenettes, Redouté jeune, Norry, etc., aux professeurs du Muséum, et à sa famille* (ed. E.T. Hamy), Paris, 1901. On Geoffroy see Toby A. Appel, *The Cuvier–Geoffroy Debate: French Biology in the Decades before Darwin*, New York: Oxford University Press, 1987; Hervé Le Guyader, *Etienne Geoffroy Saint-Hilaire: A Visionary Naturalist* (tr. M. Grene), Chicago: University of Chicago Press, 2004; Jean-Edouard Goby, 'Etienne Geoffroy Saint-Hilaire en Egypte', *Cahiers d'histoire égyptienne* (1953) 5, pp. 139–160.

4 ᶜA. al-R. al-Jabartī, *ᶜAjāᵓib al-āthār fī 'l-tarājim wa'l-akhbār* (Marvelous Remnants of Lives and Events), 1st edn (ed.ᶜA.al-R.ᶜAbd al-Rahīm), 4 vols., Cairo: Dar al-Kutub Press, 1998; *idem, ᶜAbd al-Rahmān al-Jabartī's History of Egypt: ᶜAjā'ib al-Āthār fī 'l-Tarājim wa'l-Akhbār* (ed. and tr. T. Philipp and M. Perlmann), Stuttgart: Franz Steiner Verlag, 1994. All references to al-Jabarti's work will give the Arabic pagination first followed by the English edition in parentheses. On al-Jabartī see David Ayalon, 'The historian al-Jabartī and his background', *Bulletin of the School of Oriental and African Studies* (1920) 23, pp. 247–248; and Gilbert Delanoue, 'ᶜAbd al-Rahman al-Jabartī un historien egyptien entre deux mondes', in Charles-André Julien *et al.* (eds.), *Les Africains*, Paris: Editions Jeune Afrique, 1978.

https://doi.org/10.1017/S0007087410001251 Published online by Cambridge University Press

In trying to contextualize the occupations and preoccupations of these two men and their contemporaries, scholars of the more familiar European case have mined letters, diaries and published records from the large number of eighteenth-century European expeditions to Egypt, including, of course, Bonaparte's invasion and the French occupation of Egypt from 1798 to 1801.[5] On the Ottoman Egyptian side, we have a handful of chronicles of Egypt and biographical dictionaries from the period and an expansive and little-studied corpus of loosely scientific manuscripts produced in eighteenth-century Egypt by members of the religious scholarly class.[6] These Arabic manuscripts treated the 'uncommon sciences' (*al-ʿulūm al-gharība*), a medley of mathematics, astronomy, astrology, medicine and divination techniques. These manuscripts include copies of much earlier treatises, commentaries and super-commentaries on these foundational works, and new texts on mathematical calculation techniques; aspects of number theory; magic squares; the calculation of inheritance; land surveying and the determination of surface area and volume; determination of calendars, religious holidays and daily prayer times; geometry, engineering and architecture; spherical geometry and astronomy; astronomy and astrology; medicine; decipherment through letters; and several other modes of augury.[7]

The French naturalist Etienne Geoffroy Saint-Hilaire came to Egypt with a much more specialized understanding of scientific range. Geoffroy would be known later for his conceptual approach to natural history, made famous by his public debate with Georges Cuvier in 1830, but also for decades of empirical study of 'analogies' within and (later) across zoological classes. As I shall show, over the course of his final year in Cairo, Geoffroy came to argue that scientific study of natural history could only be practised in Paris, and not in either Cairo or Lisbon. By 1799, he was increasingly desperate to return to the Muséum d'histoire naturelle in Paris, but this sentiment also justified his transfer of specimens from Egypt and, in 1808, from Lisbon to the French capital.[8] Thus the relationship of Geoffroy's natural history to the expanding French state was fundamentally one of mutual support despite his attempts to separate these two projects.

5 For records from the French invasion see Henri Munier, *Tables de la description de l'Egypte, suivies d'une bibliographie sur l'expédition française de Bonaparte*, Cairo, 1943; Jean-Edouard Goby, 'Contribution à l'inventaire des sources manuscrites et à l'étude bibliographique de l'histoire de l'expédition française en Egypte', *Bulletin de l'Institut d'Egypte* (1952) 33, pp. 305–322; Philippe de Meulenaere, *Bibliographie raisonnée des témoignages oculaires imprimés de l'expédition d'Egypte (1798–1801)*, Paris: F. & R. Chamonal, 1993.

6 Those held in the Egyptian National Library have been wonderfully catalogued and cross-indexed by David King in an English guide and a two-volume Arabic catalogue with excerpts: *A Survey of the Scientific Manuscripts in the Egyptian National Library*, Winona Lake: Eisenbrauns, 1986; and *Fihris al-makhṭūṭāt al-ʾilmiyah al-maḥfuẓah bi-Dār al-Kutub al-Miṣriyah*, Cairo, 1981. See also Boris Rosenfeld and Ekmeleddin İsanoğlu, *Mathematicians, Astronomers and Other Scholars of Islamic Civilisation and Their Works (7th–19th c.)*, Istanbul: IRCICA, 2003, which synthesizes many earlier catalogues.

7 *Al-ḥisāb, al-riyāḍīyāt, al-jabr wa'l-muqābala, ilm al-aritimāṭīqī, ʿilm al-ʿadād, ʿilm al-awfāq, al-farāʾiḍ, al-misāḥa, ʿilm al-mīqāt, al-mawāqīt, al-handasa, al-hayʾa, al-falak, al-falakiyāt, ʿilm al-nujūm, al-ṭibb, ʿilm al-ḥurūf, ʿilm al-raml, al-zāʾirja*. Consult *Al-Jabartī's History of Egypt: A Guide* and the *Encyclopedia of Islam* for these terms or their English equivalents.

8 On Geoffroy's acquisition of Brazilian specimens from Lisbon see Filipa Vicente, 'Travelling objects: the story of two natural history collections in the nineteenth century', *Portuguese Studies* (2003) 19, pp. 19–37.

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Geoffroy's Arab–Egyptian contemporary ʿAbd al-Raḥmān al-Jabartī, for his part, focused his attention on a much wider range of disciplinary approaches to the exploration of the natural and supernatural worlds – what he and others called the 'uncommon sciences' – fields with more informal domains for displaying or contesting methodologies than the Parisian Muséum d'histoire naturelle. While al-Jabartī was himself a practitioner of mathematical and astronomical disciplines, at a large-scale, social level he was most interested in the possibility in Ottoman Egypt for figures versed in the 'uncommon sciences' to gain the ear of political and military elites and ultimately influence matters of governance and legitimacy.[9] In contrast to Geoffroy's attempts to distance natural history from the state, al-Jabartī sought out the uncommon sciences precisely for the way these fields conjoined influential political and intellectual figures.

Finally, I suggest that looking at the eighteenth century in terms of the institutionalization of the European sciences and the development of a language of scientific disinterest does not adequately capture the French experience in occupied Egypt and may lead us to misunderstand the differences between these two cases. Rather than seeing the French Institut d'Egypte as the key differentiation between French and Ottoman Egyptian practices, I draw attention to al-Jabartī's conception of the role of scientific expertise in society, one which was highly localized in its particulars but could be imagined with appropriate modifications as operating in any political unit, versus Geoffroy's conception which was universal in aspiration but required the quite specific site of the French (or British) metropole for its practice.

First vignette

On 1 July 1798 Bonaparte and a force of 36,000 men, including some 160 scholars and engineers, arrived off the coast of Alexandria. Following Bonaparte's orders only a few individuals knew the precise destination of this military expedition, so when the British reached Alexandria in late June and found no sign of a French invasion, and no welcome from the Egyptian port cities to stay and wait, they soon set sail in search of the French in the Levant.[10] Arriving a few days after Nelson's departure, French troops defeated Mamluk forces in an initial victory in Aboukir, near Alexandria, and continued quickly up towards Cairo. By 25 July Bonaparte and his men had occupied the capital. However, their early advantage of surprise could not last long. By the end of the following week Nelson had returned to the northern coast and destroyed the French fleet in the Battle of the Nile. Thus the new conquerors of Egypt spent all but the first month of their occupation themselves under blockade.[11]

9 For al-Jabartī's own work in mathematics, astronomy, the orientation of the qibla, and amulets see Ayalon, op. cit. (4); and al-Jabartī, *ʿAjāʾib*, op. cit. (4), 2:187–188 (2:207–208); 2:338 (2:367); 2:367–369 (2:402–406); 2:393 (2:434).

10 Although the British fleet surprised local residents, apparently Bonaparte and the French were expected as Ottoman officials had warned of their arrival. Yves Laissus, *L'Egypte, une aventure savante: Avec Bonaparte, Kléber, Menou, 1798–1801*, Paris: Fayard, 1998, p. 74.

11 Much has been written about the French occupation, especially on the occasion of the two-hundredth anniversary of the invasion. I have been most influenced by Darrell Dykstra, 'The French occupation of Egypt,

https://doi.org/10.1017/S0007087410001251 Published online by Cambridge University Press

Despite the later uprisings in Egypt and military defeats on the Syrian campaign, the loss of over half their force, Bonaparte's decision to abandon Egypt in August of 1799, and the fact that the following two years were engulfed in negotiation and fighting over the terms of a French withdrawal, this incident is almost never heralded as a French catastrophe. Rather, as Bonaparte's long-time personal secretary Bourrienne later wrote, 'Despite the all too real disasters . . . the French flag flying atop the cataracts of the Nile and the pyramids of Memphis . . . dazzled the imagination.'[12]

The naturalist Etienne Geoffroy Saint-Hilaire was twenty-six years old when he wrote to his friend and more established colleague Georges Cuvier, 'I have left everything!'[13] As his letters show, the allure of new surroundings, even new French surroundings, entranced young Geoffroy. Writing from Lyon in late April 1798, he told Cuvier that he had left his former life without regret and already found that 'the novelty of places through which I have just passed fixed my attention'.[14] Writing to Cuvier again from Toulon a few weeks later, he had finally learned of the expedition's destination and hoped soon to be 'lost in the sands of Egypt'.[15] Ten days later, at last on board a ship bound for Alexandria by way of Malta, Geoffroy declared himself in good health and good spirits, repeating to Cuvier that he was 'as much at ease' in his current locale as he had been at the Jardin des plantes.[16]

Once on Egyptian soil, Geoffroy began naturalizing immediately even as French forces were fighting their way towards Cairo. In his early letters to family and colleagues, as he had first done at sea, he drew frequent comparisons between his new environs and Paris.[17] Throughout his many letters to Cuvier, Geoffroy emphasized the productivity of the members of the Commission des arts et des sciences and their progress in constructing a site for their work: in Geoffroy's words, the four contiguous palaces that housed the Institut d'Egypte provided 'perhaps greater conveniences and at least equal the magnificence one finds at the Louvre'. An aviary was quickly completed and 'soon we will be, in this respect, better established than the Jardin des plantes', he wrote.[18]

1798–1801', in M.W. Daly (ed.), *The Cambridge History of Egypt*, vol. 2: *Modern Egypt, from 1517 to the End of the Twentieth Century*, Cambridge: Cambridge University Press, 1998, pp. 113–138; Laissus, op. cit. (10), André Raymond, *Egyptiens et Français au Caire, 1798–1801*, Cairo: Institut français d'archéologie orientale, 1998; Patrice Bret, *L'Egypte au temps de l'expédition de Bonaparte, 1798–1801*, Paris: Hachette, 1998; Robert Solé, *Les Savants de Bonaparte*, Paris: Le Seuil, 1998; a more recent contribution is Juan Cole, *Napoleon's Egypt: Invading the Middle East*, Basingstoke: Palgrave Macmillan, 2007.

12 L.A.F. de Bourrienne, *Mémoires de M. de Bourrienne, ministre d'état; sur Napoléon, le directoire, le consulat, l'Empire et la restauration*, 10 vols., Paris, 1829–1830, vol. 2, p. 311, my translation.

13 Geoffroy, op. cit. (3), Letter I to Georges Cuvier, 29 April 1798, p. 1. This and all subsequent translations from Geoffroy's letters are my own.

14 Geoffroy, op. cit. (3), Letter I to Georges Cuvier, 29 April 1798, p. 2.

15 Geoffroy, op. cit. (3), Letter VI to Cuvier, 13 May 1798, pp. 29–31.

16 Geoffroy, op. cit. (3), Letter X to Cuvier, 23 May 1798, pp. 37–46.

17 In a letter to another member of the expedition who was still in Alexandria, Geoffroy gave him a sense of Cairo's neighbourhoods and their relative location: the immense palaces and gardens were located in 'le faubourg Saint-Victor', while Bonaparte and the rest of the French were housed in 'le quartier Saint-Honoré'. Geoffroy visited the neighbourhood of the savants frequently for only in Saint-Victor could 'the real Champs-Élysées' be found. Geoffroy, op. cit. (3), Letter XVI to Redouté jeune, 24 August 1798, pp. 69–72.

18 Geoffroy, op. cit. (3), Letter XXIII to Cuvier, 20 October 1798, 97; Letter XVII to Cuvier, 23 August 1798, pp. 74–75.

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If only his friends were there too, Geoffroy declared, he would 'believe [himself] to be in France' with the same quality and intensity of work occupying his time.[19]

Over the course of the next twelve months, Geoffroy set up household with an eleven-year-old black slave boy whom he trained to work with his collections and stuff animals. The young Tendelti, whom Geoffroy purchased for 250 francs, came also with 'an old black woman' who managed the daily housework for the three of them.[20] In a letter to his father, Geoffroy took pains to distinguish slavery in Egypt from that of the Americas. He explained that his two slaves called him 'father' and Geoffroy declared the arrangement 'a veritable adoption'. In this letter of June 1799, he wrote somewhat self-consciously that he had temporarily transferred his affections for his European family, feelings that were 'useless' in his current state, to his 'little black family'.[21] In this personal example, Geoffroy voiced the process which he sought to bring about professionally as well, namely the transfer of his Parisian scientific community to the site of French-occupied Egypt.

By late 1799, however, Geoffroy's letters started to reveal a much darker mood and his optimism concerning his new-found society was gone.[22] Writing in December of that year, he was despondent: 'Egypt is unbearable', he told Cuvier. 'I cannot recall without sadness all that I exchanged for my current state, I left true and good friends to throw myself into a society that has all the elements of a monastery or ... those of a little provincial town.'[23] The unfortunate Geoffroy would have to spend almost another year there in the company of discouraged scholars and mocking soldiers who constituted his community.

In one sense, Geoffroy's transformation from a young man enchanted by a romantic vision of travel and natural history in the field to a weary, frustrated, sick and homesick young man needs little explanation. However, the particular ways in which Geoffroy's feelings shifted towards Egypt as a place and, more specifically, a place for the practice of natural history are quite revealing. His sense of his intellectual and personal proximity to European and especially Parisian natural history was critical to his happiness (or a gauge of his happiness, or something of both). But Geoffroy's sense of Egypt's intellectual distance from France was more than simple discouragement with the silence of his colleagues back at the Muséum d'histoire naturelle. His letters offer a chronological mapping of sustained attention to multiple concerns. In fact, Geoffroy's belief in the

19 Geoffroy, op. cit. (3), Letter XVIII to Cuvier, 28 August 1798, pp. 80–81.

20 The name Geoffroy used for the boy appears to be eponymous, indicating family origin in Tendelti, the capital of Darfur.

21 Geoffroy, op. cit. (3), Letter XXX to Geoffroy *père*, 23 June 1799, 118–123. To give some context to the price Geoffroy paid for Tendelti, Geoffroy's brother was an officer in Bonaparte's army and received 1,500 francs a month for expenses. Geoffroy, op. cit. (3), Letter XXXI to Geoffroy, père, 15 August 1799, pp. 123–126.

22 Appel dates the turning point somewhat later, describing the first two years in Egypt as 'a happy and productive period for Geoffroy' that 'gave him a welcome feeling of importance' and noted that Isidore Geoffroy called the first year in Egypt one of the happiest in his father's life. Appel, op. cit. (3), p. 73, and n. 11, reference to I. Geoffroy Saint-Hilaire, *Vie, travaux et doctrine scientifique d'Etienne Geoffroy Saint-Hilaire*, Paris: P. Bertrand, 1847, reprint. Brussels: Culture et Civilisation, 1968, p. 81.

23 Geoffroy, op. cit. (3), Letter XXXVIII to Cuvier, 22 December 1799, pp. 152–154.

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possibility of Egypt as a site for research and the practice of natural history was critically related to the success of the occupying army. In an emotional letter to Cuvier in November 1799, Geoffroy lamented the destruction of a large part of the army of the Republic, who faced great casualties on a failed campaign in Syria, and immediately expressed an intense desire to return to Paris.[24]

With this military defeat, Geoffroy voiced his harshest complaints of the way the destiny of the savants and their work were in the hands of a military and political expedition. From early on, he had acknowledged that his role was not purely scientific; in October of 1798, he wrote to his father that he and the other savants devoted themselves to economic questions to please the government and to scientific pursuits to please themselves.[25] Initially, this balance seemed acceptable to Geoffroy. He boasted to Cuvier that they hoped to issue proceedings from Egypt before their Parisian counterparts could get their own out, and throughout his first year in Egypt Geoffroy was at great pains to keep abreast of current European journals. He repeatedly asked Cuvier to send such materials, recognizing that given the British blockade any journals would have to be sent by a neutral envoy.[26] Geoffroy was therefore attentive to the tension between a 'neutral' international world of scientific investigation and the political reality of the military force that had brought him to Egypt. It appears that French defeat made his balancing act untenable. As his outlook crashed in the wake of French losses, he declared that Bonaparte had dragged the scholars all to Egypt and Kléber was forcing them to stay for no greater purpose than to add another line to their eulogies, a testament to their devotion to the sciences.[27] Wondering if he were destined 'to live out his life as a mercenary in penal servitude in Constantinople', despite having 'embarked on such a beautiful career', Geoffroy could only hope that he would somehow reach Europe with his precious collections intact.[28] Where he once felt himself to be 'at the centre of a raging fire of enlightenment reason', he had come to see himself a 'plaything' of men more powerful than he.[29]

His inability to separate the sciences from politics led Geoffroy to worry, in a later letter to Cuvier, that hostilities between Britain and France would prevent his plan to present Joseph Banks, the long-standing president of the Royal Society, with a collection of specimens from Egypt and request a gift of specimens from New Holland in return.[30]

24 Geoffroy, op. cit. (3), Letter XXXV to Cuvier, 27 November 1799, pp. 144–128.

25 Geoffroy, op. cit. (3), Letter XXVI to Geoffroy *père*, 25 October 1798, p. 111.

26 Geoffroy, op. cit. (3), Letter XVII to Cuvier, 23 August 1798, pp. 74–75, p. 79.

27 Bonaparte 'wanted it said that he protected the sciences and arts, and [Kléber] didn't want to be accused of being embarrassed of us by sending us home as soon as he took power. The poor savants of Cairo were thus sent to Egypt so that one may read in the history of Bonaparte one more line of eulogy and they were kept so that one may not read a reproach in that of Kléber'. Geoffroy, op. cit. (3), Letter XXXV to Cuvier, 27 November 1799, pp. 145–146.

28 Geoffroy, op. cit. (3), pp. 144–145.

29 '*Je vis au centre d'un foyer ardent de lumières*.' Geoffroy, op. cit. (3), Letter XXII to Geoffroy *père*, 4 October 1798, 92–93; Letter XXXV to Cuvier, 27 November 1799, p. 146.

30 Geoffroy, op. cit. (3), Letter XLVIII to Cuvier, 30 April 1800, pp. 178–181, 181. For more on Banks see the recent work Neil Chambers, *Joseph Banks and the British Museum: The World of Collecting, 1770–1830*, London: Pickering & Chatto, 2007, and its copious bibliography.

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From November 1799 until his longed-for departure in September of 1801, Geoffroy repeatedly expressed his sense of uselessness in Egypt, that there was nothing to be gained for the sciences by their presence in Egypt and his urgent need to return, for the necessary experiments and research which he 'could only carry out in Paris' and to organize his observations, which he 'could only do in France'.[31] His scientific Eden had become a desolate desert.

In his Préface historique to the *Description de l'Egypte*, the mathematician and member of the Institut d'Egypte Jean-Baptiste-Joseph Fourier compared the French occupation to the Crusades, 'those famous expeditions' that achieved almost none of their goals but opened up trade and navigation.[32] Modern Egypt had proved unwieldy and Fourier's discussion of Egypt as a place for the practice of science focused on classical times. 'Homer, Lycurgus, Solon, Pythagoras and Plato', he wrote, 'went to Egypt to study the sciences, religion and law'.[33] With the French victory, the mathematician declared, 'the sciences returned, after a long exile, to their homeland and prepared to improve it'.[34] But despite Fourier's bravado Geoffroy was far from alone in preferring the sciences in their European exile and seeing Europe, and Paris in particular, as their necessary home. Bonaparte himself returned to France, along with Monge and Berthollet, in August of 1799. With Bonaparte gone, Geoffroy reported that the animosity between the savants and soldiers had increased.[35] Nevertheless, Geoffroy foresaw the day when the achievements of the savants would 'excuse in the eyes of posterity the carelessness with which our nation threw itself, as it were, into the Orient'.[36] I read in this line a renewed assertion of the differentiability of scientific and political projects, even if Geoffroy located that possibility only in the future.

Geoffroy's discomfort in Egypt was not entirely due to an absence of familiar practices around him. Told that many Mamluks were collectors, Geoffroy and others raided the vacated urban palaces, taking specimens of unusual animals and fine luxury items, including a clock made by the Swiss clockmaker Berthout and a large vase from Japan.[37] Geoffroy freely admitted to Cuvier that he had had to correct some of his initial classifications in ways that brought them into accord with local knowledge.[38] In a second letter to Cuvier written the same day, Geoffroy declared he found the local fishermen easy to work with and he praised their terminology as being 'almost Linnean' in its ability to capture 'the most apparent and distinctive characteristic or one of the most remarkable habits' of a species.[39] From his first week in Egypt, Geoffroy also

31 Geoffroy, op. cit. (3), Letter LIII to Cuvier, 9 November 1800, 193–196 ; Letter L to professeurs du Muséum, 23 September 1800, p. 187.

32 J.-B.-J. Fourier, Préface historique to the *Description de l'Egypte*, Paris, 1809–1822, pp. i–xcij, pp. xviij–xix. All translations from this are mine.

33 Fourier, op. cit. (32), p. i.

34 Fourier, op. cit. (32), p. xliij.

35 Geoffroy, op. cit. (3), Letter XXXV to Cuvier, 27 November 1799, p. 147.

36 Geoffroy, op. cit. (3), Letter XXXV to Cuvier, 27 November 1799, p. 147.

37 Geoffroy, op. cit. (3), Letter XVII to Cuvier, 23 August 1798, p. 74

38 Geoffroy, op. cit. (3), Letter XLVIII to Cuvier, 30 April 1800, p. 180. Geoffroy follows up these positive remarks with a note that 'unfortunately' he is part of work 'that advances in Europe'. Ibid.

39 Geoffroy, op. cit. (3), Letter XLIX to Cuvier, 30 April 1800, p. 183.

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encountered other European naturalists there and in one case hoped to make use of the Venetian consul to arrange for certain specimens to be sent back to Paris.[40]

Ultimately, however, and despite these moments of overlap and shared interest, Geoffroy and his colleagues gave up any attempt to sustain a transfer of the space and community of European science to Egypt. During his time in North Africa, Geoffroy recognized certain things, such as a clock or unusual animal, or isolated practices of close observation, but did not seem to have mentally placed them in a social network worth exploring (his position as part of an unpopular occupying force certainly played a role in discouraging free and easy exchange). Still, rather than investigate the society on hand in Egypt, Geoffroy increasingly directed his attention back toward Paris. At least equally important to this failure to engage or even properly to see an extant scientific culture was the extent to which the French occupation itself disrupted the locales and context of that culture. Some members of the Mamluk military elite were killed in the early battles with the French. However, many more fled the city, leaving their urban palaces and regrouping in Upper Egypt (to the south of Cairo). From there, they mounted regular raids, which, coupled with a major urban uprising, put an end to most of the French ambitions in Egypt.

Second vignette

In this episode we return to the vacated Mamluk palaces commandeered by the French savants and military elite for their new scientific institution. One of the largest ruptures between French and Arab–Ottoman sources seems to be the question of the Institut itself. A major source of identity and pride for the French, as Geoffroy's letters attested, the Institute could hardly be viewed by the intellectual elite of Cairo in the same way. Al-Jabartī visited the complex of adjacent houses on several occasions but never once referred to the site as the French Institute.[41] Invariably, al-Jabartī referred to each palace as 'the house of' its former owner, all Mamluks who had been killed or fled to the south as the French took over Cairo.

As al-Jabartī reported, Ḥasan Kāshif Çerkes, who died of the plague during the French occupation, had just completed construction of an enormous new house as the invasion occurred, 'expending on it large sums extorted from the people'. 'Even before the whitewashing was finished', the French took over both Ḥasan's old and new homes and used the ground floor of the new building for Institut sessions.[42] Ḥasan's urban palace was also the site of the display of French scientific marvels put on to shock (quite

40 Geoffroy, op. cit. (3), Letter XII to Redouté jeune, 25 July 1798, p. 54.

41 For al-Jabartī's accounts of the French lodging and his visits to the Institut see al-Jabartī, *ʿAjāʾib*, op. cit. (4), 3:15 (3:17); 3:57 (3:53); 3:58–60 (3:55–57); 3: 92–93 (3:85–86). In the biography of Ḥasan Kāshif Çerkes, al-Jabartī credits the astronomers, technicians, scientists and engineers who inhabited Ḥasan's palace with saving it from the destruction of residences wrought by the French soldiers – 3:280 (3:269). Once, in referring to an individual's position and not the site directly, al-Jabartī referenced *madrasat al-maktab*, which has been identified by Cuoq as the Institut d'Egypte. See *Ajaib* (3:242 n. 136). The Arabic edition offers no gloss of this term, 3:251.

42 Al-Jabartī, *ʿAjāʾib*, op. cit. (4), 3:57 (3:53); 3:280 (3:269). These residences are illustrated in the *Description de l'Egypt*.

https://doi.org/10.1017/S0007087410001251 Published online by Cambridge University Press

literally, making use of a Leyden jar) and amaze a select group of Cairene religious scholars.[43]

Following complaints first made by the savants themselves, several scholars since that time have identified Egyptian 'indifference' to French scientific spectacles.[44] Jean Dhombres rightly notes that the French took solace in reading the Egyptians this way: 'the observed indifference of Egyptians to "modernity", (which is not the same as resistance or opposition), provided an acceptable answer for the failure of French colonisation'.[45] Dhombres is careful to distinguish perceived indifference from resistance or opposition. This opens the way to reconsider al-Jabartī's accounts of the great houses commandeered by the French, particularly if we also examine the roles of these sites in the decades before the French invasion.

There was undoubtedly a lot of misunderstanding and no small measure of mistrust on all sides, but substantial evidence establishes that neither Cairene culture nor al-Jabartī himself were rejecting the palaces as a special site for the practice and patronage of the sciences by referring to them by their Mamluk owners' names. As important as the Institut was for Geoffroy, in evoking their Mamluk owners' names al-Jabartī bespoke the continuity of these grounds as sites for the patronage of teachers of the uncommon sciences and of instrument-makers, as libraries open to students and less-affluent scholars, and even as sites for for entertaining diversions for gatherings of 'late-night compatriots'.[46]

In many ways, accounts of the study of the unusual sciences in eighteenth-century Arab provinces of the Ottoman Empire are very similar to accounts of the study of the better-known Islamic sciences of theology and jurisprudence. This is not particularly surprising because by the eighteenth century there was a long-established Islamic genre of the intellectual biography and such biographies are essential sources for our understanding of both the common and uncommon sciences.[47] However, al-Jabartī retold the

43 Bourrienne described Berthollet's chemical marvels presented to an audience of sheikhs sometime between mid-September and mid-October of 1798, shortly before the first major uprising in Cairo: 'Bonaparte invited the leading shaykhs to attend some chemical experiments which M. Berthollet would carry out. The General expected to take pleasure in their astonishment; however, all the miracles of the transformation of liquids, electrical commotions and galvanism, did not cause the least surprise… When M. Berthollet had finished, Shaykh al-Bekry had the interpreter tell him, "All of this is quite nice, but can they make me be here and in Morocco at the same time?" Berthollet responded with a shrug of his shoulders. – "Well, then," said the shaykh, "he is not much of a sorcerer."' Bourrienne, op. cit. (12), vol. 2, p. 177.

44 Robert Solé, like Bourienne above, wonders that the Egyptians did not respond with greater force to French scientific demonstrations. Solé concludes, 'Their apparent indifference is without doubt a sort of self-protection, as if this imported science threatened their identity.' Solé, op. cit. (11), esp. pp. 43–58, 50. Translation mine.

45 Jean Dhombres, 'Scientific motivation for and mood from the experience of the Egyptian expedition', in E. Ihsanoglu, A. Djebbar and F. Gunergun (eds.), *Science, Technology and Industry in the Ottoman World*, Turnhout: Brepols, 2000, pp. 91–99, 94.

46 This phrase, *ahl al-majālis al-sāmarīn*, comes from a manuscript written by a family acquaintance of al-Jabartī and later rector of al-Azhar Mosque, Aḥmad al-Damanhūrī, *Iḥyāʾ al-fuʾād bi-maʿrifat khawaṣṣ al-aʿdād*, MS Cairo Riyādiyāt Taymūr 86, microfilm 50732. f.42r. My translation.

47 See M.J.L. Young, 'Arabic biographical writing', in M.J.L. Young, J.D. Latham and R.B. Serjeant (eds.), *Religion, Learning and Science in the ʿAbbasid Period*, Cambridge: Cambridge University Press, 1990,

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history of these two fields of study differently. He often specified the location of study of the uncommon sciences, while in his or others' accounts of studies in the traditional sciences the location was rarely specified, although from information outside the biographical notices, like documents specifying teaching appointments, we know that such instruction was generally held in mosques or schools.[48] Throughout al-Jabartī's accounts, instruction in the uncommon sciences took place not in schools or mosques but in private homes like those of wealthy scholars, merchants or Mamluks.[49]

As one of al-Jabartī's most personal revelations attests, some instruction in the uncommon sciences took place *on* rather than *in* private homes. The chronicler broke with his usual reticence concerning his own life to describe childhood evenings spent on the rooftop with friends as they struggled to master astronomical concepts and instruments. His father, Ḥasan al-Jabartī, took up a position at one end of the roof and the boys worked among themselves at the other end, consulting their elder when stumped.[50] The close setting and intimate sociability of this lesson in astronomy echoed throughout al-Jabartī's accounts of personal friendships forged through shared study of the uncommon sciences. In this way, the more private setting of individual homes seemed to have encouraged an especially strong bond among teachers, students, practitioners and patrons of the uncommon sciences.

Lack of access to his version of these sorts of relationship seems to have troubled Geoffroy more than the deprivations due to the physical conditions of Cairo. Geoffroy alluded to the importance he placed on personal connections in an early letter from Marseilles to the professors of the Muséum d'histoire naturelle. He asked their permission not just to keep them abreast of his activities in natural history, but also to share his experiences and reflections of a personal nature.[51] Ultimately Egypt failed to be a place where Geoffroy could produce knowledge; he was short on supplies, a state exacerbated by the destruction of several French ships in the first month and the ongoing British blockade, but even more crucially he was lacking a community. Perhaps a vibrant exchange of letters might have sustained his personal and intellectual needs when physical proximity was impossible – Geoffroy repeatedly wrote of his desire to hear back from someone other than his father.[52] However, Geoffroy's eventual repudiation of

pp. 171–172. For the modern period, see Marilyn Booth, 'Exemplary lives, feminist aspirations: Zaynab Fawwāz and the Arabic biographical tradition', *Journal of Arabic Literature* (1995) 26, pp. 120–146.

48 For the absence of location of study and a full description of traditional accounts see Jonathan Berkey, *The Transmission of Knowledge in Medieval Cairo: A Social History of Islamic Education*, Princeton: Princeton University Press, 1992, Chapter 1.

49 For three such cases, see al-Jabartī, *ʿAjāʾib*, op. cit. (4): al-Shubrāwī, 2:52–53 (2:54); al-Janājī, 2:187–188 (2:207–208); Ḥasan al-Jabartī, 1:616 (1:657). There are, however, examples from earlier periods of instruction in the uncommon sciences in schools and educational–charitable complexes discussed in Aydin Sayılı, *The Observatory in Islam and Its Place in the General History of the Observatory*, Ankara: Türk Tarih Kurumu Basımevi, 1960.

50 Al-Jabartī, *ʿAjāʾib*, op. cit. (4), 2:367–369 (2:402–406).

51 Geoffroy, op. cit. (3), Letter III to the professeurs du Muséum d'histoire naturelle, 5 May 1798, p. 13–15.

52 Geoffroy, op. cit. (3), Letter XXIV to Jussieu, *c.*20 October 1798, 98; Letter XXIX to Marc-Antoine Geoffroy, *c.* March 1799, pp. 117–118; Letter XL to Cuvier, 7 January 1800, pp. 157–158.

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Egypt was so strong that only his physical presence in the Muséum d'histoire naturelle could satisfy him and, to his mind, allow him to carry out his work.[53]

In addition to Geoffroy's testimony concerning Mamluk collections, al-Jabartī documented the travels of a costly set of brass astronomical instruments across the century, tracking their ownership from the Mamluk who commissioned them to al-Jabartī's own father, and from his estate to the home of another Mamluk.[54] Thus, while Bertollet's chemical materials were new, and the French likely brought the first Leyden jar to Cairo, their use of Ḥasan Kāshif's palace as a place to store and share books, house instruments for display and use, hold private lessons, gather for serious and entertaining conversation, or put on demonstrations, represented much more of a continuity than they knew. Indeed, this continuity seemed to persist even as the French sought to effect a transformation of the grounds into a scientific institute fully integrated into European circles.[55]

Al-Jabartī had not relocated from his native intellectual and social world; yet over the eighteenth century, that world had been repeatedly disrupted by famine, disease and political and economic turmoil.[56] For both al-Jabartī and Geoffroy, therefore, I suggest that their pursuit of the sciences whetted their appetite for a particular kind of community in highly uncertain and dislocating times. Al-Jabartī's golden age was not located in the distant Islamic past. Rather, he identified the decades of the mid-eighteenth century as his ideal.[57] In so doing, al-Jabartī was not rejecting science or modernity, nor did these decades of the eighteenth century carry any special Islamic significance. Rather, they were a period of relative prosperity and stability, particularly for wealthy families like the al-Jabartīs, and one in which practitioners of the uncommon sciences enjoyed particular influence. For Geoffroy, his ideal was still extant, but only in Paris.

On the question of institutions, al-Jabartī neither rejected nor idealized their role. Rather, he focused on the bonds that undergirded such institutions and perhaps historians of early modern European institutions would be advised to consider al-Jabartī's position. We see another angle of al-Jabartī's reaction to scientific institutions in his discussion of those founded by Mehmet ᶜAlī, an Albanian Mamluk who came to power in the aftermath of the French withdrawal. Among Mehmet ᶜAlī's early initiatives were the printing press at Bulaq and the creation of a new building on the grounds of the citadel to house what al-Jabartī explained was called the 'School of Engineering'. Al-Jabartī's language indicated that he was reproducing the name others gave this building, and his terminology offered a new and more formal linguistic construction

53 Geoffroy, op. cit. (3), Letter LIII to Cuvier, 9 November 1800, 193–196; Letter L to professeurs du Muséum, 23 September 1800, p. 187.

54 Al-Jabartī, *ᶜAjāʾib*, op. cit. (4), 1:139 (1:122); 1:201 (1:187); 1:622 (1:664).

55 Yves Laissus documented the 'welcome' of the Institute of France to the Institute of Egypt, but noted that the Parisian meetings record receipt of a single set of proceedings from Egypt and apart from that make no mention of their counterparts in Egypt. Laissus, op. cit. (10), pp. 115–116.

56 Raymond, op. cit. (11), vol. 1, Chapter 3, pp. 81–105.

57 Al-Jabartī, *ᶜAjāʾib*, op. cit. (4), 1:339 (1:332).

https://doi.org/10.1017/S0007087410001251 Published online by Cambridge University Press

than anything that had come before in his accounts, including his accounts of the French sites.[58]

Al-Jabartī's works were banned under Mehmet ᶜAlī in the first part of the nineteenth century because of their critical assessment of the Viceroy of Egypt. When Mehmet ᶜAlī is seen as the great modernizer of scientific education and society, al-Jabartī seems quite reactionary. However, al-Jabartī's text demonstrated that he was actually quite interested in and appreciative of several of Mehmet ᶜAlī's 'scientific' projects. Significantly, it was on the issue of justice that al-Jabartī made his real attack, writing,

> The Pasha [Mehmet ᶜAlī] had freedom of action unavailable to any other rulers of these times, and if God had endowed him with justice commensurate with his determination, leadership ability, perspicacity, organizational skill, and competitiveness, he would have been the wonder of his age, unique in his time.[59]

One finds no criticism of Mehmet ᶜAlī's educational reforms or the inclusion of the sciences in formal curriculum. While these were significant changes, al-Jabartī did not present them as disastrous ruptures from a past tradition. The entire four-volume work gave ample evidence that Mehmet ᶜAlī's interest in the unusual sciences did not make him 'unique in his time' and biographies and events touching on these sciences continued to work their way into his text throughout the final volume in much the same way they had in the first three volumes. Rather, I suggest, the radical departure that al-Jabartī rejected was the severing of his desired relationship between powerful military leaders and powerful local religious scholars.

By operating in a newly constructed building, the pasha intentionally created a site without a history. In the new school, the uncommon sciences of surveying and land management, which had been part of eighteenth-century craft knowledge and had also attracted scholarly study, were no longer taught by local religious scholars or craft practitioners. Instead, Mehmet ᶜAlī brought in Turkish and European instructors, men who had no recourse to local family or contacts, and indeed men who served (and in at least one case died) at the pasha's pleasure.[60]

This engineering project was not the first, nor was it the most dramatic, measure taken by Mehmet ᶜAlī to start afresh with himself and his family squarely at the centre of power. When examined alongside his massacre of the most powerful rival Mamluks in 1811, carried out as they were all enclosed in the citadel walls under invitation to join in a celebration in honour of Mehmet ᶜAlī's son, one sees a certain grim consistency in Mehmet ᶜAlī's early desires to consolidate power under his authority and his strategies to

58 Al-Jabartī, *ᶜAjāᵓib*, op. cit. (4), 4:396 (4:359), 4:430 (4:390); 4:493 (4:448). First given as *muhandis khāna*, a compound formed from a word al-Jabartī used elsewhere for architect or engineer (*muhandis*) and a word of Persian origin, used in Turkish as well, indicating a special building, originally used to describe waystations along trade routes or *khan*s. In the following passages, al-Jabartī wrote this as a single word, with the definite article in the final case.

59 Al-Jabartī, *ᶜAjāᵓib*, op. cit. (4), 4:401 (4:363). Compare this to Miot's critique of Bonaparte: 'It is truly impossible not to lament, that a man of this truly magnificent mind had not virtue corresponding with his talents.' Jacques Miot, *Memoires of My Service in the French Expedition to Egypt and Syria* (tr. unknown), Tyne and Wear: Worley Publications with Brigade Library, 1997, pp. 43–44.

60 Al-Jabartī, *ᶜAjāᵓib*, op. cit. (4), 4:396 (4:359); 4:406–407 (4:367–369); 4:430 (4:390).

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achieve those ends.[61] Both his new military and new educational institutions had a twofold motivation: on the one hand, he desired to follow Ottoman and European models of military organization and training, and, on the other, he wished to undermine the existing Cairene power structures and thereby strengthen the position of his own family.[62] This arrangement left little room for al-Jabartī's hoped-for corrective influence of members of the scholarly class on the exercise of political power, and his critique of the Pasha focused not on any importation of Ottoman or European sciences but on more prosaic abuses of power.[63]

Despite their overlap in time and space, this is not a story of two men deeply concerned with one another. We have no evidence that al-Jabartī and Geoffroy ever met; certainly, they made no mention of one another. We shall not be surprised to find that their conceptions of the proper relationship between scientific and political realms differed. Geoffroy wanted to disentangle himself and his work from the French invasion and carve out a place for science apart from political and military intrigues. Paradoxically, however, Paris became the only place he could work. By the end of his time in Egypt, Geoffroy had embraced a view of the practice of natural history that was quite limited in location. His full working life could not be transported outside Europe, or even outside Paris, as Filipa Lowndes Vicente shows with her study of the fate of a Portuguese natural-history collection accrued in Brazil, which Geoffroy then 'collected' from Lisbon.[64] One could amass curiosities anywhere, but only turn objects into scientific study in Paris.

Al-Jabartī addressed the problem of the interestedness of political and scientific practitioners by accepting that tension and praising figures whose temperament and training cultivated their good judgement. Individual judgement was for al-Jabartī critical to regulating society, and, as his hundreds of positive biographies of practitioners of the uncommon sciences suggested, the natural inclinations of at least some individuals could be helped along by certain training. The unusual sciences offered an important cluster of fields which played such a role in al-Jabartī's accounts. Thus expertise in the uncommon sciences and the precision and sense of justice that al-Jabartī believed went along with such expertise did not make scholars *dis*interested, rather they made them interested in the right goals. At the broadest social level, al-Jabartī's aims were not scientific, although he valued precision and especially verification quite highly. Consequently, al-Jabartī did not want to further separate political and intellectual figures because he in fact wanted certain intellectual figures to influence political figures and the course of his

61 On the massacre, see Khaled Fahmy, *All the Pasha's Men: Mehmet Ali, His Army and the Making of Modern Egypt*, Cairo and New York: American University in Cairo Press, 1997, pp. 82–84, where he notes others had tried, less successfully, somewhat similar means of eliminating the power of the Mamluk households.

62 That Mehmet ᶜAlī wanted to secure hereditary rule for his family rather than independence from the Ottoman Empire is one of the major arguments of Fahmy, op. cit. (61).

63 In addition to the passage quoted above at note 59, see al-Jabartī, *ᶜAjāᵓib*, op. cit. (4), 4:248–249 (4:215–216).

64 Vicente, op. cit. (8).

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society. Al-Jabartī's own title, *Marvelous Remnants of Lives and Events*, declared his interest in lives *and* events, and I suggest that his original use of a fusion of two long-standing genres, the biographical notice and the chronicle, further indicated that his concern was not with either biography or history in isolation but precisely with the interrelationship between individuals and the course of society.[65]

Geoffroy, on the other hand, became more deeply invested in the separation of political and scientific concerns – all while his career depended on their interrelationship. From his posts in the newly nationalized scientific institutions of the early 1790s, to his participation in Bonaparte's expeditionary force at the end of the century, the conditions of Geoffroy's work could not be separated from the French state. Yet he wrote in effusive terms of his disgust at the politicization of his work in Egypt, and perhaps this struggle, made so personal by his experiences in Egypt, played a role in his famous debate with Cuvier in 1830, his defence of his methodology as being more egalitarian and less tied to the power of the state and elites, and his espousal of a project not entirely unlike that of al-Jabartī, namely a proscriptive programme drawing on a much looser understanding of the sciences in the name of his own sense of social progress.[66]

65 On the contested question of al-Jabartī's genre see Jane Hathaway, 'Sultans, Pashas, Taqwims, and Muhimmes: a reconsideration of chronicle-writing in eighteenth-century Ottoman Egypt', in Daniel Crecelius (ed.), *Eighteenth Century Egypt: The Arabic Manuscript Sources*, Claremont: Regina Books, 1990, pp. 51–78.

66 On the political aspect of Geoffroy's debate with Cuvier, see Appel, op. cit. (3), *passim*, and esp. pp. 175–201; for a fascinating study of the debate, architecture and social reform see Paula Young Lee, 'The social architect and the myopic mason: the spatial politics of the *Muséum d'histoire naturelle* in nineteenth-century Paris', *Science in Context* (2007) 20, pp. 601–625.

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