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MAKING USEFUL KNOWLEDGE: BRITISH NATURALISTS IN COLONIAL INDIA, 1784-1820

A dissertation submitted in partial satisfaction of the requirements of the degree

Doctor of Philosophy

in

History (Science Studies)

by

Minakshi Menon

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Professor Naomi Oreskes, Chair
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Professor Robert Westman

2013
The Dissertation of Minakshi Menon is approved, and it is acceptable in quality and form for microfilm and electronically:

Chair

University of California, San Diego
2013
For KS
And for Stephanie
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I could not have written this dissertation without Henry Noltie’s generosity and steadfast support. He shared his enthusiasm and deep knowledge of botany and all things Scottish with me, gave me access to large amounts of primary material in his possession, and helped me think through the arguments in Chapter II. He was my companion during fieldwork in Scotland, driving me around the Scottish Borders and the Highlands. I am the richer for seeing Scotland (and India) through his eyes.

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ABSTRACT OF THE DISSERTATION

Making Useful Knowledge: British Naturalists in Colonial India, 1784-1820

by

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Doctor of Philosophy in History (Science Studies)

University of California, San Diego, 2013

Professor Naomi Oreskes, Chair

This dissertation explores the making of natural historical knowledge in late-eighteenth and early-nineteenth-century British India. In answering its organizing question, “What was colonial natural history as a form of knowledge?” I argue that colonial natural history and the East India Company state were co-constitutive. Natural history was an expression of the manner in which the Company’s commercial interests shaped the organization of governance. It was a hybrid way of knowing that brought together different types of knowledge, European and indigenous, in the service of the Company state; and it was useful knowledge, directed to specific contexts of use without
necessarily affecting natural knowledge making in Europe.

The dissertation draws on the literatures and methodologies of two sub-disciplines, history of science and South Asian history, as well as on research in science studies to explore the knowledge-making strategies of three colonial *savants*, the noted Orientalist Sir William Jones (1746-1794), the surveyor-medic Francis Buchanan (1762-1829), and the botanist-medic William Roxburgh (1751-1815), to illustrate in detail how such hybrid knowledge was produced. It places the histories of Britain and India within a unitary epistemological field to show continuities between the sensibilist epistemology of eighteenth-century European *savants* such as John Locke and Denis Diderot and the Orientalist natural knowledge-making of Sir William Jones; and between the pedagogical strategies followed by the natural historian, Dr. John Walker (1731-1803), at the University of Edinburgh’s Medical School, and the development of the colonial survey as a form of knowledge by his student Francis Buchanan. It also explores how the entanglement of East India Company business and the private trade of its employees assisted the emergence of the colonial state’s institutions, including its natural knowledge-making institutions. It does this through an examination of the Indian career of William Roxburgh and his patron, the Madras free merchant, Andrew Ross. I argue that building the colonial state in India was a collaborative enterprise between Company officials and private merchants, involving clientage relations between merchant grandees and Company functionaries lower down the hierarchy. This produced state authority as a patchwork of limited local relations, while simultaneously enabling the making of the “interested” natural knowledge on which Company profits and private fortunes were built.
Chapter I

Introduction: Colonialism, Imperialism and Natural History

This is a dissertation about early-modern British ideas and practices of natural history in colonial India. It covers three broad themes which are connected to the making of the colonial state and its social relations: the emergence of colonial botany, the making of the colonial survey as a form of knowledge, and the relationship of East India Company commerce to natural knowledge-making. Each theme is examined through the knowledge-making practices of an important colonial savant: Sir William Jones (1746-1794), Dr. Francis Buchanan (1762-1829) and Dr. William Roxburgh (1751-1815). The dissertation argues that colonial natural history was a simultaneous project to study India’s natural world, supply British markets with commodities, and create institutions for colonial governance. It was a vital part of building the early-modern British Empire.

Following the new imperial historians it places the histories of India and Britain within a unitary epistemological frame, in order to complicate received notions about metropolitan and colonial “difference”.¹ It tries to lay bare the connections between the imaginative and the material in the lives of three British men of science as they fashioned careers for themselves in Britain and India, and were in turn fashioned as subjects through the power relations of the British-Indian

encounter. And it illustrates in detail just how such connections were constructed, and through them, how “useful” knowledge was produced.

In the years it has taken to research and write it, “colonial science” and the prospect of a “globalized” history of science have acquired some purchase within history of science. South Asianist historians, meanwhile, have begun to pay interested attention to histories of science in India, and books have appeared on indigenous medicine, science, and technology under the Raj, and the forms that western scientific rationality can take in non-European contexts. The discomfort in each discipline at crossing borders and claiming space has, nevertheless, been palpable. On the one hand it has been claimed that “colonial science” was practiced in metropolitan contexts, or that it can be dispensed with entirely as a concept in favor of studying the construction and spread of scientific knowledge through reciprocal (if asymmetric) processes of circulation and negotiation in early modern cultures. On the other, some post-colonial historians of India have argued that Western Science was a semiotic system with enormous power over the imagination

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of modern Indians. The practices of science in modern India are given short shrift in this approach.

Neither strategy satisfactorily addresses the question: What is colonial science? Defining colonialism requires engaging with contemporary theories and practices of colonization. How were “colonies” and colonization understood in the early modern world? What knowledge-making practices were associated with different forms of early-modern colonialism?

“Colonialism”, “imperialism” and “colonial science” are intertwined here as concepts with questions regarding the making of early-modern states in Britain and its colonies, without considering which it is hard to understand the making of British imperialism. There is also a matter of historiography. The story I tell here is inseparable from my reading of works about India, about the history of science and the history of natural history. Discussions of historiography therefore appear as part of the text or are included in the footnotes to each chapter. A few key works whose arguments clarify the conceptual framework of this dissertation are discussed below.

Colonialism as both ideology and practice is illuminated (if not wholly explained) by a consideration of the etymology of the Latin word *colonia*, meaning a settlement from a metropole in a foreign territory. Its history includes the notion of the colony put forward in Richard Hakluyt’s writing, where the building-block of the *polis* as well as the achievement of the *vita beata* depended upon the founding of new villages or *coloniae* to account for surplus population and commodities at

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5 Prakash, *Another Reason*.
home. The act of founding such colonies implied a relationship of power and property. Francis Bacon put his finger on it in The Essays or Counsels Civil and Moral (1625), where, speaking Of Plantations, he said, “I like a plantation in a pure soil; that is, where people are not displanted to the end to plant in others. For else it is rather an extirpation than a plantation”. Contemporary theories of colonialism discussed both – the relationship of power and of property – as well as the implications of dominium and imperium for the preservation of liberty in the commonwealth. The British resolution of the problem in theories of commercial imperialism – an empire of the seas – required the maintenance of liberty and the protection of property in the polis as a precondition of imperial success abroad.

Making trade an affair of state implied a passage to modern notions of political economy. This, as David Armitage has noted, was an important stage in the ideological history of the British Empire, because it became intellectually plausible to argue that liberty and empire might be reconciled, “both theoretically and historically, within the discourse of political economy.” The forms of knowledge-making that accompanied this development in Britain, i.e. “the definition of the polity in terms of its fiscal, financial and commercial capacities rather than in terms of its constitution or the civic personality of its citizens”, statistics and political arithmetic, made socio-economic engineering a key facet of contemporary politics.

Eighteenth-century projectors became committed to developing strategies to “improve” the nation in different ways. And such improvement, as it related to the

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7 Ibid., 74-75.
9 Armitage, Ideological Origins, 147.
possession of landed property, became linked to the agriculturalist justification for colonization in writings in Britain from the sixteenth century onwards: God’s commands to replenish the earth were interpreted to mean superior rights of possession for those who cultivated the land more productively than others.\textsuperscript{10} Its clearest expression was the colonization of the Scottish Highlands by Lowlanders and English, discussed in Chapter III, and its ideology best illustrated in Sir John Sinclair’s great project of information gathering and transformation, \textit{The Statistical Account of Scotland} (1790s).

The \textit{Statistical Account} was one template for the information collection methods deployed by the East India Company state. A brief discussion of its history and methods is therefore a useful framing device for the account of Francis Buchanan’s survey of south India (Chapter III). Its author had first come across “statistics” as a mode of political inquiry during a tour of Germany in 1786, though he distinguished his use of the term from the way the Germans understood it: “… I apply a different idea to that word, for by Statistical is meant in Germany, an inquiry for the purpose of ascertainning the political strength of a country, or questions respecting \textit{matters of state}; whereas, the idea I annex to the term, is an inquiry into the state of a country, \textit{for the purpose of ascertaining the quantum of happiness enjoyed by its inhabitants, and the measure of its future improvement} […]”\textsuperscript{11} A reviewer of Sinclair’s \textit{Essays on Miscellaneous Subjects} (1802) for the \textit{Edinburgh Review} dismissed his views on the nature and advantages of statistical enquiries as

“extremely trite and puerile”, but in fact there was a peculiar novelty to his use of statistics that made it one of the great achievements of the Scottish Enlightenment. Its Scottish Epicurean origins were unmistakable – “statistics” were meant to reveal the “quantum of happiness” enjoyed by the inhabitants of a country and “the measure of its future improvement” – and its genealogy as clear: in due course it would produce the Mills, *père* et *fils*. Elsewhere Sinclair would elaborate on its Baconian inspiration and its empiricism. Just as Bacon rested his system of natural philosophy on the investigation of local facts, statistical inquiries were to do the same with regard to political disquisition, “by analyzing the real situation of mankind; and examining, with attention and accuracy, and even with a degree of anatomical minuteness, the internal state of a society…”

The task of carrying out this mammoth venture was entrusted to the clergy of Scotland, who were provided with exhaustive lists of queries contained in Circular Letters, calculated to reveal the internal anatomy of all Scottish parishes. The first letter, dated May 25 1790, showed a significant entanglement: the natural history and political state of Scotland were to be elucidated together, and the heads under which the questions were organized revealed why. Every parish was to be viewed through the lens of productivity, in other words, political economy. Questions respecting the Geography and Natural History of the Parish”, “Questions respecting

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13 Sir John Sinclair, *Analysis of the Statistical Account of Scotland; with a general view of the history of that country and discussions on some important branches of political economy*. In two parts (Edinburgh, Printed for Arch. Constable & Co., 1825), 60.
the Population of the Parish”, and “Questions respecting the Productions of the Parish”, brought together inquiries about terrain, infrastructure and zoology:

8. What is the general appearance of the country? Is it flat or hilly, rocky or mountainous? 9. What is the nature of the soil? Is it fertile or barren, deep or shallow? 11. What are the most prevalent distempers? And to what circumstances are they to be attributed? 13. Are there any considerable lakes or rivers in the parish? 15. Are the rivers navigable? Or might they be rendered useful in navigation? 33. Are there any mines, particularly coal-mines? What are they? To whom do they belong? And what do they produce? 39. What quadrupeds or birds are there in the parish? What migratory birds? And at what times do they appear and disappear? 40. Is the parish remarkable for breeding any species of cattle, sheep, horses, hogs, or goats, of peculiar quality, size, or value?”

Demography:

41. What was the ancient state of the population of the parish, so far as it can be traced? 42. What is now the amount of its population? 43. What may be the number of males? 44. What of females? 48. What is the annual average of births? 49. What is the annual average of deaths? 50. What is the annual average of marriages? 58. What may be the number of farmers and their families? 59. ---- manufacturers? 60. ----- handicraftsmen? 93. Are there any destructive epidemical distempers? 100. What may be the number of inhabited houses, and the number of persons at an average to each inhabited house?”

And agriculture:

101. What kinds of vegetables, plants, and trees, does the parish produce? 102. What kinds of animals? 103. What at an average is supposed to be the number of cattle, sheep, horses, hogs, and goats, in the district? 105. How many acres at an average may be employed in raising corn, roots, etc.? 106. What numbers of acres to each sort respectively, as wheat, barley, rye, oats, potatoes, turnip, cabbage etc.? 109. How many acres are employed in raising hemp or flax? 14

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Sinclair would have preferred to condense the responses he received into statistical tables, of which he offered a specimen.\textsuperscript{15} However, the quality of the information gathered stayed his hand, so that by 1799 he had reports on 938 parishes in Scotland, published as 21 descriptive volumes. The questions themselves are an amalgam and some of them are repeated in each category – a query about the remarkable quadrupeds bred in a parish is reproduced further on as a question about their numbers – capturing an ongoing transition in the social location of natural history and its imagined uses, from memorializing the singularities of parochial nature to recording natural resources for an improving agriculture. Gilbert White and Robert Plot move away, to be replaced by the Rev. John Walker, whose strategies to rationalize labor processes and the objects they could produce were a high point of his natural history lectures at Edinburgh’s Medical School (see Chapter III). Comparison was the goal, which would have been facilitated through the production of tables; but the data were, regardless, effective and allowed Sinclair the satisfaction of noting that his political arithmetic had both captured the weaknesses of the state and allowed an increase in the quantum of happiness enjoyed by the people: in 1793-94 the tax on coals carried coastwise in Scotland was abandoned because of the number of complaints against it in early returns to Sinclair.\textsuperscript{16}

Sinclair’s methods were to prove attractive to a corporation of merchants seeking information about newly conquered territory overseas. Political arithmetic, a primarily British science, was an especially welcome skill in the hands of

\textsuperscript{15} Ibid., “Appendix D”, xl and xli.
Company medical men such as Francis Buchanan, who used it to good effect to count and describe a number of phenomena for Company Directors familiar with shop arithmetic. As a mode of knowledge-making, by itself and in combination with an improving natural history, it produced a language that translated indigenous life ways and knowledge for commercial appropriation.

The origins of political arithmetic, of tallying and tabulating “vital accounts” – births, marriages, deaths – lay in the seventeenth century, with John Graunt (1620-1674) and William Petty (1623-1687), who named it so. In Restoration England mathematics (and enumeration) were seen as a route to stability and good government, as a salve that would heal both church and state in the wake of the English Civil War. In the eighteenth century political arithmetic was put to various uses. It provided a means of estimating population before the introduction of the census, was used as a tool in the debates over small pox inoculation in Britain and France, and in medical meteorology to understand the causes of epidemics. But its greatest use was to measure the strength of a state, understood in mercantilist terms as the number of its people, of which the greater the better, as Sinclair explained to his readers. Its value and its power to persuade lay in the certainty demonstrated by numbers. Numbers could represent subjects not usually quantified – the virtue of a

people, for instance; and they could be sorted into tables, a method of representation with important consequences.

Tables did not necessarily have to contain numerical data. Francis Bacon, their great advocate, considered them the most perspicuous way of presenting natural historical knowledge, a vital first step in the process of induction.\(^{18}\) The combination of tables with numbers, attaching numbers to objects and presenting them comparatively, was, however, an important technique of merchant capitalism. Once those numbers came to represent money, they provided, as Andrea Rusnock has argued, the conceptual hinge that turned the qualitative into the quantitative. “Assigning something a monetary value remains one of the most fundamental ways of quantifying.”\(^{19}\) In colonial India doing so could also serve to negotiate between knowledge systems.

An important claim made in this dissertation is that colonial natural history was a hybrid form of knowledge. Hybridity can mean different things. Its eighteenth-century usage was unambiguous: “Hy’bridous, adj. (hybrid, Latin) Begotten between animals of different species”, in other words, a cross.\(^{20}\) One of its uses in contemporary postcolonial theory is to represent an in-between space, where cultural identities emerge without settling into received polarities.\(^{21}\) The concept of hybridity I use here borrows from both to argue against any simple notion of the diffusion of European science into the colonies. Colonial natural history was a


\(^{19}\) Ibid., 3.


\(^{21}\) Homi K. Bhabha, The Location of Culture (London and New York: Routledge, 1994).
brokered practice, mediated by the agency of indigenes. It occupied a liminal space, where moments of interrogation of European knowledge-practices resulted at last in the strengthening of European epistemologies of natural knowledge. At the same time the quotidian business of colonization often required that colonial administrators recognize, for example, the facticity of modes of enumeration that appeared non-empirical to a European.

Such an example is found in a report written by a Malabar collector, Alexander Walker (not to be confused with John Walker), on the land tenures of Malabar (modern Kerala).\(^\text{22}\) In this report sets of tables showing the different stages of growth of plants such as coconut, pepper, plantain and areca nut are described through metaphors in Malayālam while their monetary values are listed in columns.

The immediate rationale for the exercise arose from the different modes of alienating property in crops that were part of Malabar’s land tenure system. As nothing approaching a direct alienation in the Western style, in which all rights ("to use, abuse or dispose of") were simultaneously transferred from “seller” to “buyer” existed in Malabar, early modern British administrators and judges were hard pressed to understand which rights were alienated and at what stage of the transaction. The terms “seller” and “buyer” do not translate the roles of the parties to the bargain, since the overarching right to land and its usufruct indicated by the Malayālam word “jannam” (birth) was very difficult to alienate, as was the kānam

\(^{22}\) Major Walker’s Report of 20\(^{th}\) July 1801, Vol. No. 2538, Malabar District Records, Kerala State Archives, Tiruvananthapuram. The printed version of the document is titled “Report upon the tenures and forms of transfer of land in Malabar by Major Walker, 20\(^{th}\) July, 1801” (Cochin: Western Star Press, 1879), 1-91. I have used the latter, which I have compared with the original MS. They are identical except for minor differences in transliteration.
(“tenant”) right. However, partial alienations based on money paid and usufruct claimed in exchange, existed as an elaborate series of steps in “customary law”.23 Knowledgeable people, kānajenmamariādā ariyunnawar (those who know tradition), were summoned during the ceremony of transfer, and it was left to them to judge the money value of the right being transferred.24 Such knowledge was never codified until British courts deemed it exigent. One of the few scholars to mention Walker’s report, Duncan Derrett, considers it a translation of the Sanskrit Vyavahāra-mālā, a verse digest of traditional law that mysteriously appeared in late-eighteenth-century Kerala. According to Derrett the Vyavahāra-mālā was itself a hybrid text compiled from various sources (poems, shastric accounts) to provide a book-law for the Malayālam-speaking inhabitants of the Company’s southern territories. “There is no likelihood that such a work would have been written”, says Derrett, “but for the presence of the British rulers and their notions of how local law should be found out and administered.”25

Walker certainly mentions the Vyavahāra-mālā as a source, and explains that the karanams (deeds of sale or mortgage) attached to his report were extracted from it.26 But it would be a mistake to read his report as a simple translation of its contents. It was instead a document constructed for multiple uses by Company state

23 The terms under which land was held in pre-colonial Malabar do not translate into Western categories such as “landlord”, “tenant”, “lessor”, “mortgagee”, as William Logan, the famous nineteenth-century Scottish collector of Malabar pointed out in Malabar, in two volumes (New Delhi: Asian Education Services, 1995), Volume I, 597-608. Also see, K. N. Panikkar, Against Lord and State: Religion and Peasant Uprisings in Malabar 1836-1921 (Delhi: Oxford University Press, 1989), 1-48. The classic work on kānajenmamariyādā remains Elamkulam Kunjan Pillai, Jenni Sāmpradāyam Keralathil (Kottayam: Sahā Pravarthaka, 1959).
24 Walker, Report (1879), 32.
25 J. Duncan M. Derrett, Religion, Law and the State in India (Delhi: Oxford University Press, 1999), 262.
26 Walker, Report (1879), 12.
officials, as Walker’s commentary attests. It would have been referred to in courts of law to adjudicate property disputes, but it was also included in the collections of the Madras Board of Revenue, to assist revenue collectors in surveying and assessing cultivation. As the tenurial system in Malabar was enmeshed with the natural history of the crops assessed, Walker’s report provided *tables* of the rate of growth of each crop and its monetary value at each stage. The table below, for example, could be used to calculate the payment on each coconut tree depending on its size. Collecting revenue thus meant not only knowing whom to tax but *what* to tax.

**TABLE FIRST**

<table>
<thead>
<tr>
<th>The periods of valuation</th>
<th>First</th>
<th>Second</th>
<th>Third</th>
<th>Fourth</th>
<th>Fifth</th>
<th>Sixth</th>
<th>Seventh</th>
<th>Eighth</th>
</tr>
</thead>
<tbody>
<tr>
<td>The names and descriptions of the periods</td>
<td>Kazhittayi, plant inside the hole, i.e. it is yet confined to the pit in which it was planted, and does not appear above the surface of the ground</td>
<td>Kiliyolattayi, a plant with its leaves separating, and beginning to spread out from the pit.</td>
<td>Kiliyolamuttirnola, a plant with its branches rising and spreading out from the pit.</td>
<td>Kudamperinja, a plant with the stump above the ground 3 or 4 inches, spread open like the mark of an elephant’s foot.</td>
<td>Anayadi, a plant with the tree equal to the ground.</td>
<td>Maramwetchu, the tree of a span from the ground.</td>
<td>Kollukkadathathu, a tree with the flowers near shooting out.</td>
<td>Kollachathu, a tree with flowers well blown.</td>
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<td></td>
<td>RS. QS. RS.</td>
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<td>0 2 0</td>
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</tr>
</tbody>
</table>

Figure I.1 Partial table from Walker (1879) in English and Malayālam

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27 Partial table from Walker in English and Malayālam, 37.
This table is a fantastic, hybrid object, a tabular representation of the value of the coconut tree at different periods of its growth. The size of the plant is indicated not in linear measures but in poetic metaphors: in its second stage of growth the coconut plant is imagined as a bird with its wings unfurled – *Kili* (bird) *ola* (a leaf) *tayi* (a plant); in its fourth as a pot spread open – *Kudam* (pot) *wirinja* (open); in its fifth as an elephant’s step – *Āna* (an elephant) *adi* (footstep) – not the usual contents of a European statistical table. As an instrument of revenue assessment it provided certainty through form, regular columns enclosing objects (however fancifully represented), whose values were expressed in numbers. It deployed indigenous knowledge while revealing the colonial social relations at work in revenue collection: a collector making an assessment would have been accompanied by a trusted indigene whose job it was to indicate the plant’s stage of growth, to which a monetary value was then attached. Such a table was neither a simple “translation” of indigenous practice nor an obvious exercise in political arithmetic. It was a natural knowledge-form constructed to transact between different ways of knowing in order to operationalize the colonial state’s revenue collection machinery. It would have had no relevance in metropolitan contexts; nor would it have been particularly useful outside the immediate context of colonial state making. It was, in short, a piece of *colonial* science in action.\(^{28}\)

\(^{28}\) Compare Londa Schiebinger, "Forum Introduction", who defines “colonial science” as “science done during the colonial era that involved Europeans working in a colonial context. This includes science done in Europe that drew on colonial resources in addition to science done in areas that were part of Europe’s trading or territorial empires” (52). Also Daniela Bleichmar, “Books, Bodies and Fields”, 83, who claims that “colonial science was enacted at home.”
Colonial natural history as a cultural practice played an important role in developing and sharpening European forms of knowing. If its vitality arose from its engagement with its environment where holding fast to binary oppositions (native belief/European science) could hobble the search for resources, then it also opened a space where the necessity of fine-tuning European epistemological practices to accord with that environment became the more urgent. This is evident in an exchange of letters between two British savants, Sir William Jones, and Dr. James Anderson, a surgeon on the EIC’s Madras establishment, about the use of arsenic in physic. Their discussion was prompted by the decision of the Madras Medical Board to approve a native remedy for snakebite, the Tanjore pill. The history of the pills has been discussed in an important recent book by Pratik Chakrabarti. They were made and used by practitioners of Siddha medicine, and had a loyal following among Europeans on the Coromandel Coast. Therapeutic trials were a success in Madras but inconclusive in Britain. Some of the pills’ ingredients were regarded doubtfully by Company surgeons, but in the absence of any European remedy for snakebite the pills were recommended by the Hospital Board, and medical storekeepers were instructed to keep them always in stock.

James Anderson was a vehement critic of their use, not least because of the arsenic contained in them. Jones, on the other hand, was willing to consider the use of arsenic in medicine because it had been successfully tried in Britain:

I was much interested in your papers concerning the Hindu pills for the cure of persons bit by venomous Snakes. Till I saw Duncan’s

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30 Ibid., 182-187.
Medical Commentaries I had the same abhorrence with yourself to the use of arsenick in Medicine, & had resolved to suppress a Paper of a Native Physician concerning the cure of the Elephantiasis by small quantities of Arsenick; but when I found that it had been safely given in England for intermittents, I ventured to print it in the Second Volume of our Transactions.\(^{31}\)

But the weight of their discussion as apparent from Anderson’s reply was the propriety and correct use of experimental methods in the new Indian milieu. Jones, Anderson hints, is unacquainted with the natural history and bodily economy of the Indian goat. His naiveté lay in proposing that the result of an experiment with arsenic carried out on his pet was even minimally conclusive regarding its general application. Experimental methods did not travel so easily:

All the Elements we are acquainted with are in the composition of our own Constitutions, and we know of nothing else in Arsenick the application of the one to the other in this case appear (sic) feasible and we cannot certainly determine that a very --- (blank in original) people might not effect it to advantage but I who know that the Goat to which you gave the Pill can eat the Euphorbia aphylla or Tirucully with impunity, a plant filled with milky juice a single drop of which will raise a Blister upon a Horse and bring on so great a degree of Inflammation when applied to our Bodies as disposes to Gangrene & Mortification must act with caution in the use of even those Medicines that are most approved – It seemed to me that the orders of Government required a Caveat…\(^{32}\)

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\(^{31}\) William Jones to James Anderson, Crishna-nagar, 14\(^{th}\) September 1789, copy in Roxburgh Correspondence (large envelope), Natural History Museum, London (hereafter RC/NHM), f. 147 (verso). Jones is referring to Medical Commentaries for the Years 1786, 1787 Exhibiting a Concise View of the Latest and Most Important Discoveries in MEDICINE and MEDICAL PHILOSOPHY. Collected and Published by Andrew Duncan, M. D. F. R. & A. S. Ed. Ed etc., specifically Duncan’s review of “Medical reports of the effects of arsenic in the cure of agues, remitting fevers, and periodic headache. By Thomas Fowler, M. D., Physician to the General Infirmary at Stafford 8vo. Volume Sixth, London, 1795”, at 72-83.

\(^{32}\) James Anderson to William Jones, n. d., RC/NHM, f. 145 (recto). The exchange sheds light on the construction of experimental histories by eighteenth-century surgeons and physicians (and lay practitioners). As Ursula Klein and Wolfgang Lefèvre have observed, such mundane experimental practices have slipped through the net of systematic historiographical writing. Ursula Klein and Wolfgang Lefèvre, Materials in Eighteenth-Century Science: A Historical Ontology (Cambridge, MA and London, England: MIT Press, 2007), 26. Here Anderson is cautioning Jones that experimental practices in medicine had to bring together the theory and practice of physic. The cure of diseases demanded explanation on the same principles as the “laws of the animal oeconomy”. See Andrew
Anderson’s stricture on the Medical Board’s orders approving the Tanjore pill reveals the tensions endemic to colonial projects of natural knowledge-making. It reinforces a core argument made in Chakrabarti’s book about colonial medical practices as the outcome of the practical needs of colonizing regimes. Such practices were firmly embedded in the political economy of these regimes, as I have shown in the case of Walker’s tables, and difficult to understand apart from them. Making the connections can be difficult because the historiographies of natural history, early modern political economy, colonial and imperialism do not often intersect.

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It is only recently that historiographical attention has been directed at the relationship of natural history and political economy. In 1996, a volume on the Cultures of Natural History edited by Nicholas Jardine, James Secord and Emma Spary was published by Cambridge University Press. It contained 25 articles. In their Introduction two of the editors explained to their readers how their volume covered drastic shifts in the “meanings and human significances of natural objects” between the 16th and 19th centuries. There was, however, one constant – the importance of the role assigned to natural history in the commonwealth of learning. Natural history had meant different things over the centuries: it had been seen as

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Duncan, *An Address to the Students of Medicine at Edinburgh, Introductory to a Course of Lectures on the THEORY and PRACTICE of PHYSIC, Delivered 1st November 1776* (Edinburgh, 1776).

revelatory of the divine workings of providence, as the stable foundations on which
cultural philosophy built itself, and “as the basis for the agricultural, commercial and
colonial improvement of the human estate.”

Its historiography, in turn, had changed over the course of the twentieth
century, from tales of progress to accounts of spatial, temporal and disciplinary
 discontinuities. This had brought in its train attention to national styles of “doing”
natural history, and to differences between metropolitan and provincial ways of
studying nature. Elites and artisans, men and women, it had been shown, studied
nature differently; they were thus part of different cultures of natural history.

Natural history was cultural activity in two senses: it was a form through
which people made sense of their lives, and a way in which they reproduced their
social existence. It was also a set of practices developed by groups of interacting
people rather than knowledge generated by isolated individuals. Identifying and
analyzing those practices was the job that the contributors to the volume had set
themselves. Several categories of practices are then mentioned and discussed:
material, social, literary, bodily and reproductive, one after the other, with a single
significant omission: there is no mention of natural history as political-economic
practice. The absence is particularly noticeable because natural science and natural
history in early modern Europe owed a great deal to the growth of the European
capitalist economy. In Britain alone, two important forms of natural historical
practice developed that were dedicated to building the wealth of the state – statistical
surveys and political arithmetic – neither of which receive mention in the volume.

The term “political economy” itself was invented in the period, connecting earlier notions of *oeconomy* – the management of households – to the idea of stewardship, with its connotations of fostering and building the available resources of a people or a state; and to the “economy of nature”, meaning God’s providential care of the natural world and everything in it. A thoughtful Introduction by the editors of a volume of essays on *Oeconomies in the Age of Newton*, points this out while also noting the symbiosis between early modern science and economics.35

There was a “double seepage” Schabas and De Marchi say, “as much or more between political economy and physiology, or botanical oeconomy, public *benessere*, or mineral riches, as between political economy and rational mechanics.”36 This is exemplified in an essay by Staffan Müller-Wille in which he explains how the conceptual content of Linnean botany, especially the naming of species, was affected by the idea that botany formed a “sphere of exchange”.37

Other essays in the volume, one by Emma Spary on the emergence of natural history as a science of resources in early modern France, another by Alix Cooper on the idea of “natural riches” in the early modern German territories explore how the link between natural history and European state making was forged.38

The link itself was the idea of natural history as *useful* knowledge that could generate the wealth that various mercantilist and cameralist doctrines considered

36 Ibid., 4.
38 E. C. Spary, “Peaches Which the Patriarchs Lacked: Natural History, Natural resources, and the Natural Economy in France”, in *Oeconomies*, 14-41; and Alix Cooper, “The Possibilities of the Land”: The Inventory of “Natural Riches” in the Early Modern German Territories”, in *Oeconomies*, 129-153.
vital to the strength of a state. Wealth in turn was redefined: it was no longer the noble metals (gold and silver) alone, but all of nature’s vegetable and mineral productions whose value to the state would be revealed by the exertions of “useful” men of science. The lines of descent of this emergent natural history in central Europe and Scandinavia were many. But Cooper’s example, a new kind of natural-historical writing that arose at the conclusion of the Thirty Years’ War (1618-1648), the oryktographies, which departed from the lengthy tradition of mining literature in the German territories, is particularly important for my argument in Chapter III.39 This new literature, produced primarily by German physicians, brought together oryctognosy and mineral geography in the study of regional mineralogies.40 A key shift then occurred, as Cooper notes elsewhere, once Francis Bacon and his successors in England formalized this literary approach to include entire territories.41

That the formalization of this mode of writing occurred in an island nation, arguably the greatest mercantile and colonizing power in early modern Europe, was no accident. To show why we have to tease out connections concealed by the separation of historiographies. Let us begin with a canonical contribution to the history of seventeenth-century science, Steven Shapin and Simon Schaffer’s Leviathan and the Air-Pump. The main claim of the book is captured in the sentence with which the authors opened their concluding chapter: “Solutions to the problem of knowledge are solutions to the problem of social order.” The sentence following

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39 Cooper, in Oeconomies, 133.
41 Alix Cooper, Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe (Cambridge and New York: Cambridge University Press, 2007), 116.
it stated: “That is why the materials in this book are contributions to political history as well as to the history of science and philosophy”.  

The book’s materials are indeed a magnificent contribution to the political history of early modern Britain, *but with its colonial history left out*. The authors describe the practices through which the post-Restoration social/knowledge order was constructed in England, and show why the “form of life” constituted by Boyle’s experimental community trumped the different form of life championed by Hobbes. The body politic of the experimental community, Shapin and Schaffer argue, could be shown to be a reflection of the post-Restoration Settlement. The political structure of the community, where mastery was constitutionally restricted and men were free-acting, witnessing and believing individuals guaranteed the scientific knowledge produced within it. But the scientific body politic also had a hidden underbelly. Or, to borrow another metaphor from Shapin and Schaffer, the cultural and physical spaces in which the new science was performed were closely connected to spaces below the horizon of their account. In one such space, seventeenth-century Ireland, the new experimental philosophy underwrote a major project of colonization. This is explained by the sociologist, Patrick Carroll, in his book *Science, Culture and Modern State Formation*, through a series of steps that triangulate both science as culture and the science-state relationship.

Carroll uses the term “engine science” to capture the overarching culture of the new experimental science, which placed material technologies at the heart of

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natural scientific inquiry. Engine science integrated natural philosophy, engineering and mathematics in practice. The new culture of inquiry was underpinned by four epistemic engines that defined its practices: meters, scopes, graphing technologies and chambers. Attention to these technologies helps us understand science “as a very specific cultural complex of discourses, practices, and material culture. And though the specific technologies employed in statecraft may differ from those in natural inquiry, analogous practices of scoping, metering, graphing and manipulating can be identified.”

Carroll connects a variety of discourses that sought to orient government practice to experimental intervention, a point to which I will return in Chapter III. For the moment, however, it is important to note that he includes writing (the root meaning of “graph” being to write and draw) within graphing technologies. As forms of writing could reconceptualize complex material relationships and make them amenable to intervention and appropriation, they counted as powerful “epistemic engines”. Included in such forms were natural histories, his example being Arnold and Gerard Boates’ Natural History of Ireland, which “mark[ed] a particular form taken by the new science in the context of colonialism.” In this new form Ireland and the Irish were constructed as natural objects to be known and manipulated through engine science. William Petty’s writings, Carroll points out, were a mature expression of the form. Petty’s Natural and Political Observations, The Political Anatomy of Ireland, and the various essays

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44 Ibid., 48-49.
45 Ibid., 70.
on political arithmetic were interventionist techniques, which constructed the objects of state power as simultaneously political and natural. They were in substance what in the next century would be called political economy.

The colonization of Ireland was itself part of a developing ideology of the British Empire based on the political economy of commerce. As David Armitage has noted, the fundamental principle of late seventeenth-century political economy was the recognition that commerce was “an affair of state” for every European polity. The various techniques that Petty advocated were also strategies to subordinate Ireland to England’s growing commercial empire; and different conceptions of empire were broached in the effort to rethink the triangular relationship between England, Scotland and Ireland. As Ireland’s commercial expansion would have posed a serious threat to England’s prosperity, its sovereignty had to be restricted. The Cattle Acts of 1663 and 1667 passed by the English Parliament were one measure to curb a vibrant area of Irish commerce and deplete its supplies of bullion. A more drastic solution that Petty proposed in *A Treatise of Ireland* (1687) was the transplantation of the majority of the Irish population to England. This would have left 300,000 people behind in Ireland to administer it as a cattle ranching dependency of England, denying it any political autonomy whatsoever: “Whereas there are Disputes concerning the Superiority of Parliament; now there will need no Parliament in Ireland to make Laws among the Cow-herds and Dairy-Woman.”

Colonization and commerce, then, both depended on

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knowing natural facts. With this in mind, if we return to Alix Cooper’s account of the formalization of natural history writing in England, we can see why its logic worked to sustain the political economy of English commerce.

Writing the “complete” natural history of entire territories, which Cooper considers the significant development of the seventeenth century (along with the use of the term natural history itself) involved mapping the resources of places in Britain and Europe with a view to colonizing intervention for commerce and state building. Her narrative, built through an analysis of the correspondence between Henry Oldenburg and his informants in Germany, is strewn with hints of the connection: the narrowing focus of English natural histories on inventorying the natural phenomena of specific places – her example, interestingly, is the Boate brothers’ natural history; Robert Boyle’s advice on how to write the natural history of particular countries, which he addressed pointedly to “Travellers and Navigators”; a reference by one of Oldenburg’s correspondents to the differences in style of natural historical practice in Germany and England (“Seafaring leaves all corners of the earth open to you. We Germans know only narrower limits…”)⁴⁸

Boyle’s advice to the Navigator and Philosopher in General Heads for the Natural History of a Country Great or Small Drawn out for the Use of Travellers and Navigators leaves us in no doubt that the reasons for such differences in style lay in the political economy of commerce. Leading the list of Particular Directions to the ingenious are those that concern mines. The six heads under which mines are discussed make it clear that the useful arts without which “the World should want

⁴⁸ Cooper, Chapter 4, in Inventing the Indigenous, 116-151, quote at 131.
little of Returning to its former Barbarity” make it imperative to discover mines in foreign lands. And questions to guide the description of natural objects construct them as commodities, as with iron or tea: “4. Whether the iron in Pegu and Japan be far better than ours; and if so what is to be observ’d in Melting, Forging and Tempering of it?” “14. Whether the best Tea be that which comes forth at the first of the Spring, and are the Top-Leaves; in what manner ‘tis dry’d, and whether the too hasty drying thereof hurts it.”

If natural history and its forms of knowledge-making and the political economy of commercial imperialism were indeed of a piece, we should be able to discern continuities between its epistemological methods and the value systems of early modern European merchants. This is the thesis argued in Harold J. Cook’s magisterial account of seventeenth-century Dutch commerce and medicine, Matters of Exchange: Commerce, Medicine and Science in the Dutch Golden Age. “To put it in terms that the modern historian of science will understand: in recent years we have had many excellent studies of the production of knowledge, but we also need to note that values of systems of accumulation and, particularly, of exchange, also changed the kind of knowledge produced.”

This new kind of knowledge valorized matters of fact. Cook argues that shifting priorities in the early modern world brought the study of the “materially real” to the fore, pushing past the mathematical-physical sciences that were thought

51 Ibid., 411.
to have been foundational to the “Scientific Revolution”: “As commercial cities and the financial capital they produced became ever more important for the larger political systems of which they were a part, the values of the urban merchants, including their intellectual values, were increasingly dominant throughout society.”

The development of “objective knowledge” – meaning fine-grained experiential descriptions of things rather than causal explanations – and the methods suited to its acquisition foregrounded knowledge produced through the senses rather than through thought. “Like commerce science arose not from liberating the mind from the world but from keenly interested engagement with it.” The merchant and the physician alike shared in the making of this knowledge. If the merchant’s credit rested on knowing details of the plant and mineral commodities he purveyed, where they could be procured, and how they could be distinguished from look-alikes, then the physician’s reputation was built on the therapeutics he constructed through their use.

Epistemologically speaking, the search for such knowledge attached a new value to the passions. No longer were the passions to be controlled through the use of reason. Instead they were understood as aspects of the body that conveyed beneficial information for life (and trade). Cook grounds his analysis in, among other things, a reading of Descartes as physiologist and medical investigator. His Descartes is an archetypical Dutch philosopher, the author of the *Meditations* rather than the *Discours*, pursuing practical knowledge about the material world, and separating knowledge of nature from moral philosophy. Rather shockingly, Cook

52 Ibid.
claims that a materialist epistemology lay at the heart of the changes that occurred in
the seventeenth century, making medicine and natural history rather than matter
theory or mathematical physics “the big science of the early modern period, not only
in the Dutch Republic but throughout Europe”. 53 This is a welcome change of
subject for any historian intent on showing that colonialism was a constitutive part of
modern science. Patrick Carroll takes us some distance down the road by pointing to
the intellectual origins of experimental philosophy in the English colonization of
Ireland. Pratik Chakrabarti takes us further. Materials and Medicine argues that
aspects of “Western” medicine had their origins in emerging colonial systems in the
West Indies and India.

Trade and therapeutics intertwined in the material culture of the West Indies
and India’s Coromandel Coast, where hydropathic treatments or the use of
indigenous remedies such as the Tanjore pill developed as knowledge-forms through
the “values of systems of accumulation and exchange”. Materials and Medicine is
in some respects a conversation with Matters of Exchange. Chakrabarti expands
upon many of Cook’s insights to show us the role of colonialism in developing
unique medical practices in the colonies, which should be distinguished from
metropolitan practices. In the Caribbean, for example, the use of minerals in
medicine developed a tradition quite separate from European iatrochemistry. 54

Chakrabarti’s study begins with the seventeenth-century buccaneers whose
prospecting activities were sanctioned by the Crown, but who operated as

53 Ibid., 410.
54 See his comments on Cook's Matters of Exchange, 5.
independent agents in their search for gold and silver in the Caribbean. The islands’ mineral wealth acquired a variety of meanings in the mercantilist narratives of the period, transfixed adventurer-naturalists like William Dampier and Thomas Trapham. Trapham, a prominent Jamaica surgeon who was urged by Henry Oldenburg and Robert Hooke to study the island’s mineral resources, was among the first to suggest that the fabulous hoards of metals concealed in the bowels of the island gave its waters special curative powers. Jamaica’s springs and hot wells soon became an important part of public healthcare, “an early instance of the European pursuit for resources in the colonies shaping their medicine.”55 The shift to plantation agriculture however occluded hydropathic therapeutics in the Caribbean, which were quickly forgotten.

On the Coromandel Coast “country medicine” entered Western medical practices at the confluence of trade, therapeutics and war. Long before the arrival of the Europeans, a series of trading networks had linked the Coromandel to Bengal and South East Asia on one side, and to the African and Arabian coasts on the other. In the seventeenth and eighteenth centuries these networks supported the “country trade”, i.e., the private trade of the different East India Companies’ functionaries in southeastern India. English East India Company men controlled a large chunk of this trade by the eighteenth century, and their own private trading ventures combined with the difficulties of shipping European medicines to India, led Company surgeons to explore native therapeutics and the pharmacopoeias that supported them.

Chakrabarti points out that local bazaars were central to the sustenance of the EIC in different ways. It was here that the EIC army recruited Indian laborers to service its needs and bought its supplies of food, furniture and clothing. And it was here that Company surgeons, men like William Roxburgh, who were both merchants and medics (see Chapter IV) mingled with native medical practitioners while studying the goods on display. Company surgeons were entrusted with the task of supplying army hospitals with drugs and provisions and these lucrative private contracts provided the context in which a “syncretic” European medicine developed in India. Long sea voyages destroyed the efficacy of many European remedies, so EIC medics were only too willing to draw on locally supplied drugs and accept instruction from indigenous practitioners on their use. In 1758 when plans were floated to enlarge the hospital at Madras, its surgeons were insistent that it have enough storage space for both European and country medicines.

The complex genealogies of the items that supported syncretic medical practices made them both commodities of the spice trade as well as medicaments. And like the separate orientations of EIC commerce in India – country trade and European trade – they too maintained separate identities as objects of trade and therapeutics. Although they were studied by surgeon-naturalists and entered European pharmacopoeias, they arrived in Europe sundered from their roots in indigenous practice.

Chakrabarti is careful to note that syncretic Western medicine did not necessarily travel back to Europe. It remained, like Walker’s tables, a part of the situated practice of science in the colonies. He does not assign any theoretical
weight to his descriptor, “syncretic”. But it is easy to read the practices he describes as more empirical evidence with which to theorize the hybridity of colonial science.

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This dissertation is also a contribution to the interdisciplinary field of science studies, which by the early 1990s had challenged and changed the way history of science was thought (and taught) in North America and Europe. The field itself is various and constituted by several disciplines including the history, philosophy and sociology of science. It has endured the “science wars” of the 1990s and seen violent debates engendered by post-positivist developments in philosophy – a derangement of epistemes as one author has it.\(^56\) I will not rehearse any of these debates here but will confine myself to an account of certain key concepts that emerged in one particular strand, the sociology of scientific knowledge (SSK) and the empirical case studies it generated, which have helped me reflect on my own material. I have also found the idea of the co-constitution or the co-production of nature and social order very useful to think. It has been elegantly stated by Sheila Jasanoff: “Briefly stated, co-production is short hand for the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways we choose to live in it. Knowledge and its material embodiments, are at once products of social work and constitutive of forms of social

life; society cannot function without knowledge any more than knowledge can exist without appropriate social supports.”

The historian Jan Golinski has proposed the broad concept “constructivism” to characterize the methodological orientation of those sociologists and historians interested in “doing” the sociology of scientific knowledge: “‘Constructivism,’ as I shall characterize it, is more like a methodological orientation than a set of philosophical principles; it directs attention systematically to the role of human beings, as social actors, in the making of scientific knowledge… it serves my purposes better than alternatives like “the Strong Programme,” “social construction,” or “the sociology of scientific knowledge,” in part because it is not the shibboleth of any particular school.”

Systematic methodological attention to the role of humans as social actors in the making of historical scientific knowledge entails understanding the world in which they acted through categories they would have understood. This is important if historians are to recover the meaning context of their actors’ actions; or to put it as one famous constructivist historian did in a masterpiece of the genre, quoting Clifford Geertz, “‘the trick is not to get yourself into some inner correspondence of spirit with your informants… [but] to figure out what the devil they think the are up to.’”

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The Great Devonian Controversy is perhaps the most rigorous example of fidelity to actors’ categories in the field. Martin Rudwick does not allow the intrusion of any concepts or terms of explanation in the course of constructing his narrative of the controversy that the actors themselves would not have used. Nor does his narrative ever get ahead of the actions of the actors themselves. Rudwick the analyst does not appear until the last two chapters, by which time he has provided the thickest possible description of the controversy. He has been critiqued (and congratulated) by one distinguished reviewer for his uncompromising narrative strategy, and by others for being cavalier in the observation of a second methodological move that constructivists consider important, the use of the “symmetry principle”.60

Briefly (and vulgarly) the “symmetry principle” means this: as sociological and historical constructivists claim to study the making of natural knowledge without engaging in assessment of its truth or validity, it behooves them to treat “winners” and “losers” in a scientific controversy in exactly the same way. In the case of The Great Devonian Controversy this should mean treating all the actors in the controversy, Roderick Impey Murchison and Henry De la Beche his chief opponent, as well as hold outs against the Devonian like David Williams and Thomas Weaver with equal sympathy. Whether this is ever possible in actual historical practice is moot. Gould and several others point this out citing different

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reasons. Rudwick may have resolved the controversy to his satisfaction as a grand compromise, says Gould, but there was a clear winner in the battle, Roderick Impey Murchison: “he wins because his concepts have succeeded as the foundation of historical reconstruction.”

Golinski’s discussion of the symmetry principle through his analysis of The Great Devonian Controversy raises a vexing question that all constructivists must perforce confront, that of the positioning of the author in the course of constructing her narrative. Historians by trade are storytellers; their disciplinary practice traditionally takes a narrative form. Constructivist historians have a particular obligation to be self-conscious about their narrative techniques, since they have parted with the notion that acts of mental perception unfold according to their own logic without reference to actors’ practices or the social or cultural relations in which they are embedded. Golinski is here reacting to criticism by Trevor Pinch and Harry Collins that Rudwick abandoned the symmetry principle, when he let Williams and Weaver exit his narrative too early in the unfolding of the controversy. He observes that the decision to let them leave was itself the result of how Rudwick had plotted his story and where he chose to end it. In other words, the historian is always already present in the narratives he chooses to construct. And insofar as he is interested in describing the temporal resolution of disputes, he will at a certain point have to let go of the symmetry principle. It is important to recognize this for a second reason, the “debatable epistemological conclusions” that Rudwick drew from

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his own account. Here Golinski is in agreement with Andrew Pickering, who

criticizes Rudwick’s talk of the *constraints* imposed on the actors by the cumulative

empirical evidence. This is to cast the making of science as an either/or choice –

either that scientific knowledge is entirely constructed through non-compelling

negotiation between social actors or that it is a reflection of pre-existing natural

reality. Instead, the aim of the historian’s narrative should be to recover the

processual (which could mean letting all the players linger on stage) in order to show

how scientific practice grapples with the material world, not just

engagement with purely social entities. But it is not reduced to a

process of revealing preexistent “reality”. The agency of material

things is captured by instrumental and human ensembles, and

manifests itself as a resistance to human intentionality; it is therefore

inseparable from human material practice and emerges temporally in

the course of that practice. Rather than “constraint”, Pickering’s key

metaphors are of the “mangle of practice” and the “dance of agency”

by which human and material activity are mutually entwined and

temporally stabilized.62

What sort of narrative agency must the historian exercise to capture the unfolding of

scientific practice in time? “The author has to be able to jump forward and backward

in time, moving between the emergence of stable configurations of knowledge

(whose stabilization is always recognized at least partially with hindsight) and the

contingencies and uncertainties of the time when that stabilization could not yet be

foreseen.”63

The historian’s ability to move through time is particularly important when

her actors’ knowledge-making occurs in a colonial context where different

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63 Ibid., 204.
temporalities intersect. In order to understand scientific practice at such a moment she must be able to enter the discrete temporal worlds her actors negotiate, giving a different meaning to the notion of jumping forward and backward in time. Negotiating distance in time is here not a matter of understanding the passage of moments in “real time” but grasping its expression as affect, form or understanding. This in turn rules out any simple application of the symmetry postulate to explain the behavior of all colonial actors. The analytical categories used to explain the actions and motivations of Enlightenment savants can hardly be applied to recover the meaning contexts of their native informants. The “contingencies and uncertainties that marked the time before the stabilization of knowledge occurred” were different cultural-temporal experiences for the parties involved. The materiality of social relations, for instance, was hardly the same for colonizers and colonized.

In the chapters that follow I focus on the practices through which the three colonial men of science I study grappled with their material world and the categories through which they made sense of it, while keeping the historical structures well in view. I study these men as an important strand in the social fabric of early-modern India, as early-modern “Indians”, incorporating them into the social-political environment of which they, like natives (the term itself is an actors’ category), were an integral part. To do this I have had to reach for analytic strategies more familiar to South Asianist historians and cultural anthropologists than historians of science or science studies scholars.

Since the arrival of the Subaltern Studies Collective on the historiographical scene in the 1980s, younger South Asianists have understood the
importance of questioning the categories through which the subaltern was presented in elite discourse. A key methodological concern in the writings of these historians has been to restore subjecthood to subalterns. One way in which they have done this is to devise modes of reading primary sources generated by elites such as colonial administrators to recover the subaltern “voice”. Subaltern discourse and indeed the idea of the discursive itself have meant different things to members of the Collective. But it is safe to say that historians associated with it have struggled to correct the asymmetry of accounts of South Asia’s colonial past, which have privileged elite voices and primary sources produced by dominant groups in colonial society.

The ideology and affect that drive Subaltern Studies historians are difficult to reconcile with the ideas and methods used by historians of science. Yet these historians’ overarching methodological concern to restore subjecthood to subalterns intersects in interesting ways with stories told about scientific knowledge-making using actors’ categories. In trying to reconstruct the histories of colonial men of science in India through terms they would have understood I make them, in effect, the subjects of their own histories. This does not mean that I forget the power differential that existed between them and those over whom they ruled, in my analysis. It does mean that I have privileged the evidence of their letters and the

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64 See Veena Das, “Subaltern as Perspective”, in Subaltern Studies VI: Writings on South Asian History and Society, edited by Ranajit Guha (Delhi: Oxford University Press, 1989), 310-324, for a discussion of these issues.
65 See, for example, Sumit Sarkar, “The Kalki-Avatar of Bikrampur: A Village Scandal in Early Twentieth Century Bengal”, in ibid.
66 See Ranajit Guha, “On Some Aspects of the Historiography of Colonial India”, in Subaltern Studies I: Writings on South Asian History and Society, edited by Ranajit Guha (Delhi: Oxford University Press, 1982), 1-8, for the use of the categories “elite” and “subaltern”.
correspondence networks they established, in the hope of recovering the experiential
dimension of their lives, instead of presenting them as vectors of objectified thought
forms. I have also tried to recapture the agency of the indigenes they interacted with,
however obliquely, through creating narratives that capture process.

Take the case of William Jones. The Jones who emerges at the end of
Chapter II is not the man who set out for India in 1783, carrying with him a view of
Orientals and their forms of knowledge acquired through his reading. By the 1790s
material conditions in India, especially the necessity of building social relations that
could undergird the colonial state, had forced him to revise his understanding of the
Orient as object. The “mangle of practice” had produced an Orient very different
from the Orient he had imagined in Britain. Capturing the changes in affect and
understanding that attended his growing knowledge of Indian botany would have
been impossible through a linear narrative intent on fixing causation. Nor could it
have been recovered by reading his published works alone. His outburst against
inflammatory Linnaean analogies, for example, has to be “read” against the world of
colonial Calcutta and his responses to it as they appear in his correspondence.

And what of Jones’s Orientalism? All postcolonial scholars are familiar with
Edward Said’s concept of “Orientalism”, defined as a discursive strategy developed
by the West to dominate the East. But what did Jones and his colleagues mean
when they spoke of the Orient and Orientalist knowledge? Various scholars of
South Asia have dealt with the question, including Thomas Trautmann, who in a
path-breaking study of the making of colonial ethnology has clearly explained the

confusion that can result when actors’ categories are confused with analysts’
categories.\textsuperscript{68} Orientalism \textit{sensu} Jones, as I explain in Chapter II, was a way of
making knowledge about India grounded in mastery of Indian languages.
Orientalism \textit{sensu} Said, as Trautmann explains, “is the whole, more or less, of
Western authoritative pronouncements on Asian societies.”\textsuperscript{69} Orientalism in colonial
India also had a second referent: it designated a group of policy makers
(“Orientalists”) who favored educating natives in the classical and vernacular Indian
languages, as opposed to “Anglicists”, who favored education in English.

Said’s redefinition of the word has led some scholars of South Asia to
confuse the two meanings. The historian Ronald Inden working within Said’s
definition of the word, includes James Mill, the greatest of the Anglicists and a man
who despised learning in Indian languages, among Indian Orientalists. In Inden’s
analysis, Mill’s \textit{History of British India} (1817) thus becomes a key text of Indian
Indology, even though Mill never learnt a single Indian language.\textsuperscript{70}

In Chapter II I show the importance of returning British Orientalism to its
eighteenth century context, in order to trace its connection to the “sentimental
empiricism” of Enlightenment \textit{savants}. By doing so I am able to show how
Orientalism was of a piece with contemporary sensibilist epistemology, which once
joined to Scottish stadial philosophy, produced a natural history of man in society.
My research on Jones demonstrates why it is important to put the historiography of

\textsuperscript{68} Thomas R. Trautmann, \textit{Aryans and British India} (New Delhi: Vistaar Publications, 1997).
\textsuperscript{69} Ibid., 23.
\textsuperscript{70} Ibid.
science in conversation with South Asian historiography. Orientalism as an actors’ category had levels of meaning that South Asianists have not grasped.

Actors’ categories are also relevant to deepening our understanding of early-modern imperialism and state building. They can be used to check the fit between the analytical categories historians develop and the mentalités of contemporary actors. The historian of Africa, Fredrick Cooper, has vigorously canvassed the concept of the empire-state, a polity without a clear national core or contiguous territorial existence. That William Roxburgh and his contemporaries understood the polity they inhabited in such terms is borne out by their perception that their transcontinental ambitions and actions were located in a continuous political space. This was as true of Roxburgh’s fervent desire to accumulate landed property in India, which would devolve to his sons, as it was of the transcontinental movement of plants and goods between different parts of British Asia, Africa and America. And, as well, of John Sinclair’s desire for a statistical account of British India similar to the Scottish one, which he declared to Henry Dundas, was necessary for a complete statistical accounting of Britain’s territories.\footnote{Rosalind Mitchison, \textit{Agricultural Sir John: The Life of Sir John Sinclair of Ulbster 1754-1835} (London: Geoffrey Bles, 1961), 134-135.}

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The conceptual weight of this dissertation lies in showing why natural history in colonial India was useful knowledge. The various practices associated with natural-historical knowledge-making in Britain were transformed once they became
technologies used by the colonial state in India. This is the thread joining together Chapters II, III and IV. All three savants, Jones, Buchanan and Roxburgh were committed to making natural knowledge for reasons of state. And all three, in different ways, were successful in their endeavors.

William Jones, whose botanical knowledge-making is discussed in Chapter II, was not a functionary of the East India Company. He was a member of the Crown’s Supreme Court in Bengal, and is best remembered for founding the Asiatic Society in Calcutta in 1784. Nevertheless, the Asiatic Society functioned as an informal institution of the Company state, and Jones’s botany, which made pragmatic use of indigenous botanical knowledge, was firmly directed at locating commercially useful plants in India. His *Anniversary Discourses* are a plea for “useful” knowledge of every kind. And though they are principally cited for the proposal he put forward in the *Third Discourse* of the Indo-European language family, it has recently been pointed out that the theory itself worked to strengthen the foundations of the colonial state.72

Chapter III argues that a particular trajectory for India’s colonization was set by the Scottish medics who came out to the subcontinent in formidable numbers. The chapter examines one of the first surveys carried out, of south India, by Francis Buchanan, a graduate of Edinburgh University’s School of Medicine. It sets itself the task of tracing the origins of the statistical survey, a form of natural knowledge-making that embedded itself in colonial state institutions such as the Board of

72 Kapil Raj, *Relocating Modern Science*. Raj appears aware of the importance of knowledge-making practices specific to the colonial milieu, and their significance for colonial state building, so his deprecation of “colonial science” as an analytical category is puzzling. But see Raj, ibid., 12-14.
Revenue, and locates them in the teaching of natural history by the Reverend John Walker (1731-1803) at Edinburgh. I argue that Buchanan’s success in presenting the survey as a language that translated between different systems of knowledge, lay in John Walker’s strategy to teach natural history as of a piece with the new science of agriculture. The language of agricultural improvement in combination with the new sociology that emerged with the Scottish Enlightenment allowed Buchanan to interpret the cultures of south India as in urgent need of a push up the ladder of civilization. This was exactly what Governor-General Wellesley required of him. Wellesley’s Indian wars were frowned upon by the Court of Directors of the East India Company who objected to their expense. He needed an advocate who could present the wars in south India to the Court in the most favorable light. Buchanan’s survey did exactly that, justifying Wellesley’s imperialist aggression in the language of civilizing improvement.

When Wellesley picked Buchanan for the job of surveying recently conquered territories in south India, he did so for a reason. He knew that his education at Edinburgh, especially his training in natural history, had given him the tools with which to provide an account of the political economy of the regions he surveyed. His teacher John Walker had pioneered a method for turning natural objects into natural-political objects for colonizing appropriation. Walker’s famous essay on the natural history of peat, which expressed a set of relations between nature, art, human labor and its productivity, and its monetary value, was a fine example of engine science. The economy of peat once metered, scoped, and graphed or inscribed through natural historical description, turned it into an object for state
intervention. This was the method that Buchanan carried with him to Mysore, Canara and Malabar. The three volumes of *A Journey* are primed with examples of how natural objects (including people) could be manipulated through statecraft.

As a form of writing *A Journey* was the apotheosis of the developments in natural history described by Cooper. As a graphing technology it turned places and ways of life in south India into inventories of natural resources and captured “economic sentiments” in the broadest possible sense. Its readers learnt how natives thought and felt about all matters that affected (and obstructed) the political economy of British commerce: their modes of trucking and bartering, their irrational systems of tolls and dues, their resistance to rational practices in agriculture. And it taught them how to view these habits and practices as natural facts that could be transformed through the arts of colonization.

*A Journey* also marked the beginning of a process through which Scottish empiricism made its way into the administrative apparatus of the colonial state and became powerful colonial ideology. Unsurprisingly, it (as well as Buchanan’s other surveys) provided James Mill with a potent resource with which to attack his opponents, the Orientalists. Mill’s primary obsession in his *History*, as the political theorist Uday Singh Mehta has pointed out, was to establish the civilizational stage to which India’s early nineteenth century condition corresponded. Such obsession with the stages of history and their meaning for civilizational progress was a feature of Scottish stadialism, which used various

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criteria – religious beliefs, the treatment of women, architecture, agricultural and craft technology – with which to rank societies. It could take a sophisticated form as in the writings of Adam Ferguson, on which William Jones drew, but it could also be used as a tool for reductive polemical purposes. Mill was aided in his task by the moral tone of Buchanan’s descriptions of the people and the material conditions he met with in the course of his journey. South India at the end of the eighteenth century exhibited conditions that failed translation into improvers’ language. Such opacity was a formidable obstacle to universal progress Buchanan told his readers, and made colonization urgent.

Chapter III follows the methodological strategy advocated by the new imperial historians to narrate the entangled histories of Scotland and India in the period. The chapter has four sections. Section I (“New Delhi”) sets the scene. It begins by discussing Wellesley’s ambitious project for a natural history of India, which fell through because of lack of support from London. A second project, meanwhile, succeeded. This aimed to publish the report of Buchanan’s fin de siècle survey of Mysore, Canara and Malabar. It was in Wellesley’s interest to have Buchanan’s report read by the Court of Directors. But why was the Court eager to publish it?

Section II (“Edinburgh”) traces the history of the Scottish Enlightenment’s improving imagination. It provides an account of the restructuring of agrarian relations in early-modern Scotland and the emergence of natural history as a discipline at the University of Edinburgh’s Medical School. It shows how the two processes were interrelated, and argues that the history of India’s colonization was
an integral (though historiographically unacknowledged) part of that history. John Walker’s natural history lectures provided an indirect template with which the Board of Revenue and other colonial institutions developed the techniques to restructure colonial agrarian relations and mine Indian resources. Section III (“Mysore, Canara and Malabar”) describes one moment in the process. It analyzes Buchanan’s language as part of the material technology of colonization.

“Mysore, Canara and Malabar” follows Buchanan through south India, describing what happens as he uses his epistemological individualism to locate the places and people he encounters at a barbarous stage of development. His narrative does powerful work in claiming empiricism and rationalism as European civilizational achievements, against which natives are compared and contrasted as credulous and stupid. Trusting native accounts of nature (or culture) he says over and over again is to fall victim to fantasy. There may have been a native or two who understood the value of sense experience, but none who knew when to let reason override it.

It was Buchanan’s use of the abstractions of conjectural history (“progress”, “rational”, “improve”, “backward”) that made his text amenable to appropriation by Anglicists such as James Mill, the “winners” in the Orientalist-Anglicist controversy. Telling the story of the controversy is not on my agenda here, but it is important to note that Buchanan’s surveys were part of the process through which the Orientalist/Anglicist opposition was constructed in colonial policy-making. William Jones and other Orientalists like him were excellent empiricists. If they were sidelined as dreamy idealists obsessed with Indian languages by their opponents in
the EIC administration, it was because they offered empirical accounts too complicated for successful deployment once the battle lines were drawn. Uday Singh Mehta’s observations on the success of Mill’s *History* are pertinent here: “It is…difficult at this distance, and with the advantage of the postcolonial experience, to imagine how his narrative could have acquired the enormous influence that it did. In this context one should remind oneself that imperial narratives, perhaps all narratives, especially those of power, lose their effectivity in proportion to how complex they become.”\(^75\)

William Roxburgh, Buchanan’s colleague and fellow Edinburgh *alumnus*, the subject of Chapter IV, left behind no narratives. If he told stories it was through the volumes of plant drawings and classifications that resulted from his botanizing, and the letters he wrote to his mentor, Andrew Ross, the most influential free merchant in Madras Presidency. Roxburgh’s letters to Ross do not survive, but Ross’s to Roxburgh are preserved in the manuscript collections of the Natural History Museum, London, and together with other material can be used to show how colonial natural history and the EIC state were “co-constitutive”.

Chapter IV shows how the “values of systems of accumulation and exchange” shaped the natural knowledge produced in colonial India. Ross and Roxburgh made a fine team. Both merchants and medical practitioners alike, as Cook has observed, were deeply interested in natural facts. It was good for business in both trades. This was especially the case when the medical practitioners in

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\(^75\) Mehta, *Liberalism and Empire*, 90.
question were also merchants on the side, intent on building their fortunes through commerce.

It was by recognizing the synergy between the Company state’s sovereign powers and its commercial functions that European men of science in India fashioned productive (and lucrative) careers for themselves. William Roxburgh’s professional trajectory is a clear demonstration of this fact. As Ross’s client, Roxburgh had access to all the power players in the East India Company’s administration, as well as to scientific puissants such as Sir Joseph Banks. The natural knowledge that Roxburgh produced to keep very different constituencies satisfied built him a large personal fortune, and ensured his entry into Britain’s first scientific circles. Sections I and II show how this occurred.

Two crosscutting networks were involved in his success: the first included all the people involved in stabilizing a piece of natural knowledge; the second the connections he generated as he created a “familial” bond with Andrew Ross, which was itself part of a bigger network of EIC state-building and state-society relations. The same people sometimes belonged to both networks, and the two stretched across the empire state, providing points of contact for widely separated figures, creating sets of exchanges in different directions. To give just one example: the bundle of letters that Ross forwarded to Governor Charles Oakeley as part of a project to build a canal to join the waters of the Godavari and Krishna rivers included those from Roxburgh, Physician-General James Anderson, General Robert Kyd, and a sea captain and free merchant, George Baker. Baker may have been a part of the Company’s powerful shipping interest and a useful ally. In the normal course of
affairs, however, Roxburgh and Kyd may never have known of him. Ross’s network brought them all together.

In carrying out the survey for the project Roxburgh became Ross’s spy in exchange for which he received the opportunity to shape the nascent institution of Company Naturalist in the Northern Circars and comment on the development of Collectorates in the Presidency. The network meanwhile exemplified how EIC state authority was consolidated through lateral ties, which produced the state as patchwork of local relations in south India.

Buchanan, unlike Roxburgh, never took advantage of the opportunities for private trade open to Company employees. I propose that this was a difference in the self-fashioning of the two men as “botanist” and “naturalist” respectively, terms of contrast developed by John Walker in his natural history lectures. Section III therefore takes a brief look at Buchanan’s Indian career highlighting points of tension that spilled over into his retirement in Britain.

Chapter V offers brief observations on the material presented in the foregoing chapters and concludes with some reflections on colonial natural history as useful knowledge and hybrid practice. Jones, Buchanan, and Roxburgh were useful men but there were differences in the way they understood useful knowledge. The differences between Jones and Buchanan were particularly sharp, an augury for colonial India under Company rule.
William Jones (1746-1794)
Artist: A. W. Devis (Calcutta); Engraver: W. Evans; APAC/BL Shelf Mark: P507
Figure I.2
Dr. William Roxburgh (1751-1815)
Engraving by Charles Turner Warren
www.wikipedia.org
Figure I.3

Figure 1.4
Chapter II
Orientalism, Language and Botanical Knowledge-Making: William Jones in Bengal

*Mise en scène*

On Thursday, the 15\textsuperscript{th} of January 1784, thirty gentlemen representing the elite of the European community in Calcutta met in a room of the Supreme Court of Judicature at Fort William. They had been summoned there by the exertions of one of their number, William Jones, who had come out to Calcutta the year before to take up an appointment as a Puisne (Associate) Judge of the Supreme Court in Bengal. The thirty-seven year old Jones had, before his arrival in India, acquired something of a reputation as a scholar, linguist and devotee of Oriental history and literature. The friends who signed his certificate of election to the Royal Society in 1772 said as much: ‘William Jones of the Middle Temple Esqre Fellow of University College Oxford and of the Royal Society of Copenhagen, a Gentleman well known for his learning in polite literature and the Oriental languages being desirous of becoming a member of this illustrious Society, We whose names are hereunto annexed do, of our knowledge of himself and publications recommend him as one deserving the honour he requests…’\textsuperscript{1} Now he was about to extend that act of Enlightenment sociability by starting a society of his own, the Asiatic Society.

The creation of literary and philosophical societies by European men of light was a familiar (even regular) activity at the time. The creation of the Asiatic Society in

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1784 for the purpose of inquiring into ‘the History, and Antiquities, the Arts, Sciences
and Literature of Asia’ is usually accorded special status as a founding moment in
histories of European Orientalism. It is credited with the discovery of India’s past, and
its founder with the precocious delineation of the Indo-European family of languages.\(^2\)
The Asiatic was, nevertheless, an informal institution engaged with a colonial state, so all
its activities and especially its Orientalism should perforce be understood as part of the
business of building the colonial state in India.

What was eighteenth-century British Orientalism about? And what did
eighteenth-century British Orientalists do? The meaning of the word as it appears in the
second edition of Dr. Johnson’s dictionary is significant: ‘Orientalism, n. f. [from
oriental] An idiom of the eastern languages; an eastern mode of speech.’\(^3\) In specifying
Orientalism as an idiom of the eastern languages, Johnson was drawing attention to the
life-ways carried within such forms of speech. He was expressing a notion that today’s
anthropologists would recognize, that the symbolic world of a language was the cultural
world of its speakers. Orientalism in eighteenth-century Europe thus meant the cultural
knowledge about Oriental peoples available through their languages; and British
Orientalism, by extension, a mode of producing knowledge about India by Britons with a
mastery of Indian languages.\(^4\)

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\(^2\) See, for example, Garland Cannon, *The Life and Mind of Oriental Jones* (Cambridge: Cambridge
University Press, 1991), 204; and O. P. Kejariwal, *The Asiatic Society of Bengal and the Discovery of
India’s Past 1784-1838* (New Delhi: Oxford University Press, 1988), 27. Hans Aarsleff discusses such
foundational histories of linguistics in “Introduction”, in *The Study of Language in England, 1780-1860*
(Minneapolis: University of Minnesota Press, 1983), 3-11.

\(^3\) Samuel Johnson, *A dictionary of the English language: in which the words are deduced from their
originals, and illustrated in their different significations by examples from the best writers. To which are

\(^4\) For the relationship of Jones’ Orientalism to Edward Said’s well-known concept, see Introduction. Also
Eighteenth-century British Orientalists based their authority claims on such mastery and as colonial administrators held that their knowledge of Indian languages gave them privileged access to the minds of the people in their power. Warren Hastings, Governor-General of India and Jones’s mentor, spoke for an important group in the colonial administration when he insisted that real knowledge of India rested on ‘social communication’ with Indians. Such knowledge, an insider’s view of Indian culture earned through a ‘generous sense of feeling’ for natives’ natural rights, appeared the obvious route to social order and further knowledge-making. For Hastings, Orientalism was inseparably a form of knowledge and a form of rule:

Nor is the cultivation of language and science, for such are the studies to which I allude, useful only in forming the moral character and habits of the service. Every accumulation of knowledge, and especially such as is obtained by social communication with people over whom we exercise a dominion founded on the right of conquest, is useful to the state…Every instance which brings their real character home to observation will impress us with a more generous sense of feeling for their natural rights, and teach us to estimate them by the measure of our own.  

Hastings’ association of knowledge-making with feeling is important for the story I tell here. The story itself is about the botanical descriptions devised by Sir William to order Indian plants, and its relationship to his ideas about language and Orientalism. Feeling appears in the way Jones selected his plant names and responded to the Linnaean

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sexual system; which, in turn, was connected to the way he imagined and then experienced social relations between Britons and Indians.

To understand how Jones thought about feeling and its role in making knowledge about the world we must return him to his late-Enlightenment intellectual and social context. His approach had two immediate sources, the French *Encyclopédistes*, creative interpreters of John Locke, whom Jones read as assiduously as he did Locke; and the Scottish theorists of society, notably Adam Ferguson. Both sets of sources drew on the foundational idea that Man is a part of Nature to explain men’s individual and social being. From Locke and the *Encyclopédistes* came a sensibilist epistemology. From the Scots came the reasoning that the mind and its faculties have a history that can be revealed through comparing peoples’ languages, manners and mores. The melding of the two produced a methodology for ordering and ranking civilizations according to cultural and social achievement, which has been described as a natural history of man in society.  

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This natural historical method can be seen at work in the organization of Jones *Anniversary Discourses* as he contrasts the ‘prerogatives’ of European and Asiatic minds and particularizes the genius of each Asiatic nation in terms of its geography and climate. His botanical writings, with their emphasis on preserving the *génie* of Indian languages and recovering the significance of traditional botanical nomenclature should thus be understood as part of a larger project to construct a natural history of man’s mind in India.

Jones’ Orientalism had a dual aspect. His respect for native knowledge expressed in Indian languages had a keen instrumentalism, a conviction that native treatises contained many useful facts about nature, perhaps even the results of actual experiment which could further British commerce in India. But its moral tone expressing sympathy for native institutions was equally clear, giving his Orientalism a virtuous cast that echoed the double nature of Enlightenment sensibility as sensation *and* sentiment.

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9 The manner in which sensibility transformed scientific empiricism has been beautifully explained by Jessica Riskin in *Science in the Age of Sentiment: The Sentimental Empiricists of the French Enlightenment* (Chicago and London: Chicago University Press, 2002), especially Chapter Seven, ‘Languages of Science and Revolution’. Riskin argues that ‘[B]y fusing sensation with sentiment, the inventors of the notion of sensibility transformed the meaning of scientific empiricism, for if knowledge arose from physical sensation, it must now originate equally in emotion’ (2). This had important implications for the interaction between the natural sciences and moral and political thought and practice, placing empiricism firmly within the contemporary culture of sensibility: ‘if scientific theories and results were a crucial ingredient of sensibility, it is reciprocally the case that the ideals of sensibility were constitutive of those very theories and results (7). In other words, to know you had to feel; and to know what natives knew you had to feel as they did. To train yourself to enter into the other’s feelings could thus be regarded as an ‘epistemic virtue’ in Daston and Galison’s sense, ‘[a norm]…enforced by appeal to ethical values, as well as to pragmatic efficacy in securing knowledge’. L. Daston and P. Galison, *Objectivity* (New York, 2007), 40-41. I do not mean to imply, of course, that Jones’s actions were necessarily virtuous in our common or garden sense of the word. Compare C. A. Bayly’s similar use of the term ‘affective knowledge’ to describe Orientalist knowledge-making in the period, without, however, attention to its epistemic history. *Empire*
Jones’s chain of reasoning has been reconstructed by reading, among other writings, his eleven *Anniversary Discourses*, the poetry he wrote in India, his essays on botany, and a recently-discovered *Ethick Epistle* in which he dilates upon knowledge made through the senses and the faculties of the mind:  

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\text{ALL clear Ideas, which our Senses raise} \\
\text{Or Intuition’s keener glance conveys,} \\
\text{Three Sister Faculties, exalted high} \\
\text{Above low matter, to Man’s use apply:} \\
\text{Fair Memory the \textit{treasur’d} store attends,} \\
\text{Reason \textit{compares}, and playful Fancy \textit{blends}.}\]

Nature’s truths, Jones knew, were perceived through the senses acting on the mind, the thinking part of the âme or soul; but he also knew that the senses worked on another part of the soul, the site of feelings and emotions, creating ‘Intuition’s keener glance.’ Men grasped the world not only because physical sensations created ideas about external objects in the mind but also because they moved the soul, creating feeling. The ‘Three Sister Faculties’ could thus be said to work as much through feeling as through the operations of the intellect, creating ‘sentimental’ facts, singular expressions of environment and culture.  

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*and Information: Intelligence gathering and social communication in India, 1780-1870* (Cambridge, England: Cambridge University Press, 1996), 17, 55.


11 Jones, *Ethick Epistle*, folio 8, lines 137-142.

were apprehended and ideas were formed, provoking changes in the structure of language. This was the truth Jones communicated in his *Ninth Anniversary Discourse* to the members of the Asiatic Society: as early peoples migrated across the globe they had ‘form[ed] new dialects to convey new ideas, both simple and complex’. And this was what he meant when he said in the *Tenth Discourse* that ‘all the Asiatic nations must be far better acquainted with their several countries than mere European scholars and travellers’. Entering other people’s linguistic worlds, understanding their idiom, was crucial if you wished to seize upon a fact strange to you but commonplace to inhabitants of the new milieu.

An Indian plant sought by Europeans in India, for example, would have to be tracked through the linguistic practices of the natives. Its local names, uses, or cultural attributes could make it unrecognizable to the European armed only with Linnaean classification techniques. The first step was to discover how natives perceived a natural object like a plant, and communicated that knowledge to each other. How did they name it? Did it have ritual meanings or important medical uses? Were those expressed through comparisons, metaphors or allegories specific to a language or region? And could you obtain such knowledge except through ‘social communication’ with the natives, making language learning imperative?

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To classify a plant you had first to find it. The immediate task of a botanist in alien surroundings was therefore to locate a desired plant. This was near impossible except by establishing social relations with indigenous informants. The problem of forging a durable civility between colonizers and natives was therefore one to which Jones devoted much time and attention. His early meditations on the connections between the world’s peoples, which appeared in the preface to his Persian grammar and his essay on *The Poetry of the Eastern Nations*, received theoretical form in his *Third Anniversary Discourse* on the Indo-European language family, in which he established the kinship of Sanskrit, Greek and Latin based on an affinity of verb roots and forms of grammar. It grounded the Enlightenment belief in the ultimate unity of all human phenomena, of men, of ideas, of languages, in the physical descent of the world’s peoples from the sons of Noah. This Mosaic ethnology made Britons and Indians, quite literally ‘brothers under the skin’, collaborators in a civilizational project that ensured their mutual amity under conditions of colonial rule.15 Jones’s optimistic feelings about the commonality of Indians and Britons, however, gave way as his quotidian experience of India evoked contrary feelings about race, culture, and the practice of colonial power. These solidified in a critique of *Philosophia Botanica* (1751), in which he queried the

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15 An extended discussion of this argument can be found in C. Kidd, *British Identities Before Nationalism: Ethnicity and Nationhood in the Atlantic World, 1600-1800* (Cambridge: Cambridge University Press, 1999), chapters 2 and 3. Kidd’s point is that the British regarded Indians as degenerate kin rather than as unrelated others. Simon Schaffer has explored how the argument, as astronomical mythopoeia, figured in an eighteenth-century project to translate Newton’s *Principia* into Arabic by a Mughal scholar, one Tafazzul Husain Khan. Khan’s British collaborators were able to present the project to themselves as an attempt by privileged intermediaries (themselves) to restore the truths of a heliocentric cosmology once possessed by ancient Indians and subsequently lost. Their status as the descendants of the kin of the ancient Indians who figured in Newton’s conjectural history legitimized their presence in India, for they had, in a sense, already been there before. Schaffer, ‘The Asiatic Enlightenments of British Astronomy’, in *The Brokered World: Go-Betweens and Global Intelligence, 1770-1820*, edited by S. Schaffer, L. Roberts, K. Raj and J. Delbourgo (Sagamore Beach, MA: Science History Publications, 2009), 49-104.
logic of Linnaean classes and the accuracy of Linnaeus’ Latin, and condemned his
‘allegory of sexes and nuptials’ as unbecoming the gravity of men of science.

In Parts I and II of what follows I scrutinize Jones’s botanical studies through the
lens of his early Orientalist writings, his journey to India, and his activities while a judge
of the British Supreme Court in Bengal. Part III makes a close reading of three essays on
Indian botany, The Design of a Treatise on the Plants of India; On the Spikenard of the
Ancients; and Botanical Observations on Select Indian Plants.\(^{16}\) I conclude with some
reflections on colonial botany as a form of knowledge and the ontological status of the
objects it produced.

I

On Monday, the 28\(^{\text{th}}\) of July, 1783, after a voyage, in the Crocodile, of ten
weeks and two days from the rugged islands of Cape Verd, our eyes were
delighted with a prospect so beautiful, that neither a painter nor a poet
could perfectly represent it, and so cheering to us, that it can justly be
conceived by such only, as have been in our preceding situation. It was
the sun rising in full splendour on the isle of Mayata (as the seamen call it)
which we had joyfully distinguished the preceding afternoon by the height
of its peak, and which now appeared at no great distance from the
windows of our cabin; while Hinzuan, for which we had so long panted,
was plainly discernible a-head, where its high lands presented themselves
with remarkable boldness.\(^{17}\)

Writing these words in the familiar language of the picturesque, William Jones
recalled a much-anticipated moment of arrival in the East of his dreams. The Crocodile,
an East India Company frigate bound for Calcutta, had stopped at the island of Hinzuan


(the modern Comoros Islands) off the east African coast, to replenish its supplies of fresh water and food. For many Englishmen en route to India Hinzuan was their first experience of the Orient. But William Jones had been visiting the Orient in ways not accessible to most men of his generation for many years before this passage to India: he had been learning its languages and reading its literatures.

Jones was born at a time when, it has been said, to read was to live.¹⁸ Men and women of his class threw themselves into reading with the same abandon shown by Rousseau’s Julie and Saint-Preux, the two most famous readers (and lovers) of the age; they used reading as an occasion for social intercourse and to structure conjugal life, friends reading to friends in the privacy of the salon or library and writing to each other about their reading, husbands reading to wives and moralizing appropriately as the occasion demanded.¹⁹ In the case of Julie and Saint-Preux, of course, reading was a subversive act, a way out of a constrictive civility to a loving and honest life. The power of Rousseau’s fiction, according to Robert Darnton, rested in his compact with his readers that all he spoke of was true; that the feelings he described, and that they, the readers, experienced when reading his words could not possibly be false.²⁰ Oriental


¹⁹ There is a significant (and growing) literature on the history of reading in early modern Europe. Jones was, on his own admission, an ‘intensive’ reader, who often wrote about his reading and its effects on him, as in the letters to Reviczky quoted above. For his multiple (and careful) readings of several volumes, see his notes at the bottom of each page in ‘A CATALOGUE & c. taken by Charles Wilkins, Esq. F. R. S., part of which (as far as No. 56) was read before the ROYAL SOCIETY, June 28, 1798’, Works, Vol. XIII. I have found the following works helpful in understanding his reading practices: Roger Chartier, ‘The Practical Impact of Writing’, in A History of Private Life: Passions of the Renaissance, edited by P. Aries and G. Duby (Cambridge, MA: Harvard University Press, 1989), 111-159; idem. (ed.), Ibid., Pratiques de la Lecture, Marseille, 1985; Lisa Jardine and Anthony Grafton, ‘“Studied for Action”: How Gabriel Harvey Read His Livy’, Past and Present 129 (November 1990): 30-78; and Adrian Johns, The Nature of the Book: Print and Knowledge in the Making (Chicago and London: Chicago University Press, 1998), Chapter 6, 380-443.

²⁰ Darnton, "Readers Respond to Rousseau", Great Cat Massacre.
literature was similarly truthful in the pleasure it gave the reader: ‘[L]e style oriental à cet avantage, qu’il éleve l’âme, qu’il soutient l’attention, & qu’il fait lire avec une sorte de plaisir, des choses qui pour le fond ne sont pas toujours nouvelles’.  

Jones exemplified such experiences, his exchanges with Count Reviczky, Hungarian-born diplomat and bibliophile, bearing witness to the accuracy of Jaucourt’s entry in the *Encyclopédie* on Oriental Style:

> You and I pursue the same studies; we are ardent devotees of the same things [Oriental literature]… But I will not allow that your enthusiasm is greater than mine; my delight in such literature is so incredible that nothing could surpass it.

> Our Hafiz is most assuredly a poet worthy to sup with the gods; every day I take pleasure in his work, which daily gives me more delight by its charm and attractive style.

And again, on Hafiz:

> But when I read those two poems of that almost god-like poet, my feelings were almost incredibly pleasurable. They are quite superb, and your interpretation seems to make them gleam with some sort of radiance.

Such ‘incredibly pleasurable’ feelings could not but communicate truth – to read of the Orient was to know it. And the structure of its languages confirmed that knowledge.

By 1772, the year he was admitted to the Royal Society, Jones was busily collecting materials for a *Poeoseos Asiaticae Commentariorum* (published 1774), from which he was able to develop *A Grammar of the Persian Language* (1771) as well as write the enormously influential *An Essay on the Poetry of the Eastern Nations*, which

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appeared as part of his *Poems, Consisting Chiefly of Translations from the Asiatick Languages* (1772). Both the preface to *A Grammar* and *An Essay* are a plea for the cultivation of Arabic and Persian in Europe, with the object of reviving a moribund European poetry incessantly labouring the same images and fables. Jones’s claim in *An Essay* is provocative (‘the poets of the East may vie with those of Europe in the graces of their diction’) but his reasoning is not: the senses work in similar ways in all men to produce knowledge of nature; and yet being tempered by climate, manners and history, the manifestation of that knowledge in language can produce exquisite turns of phrase, a propriety of speech specific to community and circumstance:

If we allow the natural objects, with which the *Arabs* are perpetually conversant, to be *sublime* and *beautiful*, our next step must be, to confess that their comparisons, metaphors, and allegories are so likewise; for an allegory is a string of metaphors, a metaphor is a short simile, and the finest similes are drawn from natural objects. It is true that many of the *Eastern* figures are common to other nations, but some of them receive a propriety from the manners of the *Arabians*, who dwell in the plains and woods, which would be lost, if they came from the inhabitants of cities: thus the *dew of liberality*, and the *odour of reputation*, are metaphors used by most people; but they are wonderfully proper in the mouths of those, who have so much need of being refreshed by the *dews*, and who gratify their sense of smelling with the *sweetest odours* in the world. Again; it is very usual in all countries, to make frequent allusions to the brightness of the celestial luminaries, which give their light to all; but the metaphors taken from them have an additional beauty, if we consider them as made by a nation, who pass most of their nights in the open air, or in tents, and consequently see the moon and stars on their greatest splendour. This way of considering their poetical figures will give many of them a grace, which they would not have in our languages: so, when they compare the *foreheads of their mistresses to the morning, their locks to the night, their faces to the sun, to the moon, or the blossoms of jasmine, their cheeks to roses or ripe fruit, their teeth to pearls, hail-stones, and snow-drops, their eyes to the flowers of the narcissus, their curled hair to black scorpions, and to hyacinths*, their *lips to rubies or wine, the form of their breasts to pomegranates, and the colour of them to snow, their shape to that of a pine-tree, and their stature to that of a cypress, a palm-tree, or a javelin, & c.*, these comparisons, many of which would seem forced in our idioms,
have undoubtedly a great delicacy in theirs, and affect their minds in a peculiar manner.\textsuperscript{25}

This is a resolutely cultural conception of language based on the idea of an intimate relationship between natural objects encountered by the senses and their spontaneous expression in language. Such lived experience of nature could neither be gainsaid nor easily replicated in other languages, since the senses of the Arabs, particularly attuned to their surroundings, are manifested in ‘wonderfully proper’ language, which feeds back to affect their minds ‘in a peculiar manner’. To know the natural world of Arabia (including the Arabs themselves) one must first know Arabic.

Should the luxuriance of Oriental imagery give a European pause, he should remember that the reality of poetic fancies could be tested through comparison with travellers’ accounts and the particulars of geography. Poetic expressions of the beauties of Yemen, for instance, proved correct not only because of the concurrent testimony of travellers and descriptions of it by many Asian writers, but ‘by the nature and situation of the country itself, which lies between the eleventh and fifteenth degrees of northern latitude, under a serene sky, and exposed to the most favourable influence of the sun’.\textsuperscript{26}

That said, Jones urges his reader beyond the conventional opposition between the faculties of Reason and Imagination in making knowledge about nature. Take Oriental poetry seriously, he says, for its fidelity to nature. The Imagination, moved by the tender passions, can capture nature’s integrity as well as Reason. The Ancients had confirmed this in their dissertations on style: Hermogenes and Demetrius of Phalera had both observed that the Beautiful arose from the delight received by the senses; just so did the

\textsuperscript{25} Jones, \textit{Letters}, Vol I, 333-335.

metaphors and allegories of Arabic and Persian poetry convey the essence of natural objects distilled from collective experience.27

The ‘propriety’ of Arabic figures of speech did not, however, make them untranslatable. Many Eastern figures were common to other nations, and could, with attention, be perfectly conveyed in the idiom and languages of classical antiquity. (His friend Reviczky had achieved this, giving the ‘god-like’ Hafiz a Latin voice.) Jones then presses home the point by offering a literal translation of an ‘ode’ by Hafiz, juxtaposing it to one of Shakespeare’s sonnets, ‘as a proof that the eastern imagery is not so different from the European as we are apt to imagine.’28

The nub of An Essay on the Poetry of the Eastern Nations is its conclusion that cultures at similar stages in their development produce similar literary forms, the Arabic pastoral, the Lebid, being very like the Alexis of Virgil, ‘but far more beautiful, because it is more agreeable to nature’. Although there is no evidence that Jones read An Essay on the History of Civil Society before 1786, Adam Ferguson’s theories about the place of poetry in the early stages of society underlie An Essay.29 Its concluding paragraph, much like the last lines of Jones’ preface to his Persian grammar, emphasizes the utility of Oriental poetry for a knowledge of Asian peoples and for the history of man’s mind:

[I]f the principal writings of the Asiaticks, which are reposited in our publick libraries, were printed with the usual advantage of notes and illustrations, and if the languages of the Eastern nations were studied in

27 On eighteenth-century insistence that the imagination was essential to scientific knowledge-making, see Lorraine Daston, ‘Fear and Loathing of the Imagination in Science’, Daedalus 127 (Winter 1998): 1, 73-95; and on the role of the imagination in capturing truth-to-nature in scientific illustration, see Lorraine Daston and Peter Galison, Objectivity (New York: Zone Books, 2007), Chapter Two, 55-113.
our great seminaries of learning, where every other branch of useful knowledge is taught to perfection, a new and ample field would be opened for speculation; we should have a more extensive insight into the history of the human mind […]30

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The reality of Jones’s landfall in Hinzuan in 1783 quickly undercut his faith in the power that reading had given him over the Orient. His account of that experience uses all the familiar tropes of eighteenth century travel narratives. It opens with the satisfying arrival scene quoted above, with the ‘sun rising in full splendour on the isle of Mayata,’ a calm sea, fair weather, and presently, the ship surrounded by canoes paddled by natives of all ranks, eager to swarm on board.31 It is punctuated throughout its length with lyrical descriptions of the island’s natural wonders.

A trip into the interior revealed a mosque with Arabic inscriptions over the gate expressing moral sentiments that far exceeded in worth ‘the Romish trumpery in the church at Madera.’32 The heat of the governor’s house, however, and the overpowering scent of musk or civet with which it was perfumed soon made Jones breathless. No very high opinion could be formed of the governor. And the king’s eldest son Shaikh Salim was no better, seeming ‘very eager for gain, and very servile where he expected it.’33 Matters improved when Jones finally met the king of the island, who displayed a sense of

30 Jones, Works, Vol. X, 359-360. For Jones’s efforts to master Persian metaphors and poetic forms see his interlinear translations of Persian verses and his compilation of an English-Persian vocabulary in MSS/Eur C274, Oriental and India Office Collections, British Library.
the benefits of trade, ‘which could hardly have been expected from a petty African chief, and which if he had been sovereign of Yemen, might have been expanded into rational projects proportioned to the extent of his dominions.’

Confusion at the simultaneous assault on all his senses (the sweetness of the fruits, the troublesome gnats and mosquitoes, the oppressive heat despite being winter in the southern hemisphere, the overpowering scents of the dwellings he entered) combined with uncertainty about the appropriate response to Arabic speakers who were not Arabs but blacks -- these are the dominant themes of the essay on Hinzuan. The king, a black man who knew little Arabic, nevertheless displayed an Arabian politeness towards Jones, and had Arabs in his train. Nothing in his reading had prepared Jones for such dissonance. Knowledge produced through poetry, language and history was beginning to acquire a geography, and Jones’s response was characteristic and classicist: if human nature was proving unsettlingly hybrid, the purity of language as essence could surely be transferred to plant nature. While dining at the governor’s house one evening, Jones observed a ‘very elegant shrub’ about six feet high, growing in the courtyard. It was not in flower, and upon asking its name, he recalled, ‘I learned with pleasure, that it was hinna, of which I had read so much in Arabian poems, and which European Botanists have ridiculously named Lawsonia.’ It was the beginning of an idea about the appropriate naming of plants that would be fully developed in his essay on ‘The Design of a Treatise on the Plants of India’.

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When Jones reached Calcutta in 1783, it presented an even more bewildering array of crosses. Young Englishmen raised in the best Whig traditions and engaged in what should have been a purely commercial enterprise, had become eastern potentates, nabobs comfortable with every custom of the country. The dilemmas that beset the Company state were evident to Jones from the moment he set foot on land.  

Although Jones had been employed in India since April 1783, he did not receive his first salary payment until well into the next year. Calcutta in early October was uncomfortably hot, and he was forced to borrow money from his colleague Sir Elijah Impey for suitable clothing. The want of ready cash would dog him for the next few years, forcing him into situations that did not comport with his power and dignity, and bringing the kind of contact with natives that his imagined Orient could not accommodate.

The Supreme Court absorbed his days, his time taken up with Arabs and Persians in the morning, Hindus in the evening and constant attention to writers. ‘By designing too much I can perform little,’ he wrote to Edmund Burke in February 1784.

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37 For details regarding political and economic changes in Bengal after the East India Company became the Mughal emperor’s Diwan (revenue collector) in 1765, see P. J. Marshall, Bengal: The British Bridgehead: Eastern India 1740-1828 (Delhi: Oxford University Pres, 1990), 93-136. The functions that went with the Nizamat (defence and law and order) were nominally in the control of the Nawab of Bengal, although carried out by a Naib (Deputy) appointed by the East India Company. The Company’s army, which was responsible for the defence of Bengal, had a nucleus of European regiments but was largely manned by sepoys (native subalterns) enrolled in ever larger numbers after 1768. The loyalty of this military apparatus could never be taken for granted; prompt payment of its troops was therefore always the first claim on the Company’s resources. Also see John F. Richards, ‘Imperial Finance Under the East India Company, 1762-1859,’ in Decentering Empire: Britain, India and the Transcolonial World, edited by Durba Ghosh and Dane Kennedy (New Delhi: Orient Longman, 2006), 16-50.

38 Jones to Sir Elijah Impey, c. Oct. 1783, Letters, Vol. II, 620. ‘Writers’ occupied the lowest rank in the Company’s civil service in India, or, as in this case, were employees of the Supreme Court in Bengal.
annexed discourse will show you how I pass my hours of leisure,’ he continued
ironically, referring to his efforts to set up the Asiatic Society.39

Natives were everywhere. Dispensing justice in the absence of a knowledge of
Sanskrit placed him at the mercy of Hindu pandits, custodians of shastric knowledge, and
reluctant collaborators in the colonizers’ project to construct a master discourse about
native ‘tradition’.40 The scandal of Captain Wilford’s pandit who had invented Puranic
passages to dupe his white employer, was still some years away, but Jones was uneasily
conscious of a returned gaze that reflected back whatever the colonizer desired to see.41
By 1785 he was well launched upon his Sanskrit studies, ‘for I can no longer bear to be at
the mercy of our pundits, who deal out Hindu law as they please, and make it at
reasonable rates, when they cannot find it ready made.’ By 1787, he was able to write
triumphantly to Earl Spencer about his ability to converse fluently in both Arabic and
Sanskrit.42

At the same time, however, his financial situation was embarrassing. A flurry of
letters passed between Jones and John Macpherson, the Governor-General, about the
judges’ salaries. Jones was able to be facetious with Charles Wilkins, Persian Translator
and Printer to the Company, about how his pecuniary difficulties compromised his status
with his native servants, but he felt real anger. He confessed as much in a letter to

40 See Ranajit Guha, An Indian Historiography for India: A Nineteenth Century Agenda and Its
Implications (Calcutta, 1988), 4-8. Shastras: Any one of the sacred writings of the Hindus. Also, a body
of teaching, a science; a treatise. Hence Shastric (adjective).
41 Francis Wilford, an officer in the Company’s army and a noted Orientalist, was well known for his
studies of the sacred Hindu texts called the Puranas. T. R. Trautmann, Aryans and British India, 90-92. In
1789, Jones detected a forgery in a Sanskrit book of oaths brought to him by a Brahmin. Jones to John
Shore, 1789, Letters, Vol. II, 838. And Bayly, Empire and Information, 147-149, for attempts by Indian
informants to feed fabricated intelligence to the British, creating ‘information panics’.
Macpherson (referring to a complaint lodged by all the judges to the Board of Control):

‘Many passages in the letter were softened by my brethren… I should certainly have asked, if we had conversed on this matter, whether distressing and pinching the judges, and making them contemptible in the eyes of the natives, and of their own servants, was, as you expressed yourself last summer, assisting them with heart and hand.’ The last straw came in February 1786: ‘In fact (you could not know it, but) I never had been so pinched in my life, for the last three months; having bought company’s bonds, (which nothing but extreme necessity could have made me sell at 30 per cent. discount), I was unable to pay my physician, or my munshis, and was forced to borrow (for the first time in my life) for my daily rice; what was worse, I was forced to borrow of a black man, and it was like touching a snake or the South American eel.’

The racism of this last remark is entirely at odds with Jones’s formal ethnology; the force of his sentiments the greater because of the anomalous situation in which he found himself. In 1783 he had written to Earl Spencer about the anxiety of power: ‘The Chief Justice leaves us tomorrow; Chambers is at Benares; Hyde in the country; the governor and council do not act as magistrates; and there are no others. All the police and judicial power, therefore, of this settlement, where at least half a million natives reside, are in my hands: I tremble at the power, which I possess; but should tremble more, if I did not know myself.’ Now this racial and power hierarchy was stood upon its head, and he, Sir William Jones, founder of the Asiatic Society and accumulator of the

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43 Jones to Charles Wilkins, 22 June 1784, 651-652; and Jones to John Macpherson, 5 February 1786, Letters, Vol. II, 690.
‘resources’ upon which an empire could erect itself was forced to borrow of a black man for his daily rice.

The remark also marks another kind of discomfort. ‘The man born blind refers everything to his fingers’ ends,’ wrote Denis Diderot in his famous ‘Letter on the Blind for the Use of Those Who See’.46 In writing this, Diderot called attention to the fact that acuity need not necessarily reside in the head. The mind could move as easily into the fingers or the ears, producing a metaphysics and a morality quite distinct from that of the sighted. Jones was extremely conscious of his fragile eyesight (he had damaged his right eye in a childhood accident).47 He often made self-deprecatory remarks about his lack of visual acuity, and it is clear that he, like other eighteenth century savants, associated clear-sightedness with power and control. The imagination and memory of the blind, so different from that of the sighted were what he desired least.48 That he had nevertheless an unusually well developed sense of touch, and often ‘saw’ with his fingers, is revealed by his choice of metaphor: the shock of race is most acutely imagined at his fingers’ ends.49

The years from 1784 to 1787 were a difficult period of acclimatization for Jones. His recalcitrant body reacted violently to the Bengali summer and monsoon, turning him

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47 I have no evidence that Jones actually possessed a copy of Lettre sur les aveugles. He was a fervent Lockean who would have encountered some of the ideas in the Lettre in Essay concerning Human Understanding, as well as in the Encyclopédie article on Sens. Talk of Cheselden’s experiment would have been common in his circle. Edmund Burke, for instance, gave it a racist inflection in his discussion of the Sublime in Philosophical Enquiry into the Origin of our Ideas of the Sublime and Beautiful.
more and more towards the equally perilous world of the word. ‘As to me, I do not expect, as long as I stay in India, to be free from a bad digestion, the morbus literatorum, for which there is hardly any remedy, but abstinence from too much food, literary and culinary,’ says a letter of 1784, written from Calcutta. ‘I rise before the sun, and bathe after a gentle ride; my diet is light and sparing, and I go early to rest; yet the activity of my mind is too strong for my constitution, though naturally not infirm, and I must be satisfied with a valetudinarian state of health.’

Many of the letters written in these years slip from a description of his bodily travails into the calm of an imagined pastoral. He willed himself to believe that in Allipore (Alipur), outside Calcutta, he had found the Oriental garden of his dreams:

> We have been rather indisposed, the weather being such as we had no idea of in England, excessive heat at noon, and an incessant high wind from morning to night; at this moment it blows a hurricane, and my study reminds me of my cabin at sea. Our way of life however is quite pastoral in this retired spot; as my prime favourites, among all our pets, are two large English sheep, which came with us from Spithead, and, having narrowly escaped the knife, are to live as long and as happily with us as they can; they follow us for bread, and are perfectly domestic. We are literally lulled to sleep by Persian nightingales, and cease to wonder that the Bulbul, with a thousand tales, makes such a figure in Oriental poetry.

Krishnanagar, a few hours’ journey from Calcutta, was the site of a partial reconciliation with his new environment in 1787. A letter to Thomas Caldicott, a prominent member of the Oxford circuit, written in September of that year, concludes on a remarkable note, with a statement unlike anything else recorded by an Englishman in eighteenth-century India: ‘I will say more of myself, than you do of yourself, but in few words. I never was unhappy in England; it was not in my nature to be so; but I never was

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happy till I was settled in India. My constitution has overcome the climate; and if I could say the same of my beloved wife, I should be the happiest of men; but she has perpetual complaints, and of course I am in perpetual anxiety on her account. But this was wishful thinking: Jones’s later letters detail his continued ailments, as does John Shore in his biography of Jones: ‘The hope with which he flatters himself, that his constitution had overcome the climate, was unfortunately ill-founded; few months elapsed without his suffering from the effects of it, and every attack had a tendency to weaken the vigour of his frame.’

The parallel universe of Jones’s Anniversary Discourses written between 1785 and 1794 reveals not the slightest trace of any psychic or bodily trauma. Their smooth transition, one into another, and their seamless continuity are a tribute to Jones’s success in holding his public written self at a distance from the upheavals of his daily life. The body is forgotten, dismissed, and the mind reigns supreme. The ten Anniversary Discourses, delivered each year to commemorate the date of Jones’s founding of the Asiatic Society, lay out his theorizing about the origins of Asia’s peoples and contain an enthusiastic celebration of Asian languages. Seven separate discourses established what came to be known as Jones’ theory of the Indo-European family, formulated primarily from philological evidence derived from the languages of each of five races, the Hindus, the Arabs, the Tartars, the Persians, and the Chinese, and framed by the Mosaic account of the created world. The Anniversary Discourses are highly condensed accounts of each of these races, detailing their descent from the sons of Noah and their subsequent

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53 See Teignmouth, Memoirs, 312.
civilizational attainments. Jones postulated a common origin from Noah’s son Ham for the Persians, Indians, Romans, Greeks, Goths, and ancient Egyptians. This argument from descent therefore made the British and the Indians members of one stock, fraternally joined through the genealogy of their languages.

The key elements of the Indo-European racial idea are set out in the Third Anniversary Discourse on the Hindus, using an idiom made familiar by theorists of the Scottish Enlightenment like Adam Ferguson. Jones delivered his address on the 2nd of February 1786, a few short weeks before he wrote the letter to Macpherson about the horror of borrowing money from a black man. The Discourse has received recent critical scrutiny by two scholars, the anthropologist Thomas Trautmann and historian of science Kapil Raj. Trautmann has pointed out that Jones’s proposal of the Indo-European language family is best understood as ethnological rather than linguistic, an insight Raj has developed into a forceful argument about the theory as a search for a new hybrid civility, encompassing Britons and Indians, upon which to erect a reliable system of judicial administration for British India.\textsuperscript{54} Raj’s argument is persuasive, showing how Jones’s ability to think the theoretical underpinnings for institutional innovation --- in this case, the creation of standardized native collaborators for the colonial state --- was a response to the everyday exigencies of his professional life. But other practical concerns, too, intervened. Jones believed that the search for natural resources in India would be simplified if it could be shown that there existed an original language in which man’s earliest sensations and ideas about the Indian environment were recorded. His botanical

\textsuperscript{54} T. R. Trautmann, \textit{Aryans and British India}, 40-61; K. Raj, \textit{Relocating Modern Science}, Chapter 3, 95-138. Also Bayly, \textit{Empire and Information}, Chapters 4-6, for the shift from ‘embodied’ to ‘institutional knowledge’, i.e. from British dependence on individual informants to the creation of ‘knowledgeable institutions’.
studies at the time involved identifying the plants around him with those named in the famous Sanskrit dictionary, the *Amarakosa*. There was no *proof*, however, that Sanskrit was indeed the ur-language in which the truths of India’s natural world were first expressed. This is why the *Third Anniversary Discourse* insists that the Indo-European theory be constructed systematically and *empirically*, ‘in a method purely analytical, and, after beginning with facts of general notoriety or undisputed evidence, to investigate such truths, as are at first unknown or very imperfectly discerned’.  

The famous ‘philologer’s passage’ on which the theory is usually hung therefore appears embedded within the ‘facts’ of Indian history, gesturing toward a possible method for the recovery of India’s civil history in classical times (‘we seem to possess only *four* general media for satisfying our curiosity concerning it; namely, first, their *Languages* and *Letters*; secondly, their *Philosophy* and *Religion*; thirdly, the actual remains of their old *Sculpture* and *Architecture*; and fourthly, the written memorials of their *Sciences* and *Arts*’), through which comparisons could be established with Greek and Roman antiquity.  

The *Sanskrit* language, whatever be its antiquity, is of a wonderful structure; more perfect than the *Greek*, more copious than the *Latin*, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs and in the forms of grammar, than could possibly have been produced by accident; so strong indeed, that no philologer could examine them all three, without believing them to have sprung from some common source, which, perhaps, no longer exists; there is a similar reason, though not quite so forcible, for supposing that both the *Gothick* and the *Celtick*, though blended with a very different idiom, had the same origin with the *Sanskrit*; and the old *Persian* might be added to the same family if this were the place for discussing any question concerning the antiquities of *Persia*.  

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Facts about India culled from its arts, religion, philosophy and architecture were to be stabilized using natural history’s methodology: the gods of Greece and Italy were worshipped under different names in India, just as ‘[t]he six philosophical schools, whose principles are explained in the Dersan Sastra, comprise all the metaphysicks of the old Academy, the Stoa, the Lyceum’; Hindus like the British, a commercial people from early times, could be assimilated to each other through evidence of the similarity of their law tracts concerning adventures at sea.\textsuperscript{58} All these cultures clearly had a common origin, anchoring the Indo-European theory, and with it the affinity of Britons to Indians \textit{and} the status of Sanskrit as India’s original language, in historical fact.

Language provided evidence of the operations of the mind, as Locke had shown, placing it within the province of natural history; but it also expressed ideas manifested in civil history, straddling them both, and collapsing the distinction between them. Language (and the Indo-European theory with it), in a word, provided evidence for civil \textit{and} natural history.

You cannot but have remarked, that almost all the \textit{sciences}, as the French call them, which are distinguished by Greek names and arranged under the head of Philosophy, belong for the most part to history; such as philology, chemistry, physic, anatomy and even metaphysics, when we barely relate the phenomena of the human mind; for, in all branches of knowledge, we are only historians when we announce facts, and philosophers only when we reason on them: the same may be said of law and medicine, the first of which belongs principally to civil, and the second chiefly to natural history.\textsuperscript{59}


Civil history recorded memories of the establishment of Asian despotisms. These could be confirmed through the changes in language that marked the debasement of men’s mental faculties under oppressive forms of government. As Jones worked on his *Third Anniversary Discourse*, he read Adam Ferguson’s *Essay* a second time, and declared himself ‘extremely pleased with it, particularly the chapter on the relaxation of the national spirit.’ Ferguson’s examples of the causes of the ‘relaxation’ of the national spirit among ‘polished’ nations were familiar. The pursuit of wealth, of refinements in the arts, the separation of civil from military occupations, the substitution of the knowledge of books for the spirit of curiosity, Jones had encountered them all in the annals of the Hindus. The fate of China was a cautionary lesson: there the ordinary refinements of government were brought to a peak of perfection and every department of state made an object of a separate profession. And yet, among the millions set apart for the military profession, none could be found to defend their country against an enemy ‘artless and mean’.

Indian society, similarly fragmented into numerous castes and professions, had lost its national genius with its language, to Mohammedan conquest. The advent of the Muslims had given birth to *Hindustani*, which neither in its inflexions nor in its regimen of verbs resembled the Sanskrit it had displaced. Facts about India’s natural productions would never be known without a return to Sanskrit in all its purity.

Botany, for example, ‘the loveliest and most copious division in the history of nature,’ required an intimate acquaintance with that ‘most copious of languages,’ Sanskrit

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for its comprehension. The natural character of the plants of India, the understanding of which was the most important goal for any European botanist working in India, was impossible to arrive at in the absence of a thorough knowledge of Sanskrit.

The most famous European botanical work on India at the time was the seventeenth century Hortus Malabaricus, compiled by the Dutch administrator and botanist, Hendrik Adriaan Van Reede. Linnaeus himself could not extract the natural characters of Van Reede’s plants from their written descriptions because of the disgraceful inaccuracy of the Sanskrit in which they were first described. The pandits themselves had almost wholly forgotten their ancient appellations of particular plants. In the face of such a palpable relaxation of the national character, what was a European to do? How could any European attached to the study of nature dare to dream of an experimental knowledge of the virtues of Indian plants, without the language in which traditional experience of nature was encoded? And what was to be done to reestablish the severed link between natural experience and language?

64 Jones, ‘Botanical Observations’, Works, Vol. V, 212. Jones’ claim involves an interesting misunderstanding that merits further discussion. Van Reede’s plant names although written in Nagari (Sanskrit) characters are in Konkani, a contemporary south Indian language. The ‘pandits’ were the three Konkani brammins, Ranga Bhatt, Apu Bhatt and Vinayaka Pandit, who doubtless provided the vernacular names of plants in Konkani, just as Itti Achudan, Van Reede’s Ezhava informant did in Malayalam. See Hendrik van Reede tot Drakenstein, Hortus Indicus Malabaricus, continens Regni malabarici apud Indos celeberrimi omnis generis plantas rariorum, latinis, malabaricis, arabicis, & bramanum characteribus nominibu(s)que expressas, una cum floribus, fructibus & (s)eminibus, naturali magnitudine a peritissimis pictoribus delineatas, & ad vivium exhibitas..., 12 vols. (Amsterdam, 1678-1703). The ‘Arabic’ is actually Malayalam, another south Indian language, written in the Persian script, showing that language and script were not stably connected in south India before the advent of printing. South Indian languages were also ‘mixed’ in ways that confused British administrators. The Malayalam of the period, for example, was difficult to demarcate from Tamil, with numerous words in Sanskrit, Persian and Arabic. See Rev. H. Gundert, Malayalam-English Nighantu (New Delhi, 1982), preface, iii-iv. See entries for acca, acci (Tamil-Malayalam, 9), uthanam (Sanskrit, 129), ummedvar (Persian, 137). (Macrons omitted) For an extended discussion of these issues see Lisa Mitchell, Language, Emotion and Politics in South India: The Making of a Mother Tongue (Bloomington and Indianapolis: Indiana University Press, 2009), Chapter 4.
For India once, as now cold Tibet,
A groupe unusual might exhibit,
Of sev’ral husbands, free from strife,
Link’d fairly to a single wife!
Thus Botanists, with eyes acute
To see prolific dust minute
Taught by their learned northern Brahmen
To class by pistil and by stamen,
Produce from nature’s rich dominion
Flow’rs Polyandrian Monogynian,
Where embryon blossoms, fruits, and leaves
Twenty prepare, and ONE receive

- Sir William Jones, ‘The Enchanted Fruit; or, The Hindu Wife’  

Jones began to apply himself seriously to the study of Indian botany towards the end of 1784. In June or July of that year he contracted a violent series of fevers that lingered for over three months. ‘They had no sooner abated than an obstinate flux attacked me, which has reduced me to a sad state of leanness and weakness. I cannot completely dress myself, and could almost as easily fly as walk,’ he wrote to Arthur Pritchard, his clerk, from Bhagalpur in October 1784. Confined to his bed in his friend Charles Chapman’s house, and forbidden to read, the restive Jones was told by his physician that he was permitted to examine flowers. Reminiscing about the event to Earl Spencer in 1787, Jones marked it as the beginning of an intimate acquaintance with Linnaeus:

When I came to India, there were no articles in the Encyclopedia, which I was not able to understand, with more or less attention, except those of

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Botany and Chemistry: that exception I have now removed. In a state of convalescence from my severe illness three years ago, my physician forbade all intense application; but as he was a botanist, he permitted me to examine flowers, and lent me Linnaeus, with whose system I was delighted. From that time to this I have dissected and described all the blossoms I could procure; & Anna (whose progress in drawing and colouring is wonderful) has delineated many of them. I have, in my Sanskrit vocabulary, the names of a thousand plants, which I mean to describe for my amusement, if they all grow here; and I propose to add their virtues from the medical books in Sanscrit. Suffer me to recommend this delightful study to you. The Philosophy of Botany, a short but masterly work of Linnaeus, you may easily procure, and may read in a fortnight.  

With botany, as with reading, Jones enjoyed the companionship and close assistance of his wife, Anna Maria. The couple read aloud to each other every evening, jointly progressing through a formidable number of volumes on a variety of subjects during their time in India. Anna Maria was a faithful assistant in the search for flowers, often returning from her morning walks with colorful or curious blossoms, which Jones would proceed to identify with the aid of Linnaeus’ Philosophia Botanica (1751) and Genera & Species Plantarum (1783). They often worked in the Company’s botanic garden near Calcutta, together examining plants and searching for their names in Van Rheede, Rumphius and Linnaeus. Jones also had, of course, a plethora of native assistants. He needed their help to collect plants, identify them in either Sanskrit or the

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68 See, for example, Jones to Earl Spencer, 7 August 1787; Jones to Earl Spencer, 25 August 1787; Jones to Earl Spencer, 19 September 1788; Jones to John Shore, 1789, Letters, Vol. II, 744, 757, 812-813,837.  
He was punctilious in naming his native collaborators (Figure), signalling their important role in his knowledge-making enterprise. He had, as well, friends and colleagues in the Company’s service in every part of India, who answered queries, procured local plants and had them transported to Bengal to satisfy the newly converted botanophile. It was through this collective spanning both the public and private spheres of his life that Jones produced his knowledge of Indian plants; and in this, his Indian milieu, that he meditated upon the virtues of Linnaean taxonomy and the benefits of the sexual system of classification. The result was an Orientalist and sentimentalist critique that sought to restore the propriety of plant names, names that had developed through long usage and reflected common experience of the Indian environment.

Three botanical essays deserve close attention in this regard. The first essay, ‘The Design of a Treatise on the Plants of India’ was read to the members of the Asiatic Society in April 1790. It critiques Linnaean classification, but more importantly, proposes an alternative system to describe plants based on their experimentally determined properties. In the second, ‘Botanical Observations on Select Indian Plants’ (published in *Asiatick Researches* in 1795), Jones reflects on the problem of Linnaean plant names, and the indispensability of indigenous collaborators in making botanical knowledge. The third, ‘On the Spikenard of the Ancients’, is an extended exploration of

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72 Jones’s emphasis on the “propriety” of botanical names echoed French savants like Venel and de la Métherie who resisted Lavoisier’s new chemical nomenclature. They argued that names could not be imposed by artificial ‘convention’ but should reflect how nature was experienced and understood by particular cultural and national groups. In this view science was cultural expression not social engineering. See Riskin, *Science in the Age of Sentiment*. 
text-driven natural knowledge-making. It proposes a method for finding a natural object (the Spikenard) in its original milieu by tracking its presence in a variety of languages.

We should stop here a moment and consider the state-of-play in European natural history at the time, in order to understand what Jones was doing in developing his mode of describing Indian plants. Botanical practice in the eighteenth century was a heterogeneous business even if historiography has been slow to recognize this fact. What Jones called ‘mero botany’, technical arrangement and description of plants, was joined to collective ways of working with and handling them that indicated their status as commercial objects, part of the apothecary’s or craftsman’s trades, or commodities in international exchange. Jones’s initial contact with botany and chemistry came through the Encyclopédie, a site where natural history was imbricated with the history of the mechanical arts; and where D’Alembert proclaimed the project’s indebtedness to the Baconian programme of experimental history (historia experimentalis), which emphasized the uses of nature.

Experimental history as a style of scientific practice has not received the historiographical attention that it should, perhaps because of its utilitarian, everyday character. According to Ursula Klein, it functioned as a bridge between experimental philosophy and natural history and occupied the overlapping spaces of chemists’ laboratories and artisans’ workshops, making it an early form of ‘technoscience’. In the eighteenth century it represented

An extension of objectives of natural history to a laboratory science, which, like the classical domains of natural history — botany, zoology and mineralogy — was concerned with a great multiplicity of things. Its target was neither hidden causes nor imperceptible entities (such as the vacuum, forces, corpuscles, electrical fluids and typical philosophical objects of experimental philosophy), but the perceptible dimension of particular materials and operations. And its objective was not philosophical knowledge, but connoisseurship of materials, their varieties, properties, chemical transformations, and practical uses.⁷⁴

As experimental history involved collecting facts without intellectual or methodical constraints, it allowed the juxtaposition and comparison of knowledge acquired through procedures conducted in the workshops of apothecaries and artisans with that carried out in academic settings, for example the analysis of plants by fire and solvent extractions. This, Klein and her co-author Lefèvre claim, made eighteenth-century chemists simultaneously savants and technologists. There was a reason why techniques employed by naturalists in manipulating their objects were broadening in scope: their knowledge-making activities were becoming inseparably entwined with the fortunes of mercantilist nation-states.

Botanical knowledge was a valuable good for states interested in national wealth creation. Exotic plants, the chief object of Europe’s luxury trade with Asia, were a drain on specie. The balance of trade, it was believed, would tilt in favour of any European nation that could replace botanical exotics with analogous local plants, or find means to reproduce them in Europe. The recruitment of botanists by the state to address these ends gave natural history a new status as useful knowledge, and botanists a new identity — as

useful men. Britain may have come later to a realization of the ‘public benefits’ of botany than other European nations, George Yonge, the Secretary of War, noted in a letter to Jones’s friend, William Roxburgh, in 1791, but she was fast catching up. The recognition of botany’s place within the eighteenth-century oeconomie raises a different order of questions for historians of science. Were problems of knowledge within botany resolved to address problems within political economy? What did systems of plant classification have to do with state power? Could botanical nomenclature be thought of as economically ‘useful’? Such questions have prompted two re-readings of the life and work of Linnaeus, which bring Linnaean epistemology and issues in early modern political economy into the same analytical frame.

Lisbet Koerner’s biography, with its suggestive title, ties aspects of Linnaeus’s science to his project to create an autarkic Swedish nation freed from the tyranny of the Asia trade by a policy of ‘import substitution’. Koerner’s Linnaeus is less omniscient theorist than a man anxious to push his economic projects along. Consequently she links

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77 The eighteenth-century oeconomie was understood as part of the natural world, controlled by natural laws and dealt with wealth as natural products, unlike our modern object ‘the economy’, an autonomous sphere amenable to human intervention. For a discussion of this distinction see M. Schabas, The Natural Origins of Economics (Chicago and London: Chicago University Press, 2005), Chapter One, 1-21; and Schabas and De Marchi, eds., Oeconomies, “Introduction”, 1-13.
her explanation of the emergence of binomial nomenclature to the 365th aphorism in *Philosophia Botanica*, instructing the reader to investigate the ‘economic uses’ of plants. Koerner conjectures that binomials made their first appearance in a tract on animal husbandry, *Pan Svecicus*, precisely because their invention was a response to the practical problems of recording the identities of fodder plants in the wake of grazing cattle; or alternatively, was stimulated by the need for a portable identification system for students on overseas voyages in search of useful flora.78

The connection between Linneaus’s botany and his notions of the *oeconomie* can also be interpreted as more fundamental. The conceptual content of Linnaean botany, according to Steffan Müller-Wille, was affected by the idea that botany formed a ‘sphere of exchange’. In his interpretation the main abstractions of the Linnaean system resulted from the need to transform plants into stable objects of exchange. An initial step in the process was the distinction Linnaeus drew between ‘physics’, ‘natural science’ and ‘oeconomia’ in his classification of the sciences. Physics, the science of the properties of elements (earth, air, fire, water) was distinguished from natural science, which studied natural objects like plants or minerals. These latter were materials to be worked on and prior to and outside the production process --- part of the sphere of exchange rather than of production. Linnaeus’s definition of species as ‘eternally immutable “forms”’ was thus determined by the ‘economy’ of his botany and the need to attract the largest number

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of valuable species to Sweden. Here is Müller-Wille explaining the correspondence between species names and specie:

In the last instance, it is only the names of species, that rigid designatory relation established in exchange, that can remain unchanged throughout all possible transactions. All other features, including “form or structure,” may be dependent on local contexts. This is also the sense in which Linnaeus compared names with coins: as the coin did not need “a metallurgic examination” to serve its function of mediating exchange, thus the name of a plant does not need an etymological examination to serve its communicative function. Coining plant names in honor of their “first discoverers” illustrates this point: while such a name is permanently and rigidly attributed to the plant kind in question, in whatever contexts it might be referred to later, the name itself does not say anything about the actual plant, the circumstances of its discovery, or even the personality of its discoverer. And yet it is precisely because names are thus reduced to linguistic expressions stripped of all contextual meaning that they can remain unchanged throughout any conceivable context.

William Jones’s objections to Linnaean naming practices, which appear in each of the three essays discussed below, confirm Koerner’s and Müller-Wille’s intuitions about the contingent origins of binomial nomenclature in Swedish cameralism. They help us see that the Linnaean system was neither self-evidently nor immediately hegemonic, as historical analysis is sometimes wont to present it, but a situated response to a local problem. The onus is upon historians of science to explain why and how it travelled as widely as it did. (While this chapter does not address the question directly, it suggests how such an inquiry could proceed by studying the botanical research of a single savant in alien surroundings.)

79 Staffan Müller Wille, “Nature as a Marketplace: The Political Economy of Linnaean Botany”, in Oeconomies, edited by M. Schabas and N. De Marchi, 154-172. Müller-Wille’s argument is more complex than my summary allows and should be read in full to be appreciated.

80 Staffan Müller-Wille, “Nature as a Marketplace”, Oeconomies, 163.

In the opening pages of *The Design of a Treatise on the Plants of India* Jones satirizes the utility of Linnaean names, all too obviously embedded in the politics of botanical knowledge-making in Europe:

> [T]he childish denominations of plants from the persons, who first described them, ought wholly to be rejected; for *Champaca* and *Hinna* seem to me not only more elegant, but far properer, designations of an *Indian* and an *Arabian* plant, than *Michelia* and *Lawsonia*; nor can I see without pain, that the great *Swedish* botanist considered it as *the supreme and only reward of labour* in this part of natural history, to preserve a name by hanging it on a blossom, and that he declared this mode of promoting and adorning botany, worthy of being *continued with holy reverence*, though so high an honour, he says, *ought to be conferred with chaste reserve, and not prostituted for the purpose of conciliating the good will, or eternizing the memory, of any but his chosen followers; no, not even of saints*: his list of *an hundred and fifty* such names clearly shows, that his excellent works are the true basis of his just celebrity, which would have been feebly supported by the stalk of the *Linnea*. 

If Jones mocks Linnaean knowledge practices it is with good reason. When Linnaeus christened a plant (if we accept Müller-Wille’s reasoning) it was with the aim of facilitating its easy movement between contexts. His goal was to transfer useful plants and ensure their reliable reproduction in Sweden regardless of origin, in order, as Koerner succinctly observes, to use science to create a miniaturized mercantile empire within the borders of the Swedish state. The Linnaean ‘method’ worked to stabilize plant identities by systematically recording the differences that arose when plants were exchanged between various European gardens. These differences, ‘accidents’ of situation or place were then bred out to arrive at plants that remained unaltered by further reproduction, giving their names the solidity of commonwealth coin. 

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a ‘rigid designatory relation established in exchange’, sundered from peoples’ social and cultural lives. At its best a Linnaean name would signify the essential character of a species, as in *Chrysoplenium oppositifolium*; if established through compound or complex traits, it could refer to another genus by analogy, for example, *Carduus acanthoides*; or (sometimes) mark a sensible quality, *Gentiana purpurea*, a virtue, *Nerium antidysentericum*, or an aspect of location, *Nigella hispanica*. Finally (the practice that earned Jones’s ire), a trivial name could honour a botanist who first discovered a plant or a patron who assisted Linnaeus’s botanical endeavours, as in *Tulipa gesneria* or *Musa cliffortiana*. Naming plants after collaborators had the advantage of strengthening Linnaeus’s social relations and expanding his authority within European botanical networks. But they (and his other names) could not convey any information at all about an unfamiliar plant, working only to recall the idea of a plant already familiar to botanists. Such names were less than useful if you were labouring to identify new plants in a new milieu, unsupported by extensive herbaria or well-stocked gardens. They were neither ‘commodious’ nor ‘perspicuous’ outside Europe, since their purpose, as Jones ironically observed, was to cement the social relations of Linnaean botany. And they were particularly ineffective in the tropics. Indeed, Linnaeus’s unfamiliarity with the tropics has been offered as a reason for the success of his science by a well-known botanist, who contends that the diversity and complexity of nature in the tropics would have prevented the construction of simple systems (like the sexual system) needed to

86 Larson, *Reason and Experience*, 137, makes the same point.
precede more complex ones. Jones’s struggles to contribute to a viable classification system for Indian plants would appear to bear this out.

How did you find an Indian plant? And having found it, how did you know it? Such a plant could be new to Europeans in India, but long familiar to natives, who had fixed its identity through their ways of knowing. Only plants of recent discovery would have no previous denomination, so it was reasonable to assume that most Indian plants already had names. The first step to finding an Indian plant was therefore to discover its Indian name. And once you had found it out, to record it. Before you could do any of this, however, you had to establish that social communication with natives, which Warren Hastings emphasized as the initial condition for making knowledge under colonial rule. Plants and people came together. Jones was as aware of this as his celebrated exemplar Van Reede had been, so it is no surprise to find that a substantial part of his ‘Botanical Observations on Select Indian Plants’ translates Reede’s exhortations from the third volume of the *Hortus Malabaricus*, on the necessity of establishing social relations with natives to make reliable knowledge about local flora. He is explicit: ‘Before I was acquainted with the method pursued by VAN RHEEDE, necessity had obliged me to follow a similar plan on a smaller scale [.].’ The ‘method’ as borrowed from Reede consisted of assembling learned natives to collaborate in the identification of plants, paying respectful attention to what they had to say about ‘immemorial usage’ recorded in ancient books: ‘“the first couplet of each section in those books comprised the synonymous terms for the plant, which was the subject of it, and that, in the subsequent

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verses, there was an ample account of its kind or species, its properties, accidents, qualities, figure, parts, place of growth, time of flowering and bearing fruit, medical virtues, and more general uses [.]”

Though Jones’s does not mark it, the passage following the one above, in a slightly different translation by Johannes Heniger, establishes the name of a plant as the key to its secrets. Reede’s informants having committed antique verses to memory, ‘if anyone mentioned the proper name of some plant, any Brahman [would] at once answer you, stating whatever has been and can be said about it.’ Such a name was a history of the plant in its indigenous milieu, a fact Jones grasped at once. And its synonyms rooted it even deeper in its natural and cultural contexts, finger-posting its location. The Hortus itself was a testament to the working relationship established between Europeans and specific groups of indigenes, a hybrid text, its plant descriptions and illustrations neither European nor Indian but reconfigured knowledge, a field guide for Europeans seeking plants in India. If Jones accepted the Hortus as a model for his own work, it was because he recognized (as Kapil Raj invites historians of science to do today) that natural knowledge-making in Asia was a new kind of practice, a phenomenon in its own right, not a simple extension of European practices eastward:

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89 Jones, ibid., 66.
92 K. Raj, ibid., 58.
Far am I from doubting the great importance of perfect \textit{botanical descriptions}; for languages expire as nations decay, and the true sense of many appellatives in every dead language must be lost in a course of ages: but, as long as those appellatives remain understood, a travelling physician, who should wish to procure an \textit{Arabian or Indian} plant, and, without asking for it by its learned or vulgar name, should hunt for it in the woods by its \textit{botanical character}, would resemble a geographer, who, desiring to find his way in a foreign city or province, should never inquire by name for a street or a town, but wait with his tables and instruments, for a proper occasion to determine its longitude and latitude.\footnote{Jones, “Botanical Observations”, \textit{Works}, Vol V, 63.}

Notice that Jones is quick to acknowledge the virtues of artificial systems of classification. He understands their importance, but insists that they are the wrong tools with which to search for unfamiliar plants. A perfect plant description, as explained in the \textit{Philosophia Botanica}, combined the definition of a plant (the description of its fructification) with a summary of all its other characters, and expressed it as concisely as possible in the new botanical terminology. It was designed to capture a priori truths about nature. This was the very thing, however, that using learned or vulgar names in Indian languages would rule out, since it eschewed abstraction for the ‘facts’ of the Hindu cultural imaginary. By using Indian names of plants, Jones implies, you could do more than create an artificial order for Indian flora. You could unravel the logical operations of the native mind as revealed in local institutions, i.e. plot its natural history, an essential prerequisite for an \textit{empirical} classification of Indian plants. This is the sensible thing to do, if what interests you are the uses of plants. Consider the concluding sentence of his essay on the Spikenard:

\begin{quote}
On the proposed inquiry into the virtues of this celebrated plant, I must be permitted to say, that, although many botanists may have wasted their time in enumerating the qualities of vegetables, without having ascertained them by repeated and satisfactory experiments, and although \textit{mere botany}
goes no further than technical arrangement and description, yet it seems indubitable, that the great end and aim of a botanical philosopher is, to discover and prove the several uses of the vegetable system, and while he admits with HIPPOCRATES the fallaciousness of experience, to rely on experiment alone as the basis of his knowledge.\textsuperscript{94}

To say this is to stand Linnaeus on his head. What does the master emphasize in the 269\textsuperscript{th} aphorism of the \textit{Philosophia Botanica}? Empiricism is unworthy of a true botanical philosopher. Linnaeus would have been the first to admit the importance of the uses of plants, but since his classification system aimed at stabilizing species identities within the republic of botanists, he could not possibly include idiosyncratic cultural information as part of his plant descriptions. And besides, \textit{experience} in the Hippocratic sense of the knowledge derived from experimenting with drugs on patients was deceptive and difficult. Yet here is Jones confirming the truth of the Hippocratic aphorism about the dangers of anecdotal information retrieved from patient trials, but denying that there was any way forward to a true knowledge of plants except through experiment. The inconsistency disappears if we read ‘experiment’ not as \textit{empireia} but as \textit{experimentum}, laboratory techniques, signalling Jones’s interest in the uses of plants not as an uncomplicated return to the older episteme of the European herbal, but a new mode of fixing plant identities through chemical manipulation (see quote from Klein and Lefèvre above). Orientalist knowledge-making provided a serviceable strategy for the undertaking, because native epithets and similes for plants could suggest ways to test them chemically that may not otherwise have been obvious. (Jones made a fine red ink

by dropping a solution of tin in *aqua regia* into an infusion of a cactus called *sija*, described in Sanskrit dictionaries.)\(^95\)

Following Van Reede, plant descriptions were to be as thick as possible. In ‘Botanical Observations’ Jones suggested that they include Sanskrit appellations, names in vulgar dialects, references to their beauty, poetical fame, supposed holiness or reputed uses in medicine.\(^96\) Names, synonyms or epithets in Sanskrit or vernacular languages were not necessarily descriptive of the whole plant. Jones’s hope was to devise a method to piece together an entire plant by tracking the sentimental meanings of its different parts in myth and ritual or it sensible attributes in medicine. Thus the vegetative parts of a plant (as well as its reproductive parts) were to be taken into account in determining its classification. This is best understood with an example:

<table>
<thead>
<tr>
<th>II BILVA OR MA’LU’RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many on the Receptacle, and One</td>
</tr>
<tr>
<td><em>Cal.</em> Four or five, cleft, beneath.</td>
</tr>
<tr>
<td><em>Cor.</em> Four, or five, petals; mostly reflex.</td>
</tr>
<tr>
<td><em>Stam.</em> Forty, to forty-eight, filaments; anthers, mostly erect.</td>
</tr>
<tr>
<td><em>Pist.</em> <em>Germ,</em> roundish; <em>Style,</em> smooth, short;</td>
</tr>
<tr>
<td><em>Stigma,</em> clubbed.</td>
</tr>
<tr>
<td><em>Peric.</em> A spheroidal berry, very large; many-seeded.</td>
</tr>
<tr>
<td><em>Seeds:</em> Towards the surface, ovate, in a pellucid mucus.</td>
</tr>
<tr>
<td><em>Leaves:</em> Ternate; common petiole, long; leaflets, subovate; obtusely notched, with short petioles; some almost lanced</td>
</tr>
<tr>
<td><em>Stem:</em> Armed with sharp thorns.</td>
</tr>
</tbody>
</table>
| *Uses:* The fruit nutritious, warm, cathartick; in taste, delicious; in fragrance, exquisite: its aperient and detervative quality, and its efficacy in removing habitual costiveness, have been proved by constant experience. The mucus of the seed is, for some purposes, a very good cement.

\(^95\) Jones to Patrick Russell, 22 September 1787, in *Letters*, Vol. II, 776. More details about his experiments can be found in a copy of an unpublished letter from Jones to Dr. James Anderson, 14 September 1789, *William Roxburgh Correspondence*, British Museum/Natural History, Large Envelope, f.147.v and f.148.r.

Note: This fruit is called Sri’phala, because it sprang, say the Indian poets, from the milk of Sri, the goddess of abundance, who bestowed it on mankind at the request of ISWARA, whence he alone wears a chaplet of Bilva flowers; to him only the Hindus offer them; and, when they see any of them fallen on the ground, they take them up with reverence, and carry them to his temple. From the first blossom of this plant, that I could inspect, I had imagined, that it belonged to the same class with the Durio, because the filaments appear to be distributed in five sets; but in all, that I have examined, they are perfectly distinct.97

The bilva (Aegle marmelos Correa ex Roxb) was an easier proposition to locate (it was abundant in Bengal) than the Jatamansi, the Sanskrit name given to the root/stem (Jones would conclude it was the whole plant) of a plant sold by apothecaries. It proved near impossible to acquire in its fresh state, prompting the labyrinthine pursuit described in ‘On the Spikenard of the Ancients’. The essay begins modestly, disavowing any grand objective or immediate purpose except to pose a question easily answered in India: “What is Indian Spikenard?” The real aim however, is nothing less than a demonstration of the efficacy of Jones’s etymology in identifying a plant long known to Europeans, but wrongly classified by Linnaeus as an Andropogon. The message of the essay is simple: first, a philologist who understands the origin and meaning of words in native languages will always be more successful in identifying Indian plants than a European armed only with an artificial classification system; and second, the uses to which a people put a plant should never be overlooked in deciding its identity. (Jones directly contradicts Aphorisms 156 and 269 of the Philosophia Botanica here.) If Linnaeus placed the Spikenard among the grasses it was because he accepted the authority of the Ancients without scrutiny. In truth, the Greeks who had never seen the fresh plant used the word ‘spike’ without

precision; as did the Arabs, who used the word *Sumbul*, meaning spike, to refer to the appearance of the dried plant used as a drug. Jones the linguist, following the plant through a thicket of Sanskrit, Persian and Tamil, identified it as a Valerian:

It appears, therefore, to be the *Protean* plant, VALERIAN, a sister of the mountain and *Celtic* Nard, and of a species, which I should describe in the *Linnaean* style: VALERIANA JATA’MA’NSI *floribus triandris*, *foliis cordatis quaternis*, *radicalibus petiolatis*. The radical leaves, rising from the ground and enfolding the young stem, are plucked up with a part of the root, and being dried in the sun, or by an artificial heat, are sold as a drug, which from its appearance has been called the *Spikenard*; though as the Persian writer observes, it might be compared more properly to the *tail of an ermine*: when nothing remains but the dry fibres of the leaves, which retain their original form, they have some resemblance to a *lock of hair*, from which the *Sanskrit* name, it seems, is derived.  

William Roxburgh, medic and botanist, and from 1793 Director of the Calcutta Botanic Garden, confirmed the identification and endorsed the method. Roxburgh himself noted the Indian names and uses of plants in great detail, performing his own experiments as he collated descriptions for what would become the *Flora Indica*; but the part of Jones’s method he followed most faithfully was his consultations with local informants.  

An Arab visitor from Mecca, seeing a flowering *Cétaca* or *Pandanus* in Jones’s study was able to tell him that it was *not* the *Jatamansi* or *Indian Sumbul*, while a Muslim physician from Delhi was able to direct him to the *Tohfatu’l Mumeninbul* (Dictionary of Natural History), in which the *Indian Sumbul* was particularly distinguished from the *Cypirus*, a grass with a fragrant root.  

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100 *Tohfatu’l Mumenin* (the *bul* is redundant) translates from Persian as ‘Gift to the Monotheists’ (meaning Muslims). Like many Persian works of the period the title gives no hint of the work’s contents. Several
meanwhile, assured him that *nard* was never used as a noun in Sanskrit, but as the root of a verb meaning *to rustle*. Nevertheless, establishing a Linnaean identity for the *Jatamansi* meant examining its blossoms, which in turn depended upon procuring fresh specimens of the plant either from Bhutan or from Nepal beyond the borders of British India, straining the new civility under construction. The probity of the *Bhutias*, with whom the identification of the fresh plant in Bhutan rested, was suspect, so Jones ultimately fixed his hopes on procuring the plant from Nepal through Nepalese pilgrims who regularly descended the mountains. It was thence that fresh plants were procured by a friend, a Mr. Law who resided at Gaya, planted in his garden, and figured by another friend, a Mr. Burt. Jones then triumphantly identified the plant ‘in the Linnaean style’ from Burt’s drawing and description as *Valeriana Jatamansi*.

In the event he was wrong. The Nepalese, it would appear, were just as apt to mislead as the Bhutias. The plants that grew in Law’s garden and which Burt drew and described were what we would now describe as a Valerian (3 stamens, unilocular ovary) but not the ‘true’ *Jatamansi*, if by that we mean the flowering plant produced from the ‘ermine’s tail’ with which Jones’s inquiry began. Jones had never seen the fresh plant, so the illustration that accompanied his article in *Asiatic Researches* Volume 3 (see figure 4) was put together from Burt’s illustration and the apothecary’s dry specimen, which when copies of it are, however, listed in Volume 32 of the Catalogue of Persian Manuscripts held at the Khuda Bakhsh Oriental Library in Patna, India: “No. 2040 *TUHFAT UL-MU’MININ*. A fragment of the well known medical work Tuhfat ul-Mu’minin on material medica by Muhammad Mu’min Husayni Tankabuni”, c. 1200 (not dated), http://kblibrary.bih.nic.in, accessed 12/8/11. Another “dictionary” that Jones used to identify the Sanskrit names of Indian plants, the *Amarakosa*, was not an alphabetized catalogue of words and their meanings, but a verse lexicon intended for use in composing and reading Sanskrit *kavya* (poetry). See *Cosha or Dictionary of the Sanscrit Language by Amera Sinha: With an English Interpretation, and Annotations by H. T. Colebrooke, ESQ. Serampoor 1808*; and the discussion in Mitchell, *Language, Emotion and Politics*.

fresh had a very different floral structure.\footnote{102} The point is this: Jones’s cobbled-together oddity is, regardless, an excellent metaphor for the social relations of scientific knowledge-making in colonial India, and of colonial botany as a form of knowledge. There was no practical way to go about making knowledge of India’s natural history except to do exactly what Jones did --- tailor your practices to your knowledge of the culture. Nepalese pilgrims, orthodox Hindus familiar with Sanskrit were able enough to connect word and thing; and in any case the plants came accompanied by a Persian letter ‘specifically naming them, and apparently written by a man of rank and literature; so that no suspicion of deception or of error can be justly entertained.’\footnote{103} You could be deceived by native actors (men ‘of rank and literature’ \textit{did} lie) but the risk was an essential part of colonial knowledge-making, and of stabilizing the new civility. The outcome was not the hoped-for object of European trade, but a closer approximation (A. B. Lambert, Vice-President of the Linnean Society, considered Jones’s plant a composite of two species of a single genus) than anything achieved by Linnaeus in Europe. Jones may also have accepted the identification because Sanskrit epithets for the \textit{Jatamansi} referring to its sensible qualities (\textit{jatila, lomasa}) could have fit the Nepalese Valerian. The subsequent career of the name of the \textit{Jatamansi} is complicated to say the least; an accurate botanical description and figure of the plant associated with the medicinal root

\footnote{102} The combined efforts of Nathaniel Wallich, David Don and Aylmer Lambert were needed to establish this. See A. B. Lambert, \textit{An Illustration of the Genus Cinchona...And a Short Account of the Spikenard of the Ancients with a Plate} (London, 1821), 177-181. Earlier, in 1819, Francis (Buchanan) Hamilton had expressed reservations about Jones’s identification of the \textit{Jatamansi}. See his \textit{Account of the Kingdom of Nepal} (Edinburgh, 1819), 97-8. \footnote{103} Jones, “Spikenard”, \textit{Works}, Vol. V, 23.
was published by Lambert in 1821, from specimens sent to Britain by Nathaniel Wallich.  

The efficacy of Jones’s method is perhaps best demonstrated by William Roxburgh’s whole-hearted adoption of it; and very tellingly, the support given Jones by Roxburgh’s mentor, Andrew Ross, free merchant and sometime mayor of Madras. Ross offered to procure any copies of Sanskrit books Jones might need in the course of his researches, indicating the valuable commercial benefits expected to flow from Jones’s interest in indigenous plant names. Jones himself was always alive to the possible commercial advantages of his researches. He valued his identity as a useful man. The ‘mere gratification of curiosity’ was never an adequate reason for anything he did and even his language studies were undertaken with utilitarian ends in view. As he famously said in his Preliminary Discourse, he had ‘ever considered languages as the mere instruments of real learning, and think them improperly confounded with learning itself.’ So although he opened his essay on the Spikenard by declaring that his question, “What is Indian Spikenard?” was of no apparent utility, the formulation of the question itself, and the way he chose to individuate his object (‘Indian’ is italicized)

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105 See Roxburgh’s “Explanatory Remarks” in *Hortus Bengalisensif or A Catalogue of The Plants Growing in The Honourable East India Company’s Botanic Garden at Calcutta* (Serampore: Printed at the Mission Press, 1814), iii; also W. Roxburgh, *Flora Indica or Descriptions of Indian Plants* (New Delhi, n. d). According to C. B. Clarke, a late-nineteenth-century editor of the *Flora*, and no admirer of the method of working from native names, Roxburgh’s species were so well conceived that if adopted as a framework, they would enable all other species to fall into their proper places. Preface to the Reprint, 1874, v; see unpublished copy of letter from Jones to Ross, 2 September 1789, *William Roxburgh Correspondence*, f.147.r.  
106 Jones to Ross, ibid.  
marked his interest in it as a commodity. He began his search for the plant with the apothecary’s dried specimen, which like all plant materials obtained through trade, was distinguished in Europe by country of provenance. And he aimed to stabilize the identities of the plant commodities he sought not only by tracking them through their indigenous names, but very significantly, through chemical analysis. This was a key departure from Linnaean classification practices and a novel response to the empirical demands made by commercial imperialism on colonial botanists. It originated in his reading of the Encyclopédie and the new chemistry of Lavoisier and his collaborators, particularly Antoine-François de Fourcroy.

Jones was, in a sense, the Encyclopédie’s ideal reader. His colonial location sharpened his receptivity to Diderot’s insistence that a history of nature is incomplete without a history of the arts, making him acutely aware of the advantages to be derived from the practices of native apothecaries and artisans in advancing his botanical knowledge. In his letter to Earl Spencer of August 1787 he had mentioned his difficulty in understanding articles on botany and chemistry in the Encyclopédie, and remarked that he had used his time in India to overcome that obstacle. Gabriel-François Venel’s article on ‘Chymie’ would have been very much to his taste, mirroring his own ideas on the importance of language as a receptacle for unique sensory experience and emotion; Daubenton’s ‘Botanique’, and other articles on botanical subjects would have encouraged his own efforts to understand the chemical properties and uses plants.

Venel’s pronouncements on the necessity of maintaining the traditional language of chemical artisans obviously comported with Jones emphasis on the importance of retaining Sanskrit and vernacular names of Indian plants in their classification, but the notion of adding a plant’s experimental history to its description evidently came from Fourcroy, one of the proponents of the new nomenclature.

The French were particularly forward in linking chemical-analytical and natural historical knowledge, something the British recognized and rued.\(^{111}\) The title of Fourcroy’s 1782 volume, *Leçons élémentaires d’histoire naturelle et de chimie* was a declaration of French chemists’ desire to unify natural history and chemistry.\(^{112}\) A variety of reasons spurred these efforts. An awareness that the internal characters of plants must contribute to their outward appearance was common enough among European botanists, including Linnaeus. Although for Linnaeus there was no real difference between the two, since the qualities of the inner tissues of plants were perfectly expressed in the visible external characters of the fructification on which classification depended. Such was not the case for Antoine-Laurent de Jussieu, doyen of the natural method in botany, who distinguished differentiae (external features) from characters proper (internal features), at least in theory, and drew an analogy between botany and chemistry suggesting that affinities between related plants were akin to chemical bonding.\(^{113}\) Fourcroy, Jussieu’s colleague at the *Jardin des Plantes*, tried to

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\(^{112}\) Subsequent French editions were published as *Elémens d’histoire naturelle et de chimie*. Jones owned a 1786 edition. I have used the English translation of the fifth edition by William Nicholson with notes by John Thomson, 3 Vols. (Edinburgh, 1800).  
ground these intuitions by arguing that the vegetable materials or principles composing plants had to have their distinguishing properties (and the characters dependant upon them) established through chemical analysis. His chemical philosophy held that the nature of the chemical principles that constituted plant bodies was specific to the organization of their parts and periods of growth. A description of the outward appearance of a plant was therefore incomplete without accompanying details of chemical composition. Fourcroy was speaking of minerals and not of plants, and of chemists and not botanists, when he said that

Nothing, therefore, can be shown more evidently than the advantages resulting from the application of chemistry to natural history, as it is the only means of removing that obscurity that must attend the simple descriptions of external appearance. The just and truly valuable observation of M. Daubenton, deserves to be constantly attended to by all chemical philosophers. He warns them to be very careful in describing the specimens on which they make their experiments, in order that they may be understood by all naturalists, and to avoid that confusion, which, according to that celebrated philosopher, prevails throughout the works of many modern chemists. We have found no other means of avoiding this error, than that of uniting both sciences in our lectures, and associating the knowledge obtained from the works of naturalists, with that which chemical experiments daily produce.  

But he considered his remarks to be equally true of plants. More importantly, he followed his mentor Jean-Baptiste M. Bucquet in using commercially available vegetable commodities like sugar as prototypes for identifying and naming the proximate principles he extracted through laboratory techniques, contributing to the ‘epistemic elevation of vegetable commodities’ that occurred in the period.  

The significance of the move was certainly not lost on Jones. Just as the knowledge of pharmacists and artisans was

inscribed in the development of Fourcroy’s ‘proximate principles’, Jones added indigenous knowledge of the uses of plants to his descriptions, along with the results of his own experiments. The description of the *Bilva* therefore includes Jones’s chemical analysis --- the seed mucus is extracted and tested as a cement ---- as well as information garnered from native physicians --- ‘its aperient and detersive quality, and its efficacy in removing habitual costiveness, have been proved by constant experience’. (See pages 39-40.)

A quick look at ‘The Design of a Treatise’ shows the importance he accorded all parts of a plant in describing it, indicating one possible cause of his ambivalence about the Linnaean sexual system. An effective classification system for Indian plants had to allow for the possibility of the commercial appropriation of any part of a plant, so its overall outward appearance or *habitus* required greater weighting than Linnaeus would allow.

The simplicity and genius of the sexual system lay in the way it privileged the reproductive parts of a plant and the function of reproduction to classify it. It was based on the assumption that the essence of vegetable life resided in the fructification, so that formal similarities and differences in the number, shape, proportion and situation of the stamens and pistils could be relied upon to delineate classes and orders.¹¹⁶ Singularities and exceptions which destabilized the system were corrected for by the use of plant habit. Linnaeus was aware of the tension in the system between his intuitive use of plant habit and his definitions based on fructification. Nevertheless, in aphorism # 163 of the

Philosophia Botanica, he affirmed the necessity to form plant groupings on the basis of fructification, even though ‘the fructification which is the invention of the moderns, is not yet so thoroughly understood as to discover all the classes of the natural method, though it may be considered the primary guide thereto’.  

Jones’s philosophical commitment to a natural method in botany determined by relationships based on multiple characters may have been the greater from a perceived parallel to connections between Indo-European language-families (similar links could be detected everywhere in nature); but its urgency originated in its value for the discovery of shared qualities in similar plants: [that] ‘the qualities of plants are in some degree connected with the natural orders and classes of them, a number of instances would abundantly prove.’ And more emphatically in an early letter to Patrick Russell: ‘I grieve to see botany imperfect in its two most important articles, the natural orders and the virtues of plants, between which I suspect a strong affinity’. Even so, the functionality of the Linnaean system was hard to deny:

As to the system of LINNAEUS, it is the system of Nature, subordinate indeed to the beautiful arrangement of natural orders, of which he has given a rough sketch, and which may hereafter, perhaps, be completed: but the distribution of vegetables into classes, according to the number, length, and position of the stamens and pistils, and of those classes into kinds and species, according to certain marks of discrimination, will ever be found the clearest and most convenient of methods, and should therefore be studiously observed in the work, which I now suggest.

The Latin of Linnaean botany was a third possible reason. Jones firmly believed that names should express the génie of their originating languages, holding that their
euphony and even their script were manifestations of sensible nature. Linnaeus’s attempts to establish the autonomy of botanical Latin could not but offend:

I must be forgiven, if I propose to reject the Linnaean appellations of the twenty-four classes, because, although they appear to be Greek, (and, if they really were so, that alone might be thought a sufficient objection) yet in truth they are not Greek, nor even formed by analogy to the language of the Grecians; for Polygamos, Monandros, and the rest of the form, are both masculine and feminine; Polyandria, in the abstract, never occurs, and Polyandrion means a public cemetery; dioecia and dioecus are not found in books of authority; nor, if they were, would they be derived from dis, but from dia, which would include the trioeia; let me add, that the twelfth and thirteenth classes are ill distinguished by their appellations, independently of other exceptions to them, since the real distinction between them consists not so much in the number of their stamens, as in the place, where they are inserted....

Yet even such mockery was unexceptional for the time. Critics of Lavoisier’s new chemical vocabulary indulged in similar derision. Whence then comes this outburst against the Linnaean ‘allegory of sexes and nuptials’ that appears half way through ‘The Design of a Treatise on the Plants of India’?

The allegory of sexes and nuptials, even if it were complete, ought, I think, to be discarded, as unbecoming the gravity of men, who, while they search for truth, have no business to inflame their imaginations; and, while they profess to give descriptions, have nothing to do with metaphors; few passages in Aloisia, the most impudent book ever composed by man, are more wantonly indecent than the hundred and forty-sixth number of the Botanical Philosophy, and the broad comment of its grave author, who dares, like OCTAVIUS in his epigram, to speak with Roman simplicity; nor can the Linnaean description of the Arum, and many other plants, be read in English without exciting ideas, which the occasion does not require. Hence it is, that no well-born and well-educated woman can be advised to amuse herself with botany, as it is now explained, though a more elegant and delightful study, or one more likely to assist and embellish other female accomplishments, could not possibly be recommended.

122 Riskin, Science in the Age of Sentiment, 251.
123 Jones, Works, V, 5-6.
I believe the answer lies, once again, in Jones’s colonial context. A number of themes come together in this remarkable passage. Jones, like William Smellie, and several other botanically-inclined men of the time, considered the Linnaean analogy between plant and animal reproduction inadequate. More important however, is the question of translation that lies at the centre of Jones’ critique. Linnaeus’ *Philosophia Botanica* like Rousseau’s *La Nouvelle Heloise* cannot be read in English without exciting inappropriate ideas, especially in well-born Englishwomen to whom botany might otherwise have been a subject of both diversion and instruction. *Philosophia Botanica* does not translate into a socially acceptable English.

Nothing in Jones’s discussion of *Philosophia Botanica* either in ‘The Design of a Treatise on the Plants of India’ or in any of his other botanical essays offers a clue to the stridency of this passage. The explanation must be sought in the wider context of the debates that were agitating English botany at the time. The social meanings projected onto plant sexuality by Linnaeus and which helped extend his sexual analogy, were unstable, in that they included both socially acceptable and socially transgressive sexual mores. The metaphor of marriage contained both ideas of socially legitimate bonding (monogamy), as well as other less accepted forms of sexual coupling (polyandry, incest). The manner in which the condensed meanings of Linnaean aphorisms was translated into English from Latin was also simultaneously a matter of putting ideas into circulation in society that had the potential to subvert the ‘normal’ order of sex-gender

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124 Smellie laid out his objections to the Linnaean analogy in the first edition of the *Britannica*, 643-653.

relations. This was an especially troubling issue as botany had acquired quite a following among middle and upper class Englishwomen in the eighteenth century, and many English writers of popular botanical works had women in mind as their target audience. An acquaintance with botany displayed through flower drawing, was a skill that set off an ‘accomplished’ woman from her less talented sisters. It allowed her to explore and assert her subjectivity, while embracing the accepted cultural stereotypes of femininity. The ‘overdetermined relationship of women to flowers’ in contemporary culture was, however, the very thing that fostered feelings of ambivalence toward Linnaean terminology in men like William Withering and William Jones.

The controversy between Withering and Erasmus Darwin over Withering’s translation of Linnaeus into English was well known in learned circles, and almost certainly familiar to Jones. Both men had the same aim, to translate Linnaeus so as to make his system widely accessible to English readers. As the ‘Preface of the Translators’ to the Lichfield volumes put it: ‘Of that System which hitherto like the Bible in catholic countries, has been locked up in a foreign language, accessible only to the learned few, the Priests of Flora, while the gardiner, the herb-gatherer, the druggist, the farmer, and all who are concerned in cultivating the various tribes of vegetation, in detecting their native habitations, or in vending or consuming their products, could by no industry arrive at that

128 Withering’s bowdlerized translation of Linnaeus’ *Systema Vegetabilium* was attacked by Darwin as inaccurate and misleading. Jones owned a copy. See Evans, *Catalogue*, 13.
System, which they wished to attain, and were capable of enlarging.” Withering shared their democratic sentiment, but balked at the thought of exposing women, his intended audience, to explicit details about sexual reproduction without appropriate circumlocution. His solution was to omit the sexual distinctions altogether, thereby destroying what was ‘essential to the philosophy of the system.’ Jones would have understood Withering’s paternalism.

Anna Maria, an avid botanist, acquired her knowledge of botany, as of other subjects, under Jones’ watchful gaze; he often read aloud to her, carefully omitting that which ‘I could only read with my eyes.’ His early remarks on Linnaeus, however, reveal no trace of the censoriousness of 1790. A mention of Linnaeus in the ‘Ethick Epistle’ (1785) protests his boastfulness and mangled Greek, but interestingly, not his ‘allegory of sexes and nuptials;’ nor does the playfulness of his references to polyandry in the verse-tale The Enchanted Fruit (see epigraph), written in 1784 soon after his arrival in Calcutta, suggest unease at the mating habits of plants (or humans) with multiple partners. The poem, indeed, celebrates a world quite upside-down from the perspective of late-eighteenth century Europe. In the Dwapar Yug (the third age of Hindu mythology), laws favoured women:

Not bound by vile unnatural laws
Which curse this age from Caley nam’d,

129 Carl von Linne, A System of Vegetables, according to their classes genera orders species with their characters and differences. In two volumes. Translated from the thirteenth edition (as published by Dr. Murray) of Systema vegetabilium of the late Professor Linnaeus and from the Supplemantarium plantarum of the present Professor Linnaeus...By a botanical society at Lichfield, 2 Vols (Lichfield, 1783), Vol. 1, Preface, xi.
130 Shteir, Cultivating Women, 21-23.
By some base woman-hater fram’d
Prepost’rous! That one biped vain
Should drag ten house-wives in his train,
And stuff them in a gaudy cage,
Slaves to weak lust or potent rage!
Not such the Dwapar Yug! Oh then
ONE BUXOM DAME MIGHT WED FIVE MEN’.

If Draupadi and her husbands, the five Pandava brothers, represented a mythic
time of social perfection, Jones hastens, in the lines following, to find a parallel in
historical time (Tibetan polyandry), and mark its connection to nature’s order as revealed
by the ‘learned northern Brahmen.’ The cultural disorientation achieved by Linnaeus’
transformation into a brahmin, and the confidence and control exhibited by a poet easily
crossing boundaries, are described by Kate Teltscher:

The poem demonstrates that while it is perfectly acceptable to domesticate an
alien culture by drawing analogies between foreign concepts and familiar ideas, it is
disruptive to borrow foreign terms to describe the home culture. Although the effect is
comic, the sense of displacement experienced by the European reader when Linnaeus is
designated a brahman highlights, by reversing its normal operation, the alienating effects
of the process of cultural appropriation.

The poem, then, appears almost a moment of cultural critique: Jones’ Indian
world makes the home world seem less ‘natural.’ The moment passes, of course; and
Jones’ other hymns and poems domesticate the unfamiliar for readers at home by
assimilating Hindu mythology through the classical analogies familiar to educated
Europeans. The translator’s power is never in doubt. Hinduism and Hindu tradition as

134 Kate Teltscher, India Inscribed (Delhi: Oxford University Press, 1997), 217.
135 See discussion in Teltscher, ibid., 206-209.
they appear to a domestic audience are what Jones decides they shall be. This is apparent even in a later work, his translation of Kalidasa’s drama, *Sacontala*, where the sensibilities of the home audience and the conventions of European romantic literature are preserved by censoring discordant expressions of sexual desire.\textsuperscript{136} The warmth of Jones’ outburst against Linnaeus, at the very moment that *Sacontala* appeared in Europe to wide acclaim, should alert us, however, to the ambivalence of colonial power and the precarious nature of its sense of control.

Linnaean botany, according to Ann Shteir, expresses a contemporary obsession with sex and gender difference. Its effort to naturalize and fix male/female difference, could, Shteir writes, ‘be read as illustrating a larger moment of reaction to cultural fears about blurred distinctions in sex and gender, and to gender ambiguity about shifting sex roles.’\textsuperscript{137} The conservative response to Linnaeus in Britain indicates that this attempt to fix male/female differences provoked other readings as well, some undoubtedly prompted by the proliferation of British peoples and cultures across geographical and cultural divides. As proponents of the ‘new imperial history’ have noted, the expansion of the British empire in the late-eighteenth and early-nineteenth centuries confounds attempts to write neatly demarcated ‘national’ histories of the period; the moment itself, was, nevertheless, a starting point for narratives about ‘us’ and ‘them’, as colonial administrations struggled with conflicting definitions of legal and national subjects in an attempt to keep unsightly and violent aspects of imperialism – slavery, miscegenation,

\textsuperscript{136} Teltscher, ibid., 214-215.
\textsuperscript{137} Shteir, *Cultivating Women*, 17.
concubinage – out of metropolitan sight. Consider, for example, how marriage, family and slavery, words with fairly stable institutional referents in Jones’ Britain, floated free of their moorings in Anglo-Bengal:

Jones was an arch opponent of African slavery, as his modern biographers Garland Cannon and S. N. Mukherjee have noted. Yet he owned slaves in Calcutta, and temporized about the need to do away with the institution:

It is needless to expatiate on the law (if it be law) of private slavery; but I make no scruple to declare my own opinion, that absolute unconditional slavery, by which one human creature becomes the property of another, like a horse or an ox, is happily unknown to the laws of England and that no human law could give it a just sanction; yet though I hate the word, the continuance of it, properly explained can produce little mischief. I consider slaves as servants under contract, expressed or implied, and made either by themselves, or by such persons as are authorized by nature or law to contract for them, until they attain a due age to cancel or confirm any compact that may be disadvantageous to them. I have slaves whom I rescued from death or misery but consider them as other servants and shall certainly tell them so, when they are old enough to comprehend the difference of the terms.

Jones’ ‘hatred’ of the word slave, and similar semantic discomfort exhibited by other Britons in India, resulted from their understanding of the institution as it existed in the early modern Atlantic world. Old World slavery (as in colonial Bengal), however, did not translate through the binarisms that organized western legal thinking about slavery: slave/kin, private use/market-trade, domestic/agrestic. The presence of slavery within the pre-colonial native family, and its description through terms of kinship and

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138 See Kathleen Wilson, “Introduction”, in A New Imperial History: Culture, Identity and Modernity in Britain and the Empire 1660-1840, edited by K. Wilson (Cambridge, UK; New York: Cambridge University Press, 2004), 16. The essays in this volume, and in Decentring Empire: Britain, India and the Transcolonial World, edited by D. Ghosh and D. Kennedy (New Delhi, 2006), are good examples of the themes and debates explored by the “new imperial historians”.


140 Jones, “Charges to the Grand Jury”, 10 June 1785, quoted in Mukherjee, 124.
affect, extended into the domestic and conjugal arrangements of East India Company men and the native women who co-habited with them. This was not the ‘absolute,’ ‘unconditional’ slavery of the Atlantic world; it was instead, as the historian Indrani Chatterjee has shown, a process, interwoven with other institutions like family, marriage and kinship, marked by the absence of a clear social and jural status for the women (and men) involved, and easily explained away as a form of mild domestic servitude (‘servants under contract, expressed or implied…’) The children born of such mixed unions were denied maternal or paternal ancestry, and raised in Company orphanages as ‘kinless’ subjects to service the Company’s manpower needs.\[^{141}\] In 1783, it was suggested that these ‘charity children’ be exported to Britain to swell the ranks of the working classes of the Industrial Revolution, raising the specter of miscegenation at home.\[^{142}\]

How would William Jones have experienced the ambiguities of this dynamic social formation? The Supreme Court at Calcutta routinely delivered judgments in criminal cases that revealed the dubious arrangements of the lower-class Anglo-Indian mâ­né­age – white men with nikah wives, slaves, maid servants, and the offspring born of these various (and simultaneous) sexual liaisons. John Hyde, Jones’ colleague, maintained notebooks in which he described the deliberations of the Supreme Court in such matters as the agency

\[^{141}\] The discussion in this paragraph is based on Indrani Chatterjee’s sophisticated analysis of the connections between law gender and slavery in colonial India. Gender, Slavery and Law in Colonial India (New Delhi: Oxford University Press, 1999), chapter 1; and her article, ‘Colouring Subalternity: Slaves, Concubines and Social Orphans in Early Colonial India,’ in Subaltern Studies X, edited by G. Bhadra, G. Prakash and S. Tharu (Delhi: Oxford University Press, 1999), 49-97; also see Radhika Singha, A Despotism of Law: Crime and Justice in Early Colonial India (New Delhi: Oxford University Press, 1998), Chapter Four, 121-167.

\[^{142}\] Chatterjee, ‘Colouring Subalternity’, 85.
of native concubines (*bibis*) who murdered their slave girls, and the culpability of heads of households in the actions of their female dependants.\(^{143}\)

At issue was the creation of a domestic sphere circumscribed by kinship, with a male head-of-household whose rights were to be defined and defended by British law, as opposed to old-regime patriarchal prerogatives that undercut distinctions between household, state and market.\(^{144}\) In practice, the need to embed British rule of law in the contemporary social and moral order, combined with the legal recognition of slavery, meant the continued existence of a variety of arrangements under the names ‘marriage’ and ‘family.’ An exigent ‘father’ or ‘husband’ could sell his women if the times demanded it, unsettling the boundary between household and market. The actions of the women of the household, meanwhile, were never entirely in his control.\(^{145}\) Who was a father? What were his rights? His duties? Little wonder, then, if William Jones, a man with a strong sense of paternal authority though no prude, should have been forcibly reminded of Rousseau’s unfortunate Julie and her travails in the absence of paternal guidance, as he went about his business in the Supreme Court; or that the awful possibilities of Linnaean taxonomy (its analogies as impudent as Julie’s behaviour) should have occurred to him in Bengal, not Britain.


\(^{144}\) Radhika Singha, *A Despotism of Law*, especially Chapter Four.

\(^{145}\) Ghosh, *Colonial Companions*.  

*Nikah*: In Bengal, an inferior form of marriage.
IV

What do William Jones’s botanical studies, especially his descriptions of Indian plants tell us about colonial botany as a form of knowledge? One answer, laid out at length in this chapter, is that botanical resource extraction in colonial milieus required that classification and commerce converge. This, to be sure, was hardly confined to colonial contexts. According to François Dagonet, Antoine-Laurent de Jussieu linked the names of plants to their properties, much as Jones did and for the same reason, to facilitate commercial appropriation. But classifying colonial plants in India also required the (simultaneous) creation of a colonial civility, a guarantee that a truthful account of unfamiliar natural objects would be forthcoming from colonized indigenes. I have therefore argued that the making of colonial botanical knowledge was embedded in and inextricable from colonial social relations and strategies to manage them. The search for the Spikenard is a case in point.

Locating a plant was the first job of a colonial botanist; and as Jones showed, it was best done by adopting the cultural coordinates of the natives. His plant descriptions paid careful attention to cultural information about a plant like the epithets attached to it, its meanings in myth and ritual and its uses in diet and medicine. Understanding and using the information entailed stabilizing two other natural objects, the European as knower, and the indigene as informant. Indigenous informants, Indian plants and European knowledge-makers became inter-related objects in Jones’s natural history, brought together through his interest in the history of the human mind. This should not

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146 See P. F. Stevens, *Development of Biological Systematics*, 227.
surprise us. The eighteenth-century preoccupation with devising a science of the mind is well displayed in the writings of ‘conjecturalists’ like Adam Smith or Adam Ferguson. Conjectural or ‘theoretical’ historians were interested in all the institutions through which the mind processed and manifested human experience: arts, sciences, government, manners, languages and literatures. Jones’s _Anniversary Discourses_ could, indeed, be read as chapters of the earliest conjectural history of Asia written by a _savant_ with knowledge of its languages. But what set the _Discourses_ apart from much conjectural writing was their insistence that such work be grounded empirically using natural history’s methodology. The comparative study of languages was to provide empirical evidence of the originary connection between Indians and Britons adduced from Mosaic theology, just as Indian literatures were to provide evidence of native experience of the natural world.\(^{147}\) The Indo-European theory promised that Indian informants _could_ be known, their natural history plotted along several axes, their thinking processes seized and decoded through comparison of their languages: but what of the European knower in India? How did Jones understand _his_ role in the process?

Eighteenth-century theories of the mind or the psyche did not posit a unified self. The eighteenth-century ‘self’ was understood as a loose congeries of faculties without an overmastering consciousness to create a functional whole. Rather, each faculty, including the important ones, Memory, Reason and Imagination, processed sensations differently, combining in various ways within the self to present it knowledge of itself and the world. This self, rooted in biology and perfectly knowable, was aware of the

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\(^{147}\) See M. S. Phillips, _Society and Sentiment_, 177, for the importance given to literary history in philosophical histories of the period.
workings of its different faculties and could judge their effects upon body and soul. Jones, for example, was intensely aware of the effects of reading on his faculties, especially his imagination, and the feedback that created ‘incredibly pleasurable’ feelings or a bad digestion. And herein lay the problem. As the faculties did not weigh in equal measure upon the soul one could easily overset the others. The dominance of Reason, the superior faculty, was acceptable, but not Imagination, which posed a particular risk to the knowing subject because of its permeability to its surroundings. The Imagination could aid the colonist, creating the sympathetic identification so vital to the European project in India. It could, equally, be overcome by a fantastic new milieu, corrupting the efforts of Reason and Memory to maintain continuity with prior experience, making a European go dangerously ‘native’. As a closet-bound Orientalist in Europe Jones had encountered the truths of Oriental literature. More urgent truths had been revealed once he set foot in Asia. His lived experience of India had shown him that he did indeed know himself and, as he wrote to the second Earl Spencer, could trust his own judgment. This was not necessarily true of others less schooled than he --- women like his wife or colonial underlings --- who required shielding from the power of words to inflame the imagination. Inflammatory Linnaean analogies could compromise the measured distance between Indians and Britons upon which judgments about native informants rested. The mental images conjured up by reading had the power to transform ideas about appropriate relations between men and women and between colonizing and colonized men, which were sexualized in their very constitution. Managing the intimate, regulating the domestic interior, was thus a vital part of crafting the new civility upon

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which knowledge-making depended. As Jones’s plant descriptions were meant to be accessible to all Europeans in India, they had to be presented in a manner that kept racial boundaries intact and discouraged European men (and women) from imaginings that breached racial lines. If, then, we go back and look again at Jones’s Bilva, what do we see? Not a plant classification *per se* but a description of a plant, which refers to the number of its stamens and pistils without using Linnaean terminology, and associated cultural markers, including its name, meant to lead the European inquirer directly to its referent; *and* the evidence of chemical experiments performed to confirm its identity through parallel European practices. A full-fledged classification system based on Jones’s mode of inquiry would follow in the works of William Roxburgh, confirming his intuition that the success of colonial natural history depended upon learning sentimental ‘facts’ about native nature.¹⁴⁹

What sort of objects were Jones’s plants? They were certainly *not* the exotics that enriched European botanic gardens, developed and named to facilitate transmission between contexts. Instead they were mutable hybrid objects that embedded local knowledge and gave evidence of colonial social relations and indigenous agency in their very constitution (the Spikenard). Such plants did not travel far – their ontology was determined by their local context. They were evidence, rather, of the hard work that had to be done before their European *avatars* could bloom in metropolitan botanic gardens, work that compassed the construction of colonial social relations while stabilizing colonial nature.

¹⁴⁹ See Roxburgh, *Flora Indica.*
The artist Zain-ud-Din’s rendering of *Valeriana Jatamansi*. The drawing shows the hairy brush with the living plant pasted on top. The artist had obviously never seen a fresh specimen of the root and was drawing from instructions given to him about what the entire plant may look like when alive.
These sketches by Lady Anna Maria Jones of the physician and teacher, Ramlochan of Nadia, show this “native informant” seated in a western-style armchair, holding a stylus in his right hand, with a cadjan leaf on his lap (left). The second sketch (right) shows him writing with the stylus on a portion of leaf. His demeanor is confident, his posture erect. Compare this sketch with the representation of Jones’s pandits on the monument in the chapel of University College, Oxford (below): Here Jones is seated on a chair, with his indigenous informants huddled at his feet in postures of quiet contemplation, while “the Justinian of India” codifies their learning in a digest of Hindu and Islamic law.

Courtesy: The Royal Asiatic Society of Great Britain (Jones MSS)

Figure II.2

Figure II.3
Notes in Jones’s hand in his copy of Systema Brahmanicum by Frater Paullinus:

“These drawings are impudent falsehoods. Hindus look upon them with contempt. The triangle and circle are shapes, diagrams used in magic. They have nothing to do with the linga and yoni”.

The sentences indicate his extreme disquiet at sexualized representations of Hinduism such as tantric yantras.


Figure II.4
Chapter III

A “Real Survey”: Francis Buchanan and *A Journey from Madras through the countries of Mysore, Canara, and Malabar*

I

New Delhi

1. The knowledge hitherto obtained in Europe respecting certain branches of the Natural History of the Continent of India and of the Indian Isles is defective. —Notwithstanding the progress which has been made within the last twenty years in the prosecution of scientific inquiries connected with the Manners, Produce and Antiquities of this part of Asia, many of the most common Quadrupeds and Birds of this Country, are either altogether unknown to the Naturalists of Europe, or have been imperfectly and inaccurately described.

2. The illustration and improvement of that important branch of the Natural History of India, which embraces an object so extensive as the description of the principal part of the Animal Kingdom is worthy of the munificence and liberality of the English East India Company, and must necessarily prove an acceptable service to the World.

3. To facilitate and promote all inquiries which may be calculated to enlarge the boundaries of general science is a duty imposed on the British Government in India by its present exalted situation, and the discharge of that duty is in a more especial manner required from us when any material addition can be made to the public stock of useful Knowledge without considerable expense.¹

These are the first three paragraphs of a little-known minute by an erstwhile Governor-General of British India, Richard Colley Wellesley, or the Marquess Wellesley, who headed the English East India Company’s government in India between the years

1798 and 1805. The minute in question, dated the 26th of July 1804, was addressed to the Governments of Madras and Bombay by the Governor-General in Council from Calcutta, and appears in an Index to the Consultations of the Public Department of the Company’s government (now held in the National Archives of India in New Delhi) under the heading “Natural History of India.”\(^2\) The Indexes for the three years following 1804 record Wellesley’s efforts to set up what came to be called the Institution for Promoting the Natural History of India: \(^3\) As ordered by the Governor-General in paragraph 5 of his minute, one Dr. Francis Buchanan, a Scottish assistant surgeon in the employ of the Bengal government was “directed to collect materials for a correct account of all the most remarkable quadrupeds and birds in the provinces subject to the British Government in India;” an establishment was set up at Barrackpore, a few miles outside Calcutta, to house those quadrupeds and birds; and orders were sent to various officials including the president of the Board of Trade, to instruct the medical gentlemen under their authority to correspond with Dr. Buchanan on the subject of the Natural History of India, and “offer him every assistance within the limits of their local authority.”\(^4\)

In spite of the Governor-General’s marked interest in the project, however, little progress was made on it. A letter from Buchanan to Thomas Brown, Secretary to the Public Department (1st February 1805), complained that only three out of fifty medical officers on the Bengal establishment responded to his request for a list of the quadrupeds in the vicinity of their stations. An enclosure to the same letter, listing the birds and quadrupeds added to the Barrackpore menagerie, shows that the majority of the donations

\(^2\) Index, 1804, Public Department, National Archives of India (NAI).
\(^3\) See, for example, Index entry for December 8th, 1805, ibid.
\(^4\) Consultation No. 22A, 26th July 1804, ibid.
were by Buchanan himself. Buchanan’s zealousness in recruiting volunteers improved matters somewhat, but in early 1806 Wellesley was recalled to England and Buchanan accompanied him. The Institution then went into a sudden decline, and by December 1807 sundry articles belonging to it were sold off and staff members were discharged. The Public Department’s Indexes after 1808 contain no entry for the Natural History of India; and though the Institution’s menagerie continued to exist into the 1820s as a place of amusement (Fanny Parkes, wife of a minor colonial official and an indefatigable diarist, visited it in 1824) it ceased to be a place for the prosecution of scientific enquiries about Indian birds and quadrupeds. Why was this? And if this early effort to institutionalize the study of British India’s natural history came to so abrupt an end, were natural historical enquiries about the subcontinent systematically pursued under East India Company rule? If yes, how were they pursued?

The answers to these questions have to do with the exigencies of building state institutions in colonial India. The percipient Marquess had realized by July 1800 that the East India Company’s possessions in India constituted one of the most extensive empires in the world. The Company’s servants, no longer mere functionaries of a mercantile corporation, were being asked to administer a vast and complicated revenue and judicial system; but without the benefit of an education that equipped them for such onerous duties: “the denominations of writer, factor, and merchant, by which the several classes of the civil service are still distinguished, are now utterly inapplicable to the nature and

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5 Consultation No. 115, 7th February 1805, ibid; and Consultation No. 117, ibid.
6 See Consultation No. 45, 7th May 1807, ibid; and Consultation Nos. 44 to 46, 11th December 1807, ibid.
extent of the duties discharged, and by the occupations pursued by the civil servants of
the Company.8 The Governor-General therefore proposed setting up a collegiate
institution at Fort William in Calcutta, to give the Company’s junior civil servants an
education grounded in literature and science and the “useful knowledge” that budding
young statesmen required. Company lads were selected in Britain for their putative
mercantile skills, so it was thought that they would require more rigorous schooling than
their academically inclined mates at home to fit them for their complex future
responsibilities. The curriculum to be followed indicated why an institution to promote
the study of natural history might be necessary. It structure was unlike anything to be
found at a British university, clearly connecting together the political economy of EIC
c commerce and the scientific knowledge required to build its institutions. It included
“political oeconomy, and particularly the commercial institutions and interests of the East
India Company; geography and mathematics; modern languages of Europe; Greek, Latin,
and English classics; general history, antient and modern; the history and antiquities of
Hindoostan and the Deccan; natural history; botany, chemistry, and astronomy.”9

The Institution for Promoting the Natural History of India was intended as an
annex to the proposed college, but the Court of Directors refused their assent to such an
arrangement. So although the College of Fort William did come into expensive existence
at Calcutta, and last thirty years until dissolved in 1831, the Institution was separately and
more modestly established at Barrackpore at an estimated cost of Sicca Rupees 1000 or

8 “The Governor-General’s Notes With Respect to The Foundation of a College at Fort William, 10th July
1800”, in A Selection from the Despatches, Treaties and Other Papers of the Marquess Wellesley, K. G.
during his government of India, edited by Sidney J. Owen (Oxford: At the Clarendon Press, 1877), 718-
746, at 719.
9 “Regulation for the foundation of a College at Fort William in Bengal…” – Passed by the Governor-
General in Council, on the 10th July 1800”, in ibid., 750.
125 British pounds a month. Neither the Superintendent of the Institution, Francis Buchanan, nor the medical officers ordered to correspond with him were offered any remuneration for their services; so the reluctance of the latter to send Buchanan details about the birds and quadrupeds in their vicinity appeared perfectly understandable to him. Augmenting “the public stock of useful knowledge” with information about Indian zoology was obviously not possible without some expense, so the Institution fell victim to the parsimony that set in upon Wellesley’s departure in 1805.

This chapter examines, as does the next, the pushes and pulls on natural knowledge-making and state-making in colonial India. The Governor-General’s Note nicely captured all the tensions and contradictions inherent in fitting together the Company’s commercial character and its status as a sovereign power. In order to understand this we must begin by returning to those Indexes to the Consultations of the Public Department in the archives at New Delhi.

On the 17th of July 1804, a week before the appearance of Wellesley’s minute on India’s natural history, the Governor-General wrote another minute, which also appears under the rubric “Natural History of India”: “Dr. Buchanan to prepare a copy of his Manuscript Account of his Journey in Mysore for the Court of Directors. Expence to be charged in a Contingent Bill.” Subsequent entries follow the correspondence between Buchanan and the authorities in London and detail the expenses incurred in preparing a

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10 Consultation No. 23, Public Department, NAI. The sicca rupee was a freshly minted and therefore unworn rupee of higher exchange value. See “Note on East India Company Coinage”, in Mapping an Empire: The Geographical Construction of British India, 1765-1843, by Matthew H. Edney (Chicago and London: University of Chicago Press, 1997), xvii.
11 See Buchanan to Thomas Brown, Consultation No. 115, Public Department, NAI.
12 The cost of running the Barrackpore establishment for six months came to approximately Sicca Rupees 4000 (500 l), i.e. less than the projected 125 l a month. See accounts submitted by Buchanan, Consultation No. 116, 7th February 1805, ibid.
13 Index, 1804, Public Department, NAI.
copy of the manuscript of his travels in Mysore. Why was Buchanan’s journey in south India important enough to merit a minute by the Governor-General?

Wellesley’s governor-generalship was marked by a series of wars that expanded British dominion over the subcontinent. Tipu Sultan, ruler of the south Indian state of Mysore, was his most formidable Indian opponent. Wellesley defeated Tipu in 1799, a victory that changed the balance of power in the subcontinent and brought the British enormous strategic and territorial advantages.

The territory that changed hands at the end of the fourth Anglo-Mysore War in 1799, was roughly two-thirds the size of Scotland. A survey of its resources set in motion after the war by Wellesley, and which came to be known as the Great Mysore Survey, lasted from 1799 to March 1809. It was placed under the command of a Stornoway native, Colonel Colin Mackenzie, who went out to India to pursue a career in the army and an abiding interest in Hindu mathematics, and finished up as the first Surveyor-General of India (1815-1821). The choice of Mackenzie was not fortuitous: he had successfully carried out an earlier survey in the Deccan of the “Nizam’s Territories” (parts of modern Andhra Pradesh); and was also, as he wrote in an autobiographical fragment, fitted by early training in geography and history for the job. Buchanan’s

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14 See Consultation Nos. 82 & 83, 24th January 1805; and Consultation Nos. 49 & 50, 7th March 1805, Public Department, NAI.


16 “Biographical Sketch of the Literary Career of the late Colonel COLIN MACKENZIE, Surveyor-General of India; comprising some particulars of his Collection of Manuscripts, Plans, Coins, Drawings, Sculptures,
Mysore survey overlapped in part with the areas surveyed by Mackenzie, so it is natural to wonder why the Governor-General had wished him to replicate work already underway.

One possible answer, proposed by Marika Vicziany, concerns the extreme unpopularity of the war against the Mysoreans in Britain. Wellesley’s expansionism had fallen foul of members of the Company’s Court of Directors, so he wished for a quick and positive assessment of British objectives in south India. Mackenzie’s elaborate and painstaking survey would yield results, but only with time. Buchanan, a friend of the Governor-General, could be expected to put the best possible construction on Wellesley’s expansionism and was therefore asked to swiftly assess the state of affairs in the territory acquired from Tipu.\(^{17}\)

The complexity of the endeavor can be discerned in the instructions issued by Wellesley to Buchanan. The Governor-General’s brief to him was laid out in his Instructions of 24\(^{\text{th}}\) February 1800:

> Your enquiries are to extend throughout the dominions of the present Raja of Mysore, and the country acquired by the Company, in the late war, from the Sultan, as well as to that part of Malabar which the Company annexed to their own territories in the former war under Marquis Cornwallis.

The first great and essential object of your attention should be, the Agriculture of the Country; under which head, your enquiries should include and tend to ascertain the following points with as much accuracy as local circumstances will admit.\textsuperscript{18}

The points mentioned include *Esculent Vegetables, Cattle, Farms, Cotton, Pepper, Sandal-wood, and Cardamoms, Mines, Quarries, Minerals, and Mineral Springs, Manufactures and Manufacturers, Climate and Seasons of Mysore and Inhabitants*.\textsuperscript{19}

The method of investigation recommended by the Governor-General was aimed at the generation of such information as could be used to form a basis for the assessment and collection of revenue, and aid in the formulation of policies that would augment and maintain what the Saint-Simonian Charles Dupin, and more famously, Karl Marx, would later call “productive forces”. Under *Esculent Vegetables*, for example, Buchanan was told to notice

The different kinds cultivated by the farmers and natives in general, for sale or common use; the modes of cultivation adopted for each kind, and the implements of husbandry used in them; the seasons when they are sown or gathered; the manures used for the soil; and the means adopted for watering their grounds; and as the effecting of this last point, in a cheap and easy manner, is an essential object to the common farmers in this country (Bengal), it would be eligible to have either models or drawings made of any description of machinery which may not have been seen by you in these parts of India, and which may appear to you to be likely to effect so beneficial an end. It would also be advisable for you to observe whether the poorer natives make use of any vegetables or food, which you may have seen in this country, but which may not here be in use for human food.\textsuperscript{20}

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\textsuperscript{18} “Copy of the Governor General’s Instructions, dated Fort William, 24\textsuperscript{th} February 1800,” in “Introduction” to Volume I, Francis Buchanan, *A Journey from Madras through the Countries of Mysore, Canara, and Malabar, Performed Under The Orders of The Most Noble The Marquis Wellesley, Governor General of India, For The Express Purpose of Investigating the State of Agriculture, Arts, and Commerce; the Religion, Manners, and Customs; The History Natural and Civil, and Antiquities, in the Dominions of the Rajah of Mysore and the Countries Acquired by The Honourable East India Company, in the Late and Former Wars, from Tippoo Sultaun, in Three Volumes* (London: W. Bulmer and Co., 1807), viii.

\textsuperscript{19} Ibid., viii-xiii.

\textsuperscript{20} Ibid.
Under *Farms*, he was directed to

compare the general state of agriculture in *Mysore*, &c with that of such parts of Bengal as you may be acquainted with; and state your opinion, how far the cultivation of either country may be improved, or extended, by the introduction of the vegetables, cattle, or rural economy of the other.

The next immediate object of your attention should be, those natural productions of the country, which are made use of in arts, manufactures, or medicine, and particularly those which are objects of external commerce.  

And under *Inhabitants*:

The condition of the inhabitants in general, in regard to their food, clothing and habitations, will engage your particular attention: you will also inquire how far their situation, in these respects, may have been affected by the different changes in the government.  

The different sects and tribes, of which the body of the people is composed, will merit your observance; you will likewise note whatever may appear to you worthy of remark in their law, customs &c.; and state, with as much accuracy as may be in your power, the nature of their common usages in matters of personal traffic at their markets, their weights and measures, the exchange of money, and the currency among the lower orders of people: and such matters in respect to their police, as may seem to you to have an immediate or particular tendency towards the protection, security, and comfort of the lower orders of the people.

The Instructions concluded with an order to “take every opportunity of forwarding to the Company’s Botanical Garden at this Presidency, whatever useful, or rare, and curious plants and seeds you may be enabled to acquire, in the progress of your researches, with such observations on their nature and culture as may be necessary.”

Buchanan fulfilled Wellesley’s instructions to the letter, producing a document, which when published in 1807, bore the title *A Journey from Madras Through the Countries of Mysore, Canara and Malabar;* and which, I believe, marked an important moment in the history of British rule in India: the emergence of the survey as an

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21 Ibid., ix.
22 Ibid., xii.
23 Ibid.
instrument of colonization. This chapter will therefore make a close reading of Buchanan’s *Journey* in order to explain why its composition was so important a moment in colonial *savoir faire*, and to answer the questions I have posed about the making of natural historical knowledge under the East India Company.

The manuscript of *The Journey* had a relatively uneventful passage through East India House and into print. The Court of Directors, it is true, did not sanction the large sum required to prepare the appendices relative to the natural history of the plants and animals Buchanan collected in Mysore, Canara and Malabar (Sicca Rupees 986); nor would they permit the translation of the native manuscripts brought back by him, into English (it would have cost an estimated Sicca Rupees 10,050).  They did, however, accept the suggestion made by Charles Wilkins, the Company’s librarian, that publishing it might be useful, encouragingly providing a large subscription, and agreeably surprising Buchanan:

Accordingly, in the end of the year 1805 an agreement was made with some respectable booksellers. Soon afterwards, my duty having unexpectedly brought me to England, I was agreeably surprised to find that my Journal had obtained a reception so favourable. It is true, I wished to have abridged the Work before publication, and altered its arrangement; but as the printing had commenced before my arrival, and as my stay in England was likely to be very short, I could not undertake such alterations. I have, therefore, contented myself with revising the manuscript; and the superintendence of the press has been entrusted to Mr. Stephen Jones. I hope, however, that the Index will enable the reader to understand the greater part of the Indian terms, and at the same time will in some measure supply the want of method, in which I am sorry that the Work is so deficient.

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24 Consultation No. 50, 7th March 1805, *Public Departement*, NAI.
The “want of method” that Buchanan disparages in his work is for our purposes an asset rather than a drawback, since it shows the “investigative modality” recommended by Wellesley at work before being tidied or formalized through genre. Bernard Cohn’s concept condenses all the practices of Company administrators and bureaucrats intent on understanding and mobilizing indigenous knowledge in the service of the state. But there is one in particular that deserves special attention: historiography. The new types of historiography that developed from the Scottish inquiry into Man broke with linear narrative in order to incorporate the social experiences and material life of people, their inner lives and their collective morality into historical writing. These new historiographies gave the colonial survey a distinctive form – as a natural history.

Buchanan’s textual strategies marked the emergence of an investigative modality, as and through a new form of writing. Showing what was new about A Journey as a form of writing, I argue in what follows, is both a way of showing how form acted as a cognitive instrument in making sense of a new colonial milieu and how scientific knowledge traveled and transacted between places. What kinds of knowledge did Buchanan carry with him on his travels through Mysore, Canara and Malabar? How was

26 The phrase “investigative modality” was coined by the anthropologist Bernard S. Cohn as a way to understand the imperatives that drove colonial knowledge-making and the modes devised to realize them: “An investigative modality includes the definition of a body of information that is needed, the procedures by which appropriate knowledge is gathered, its ordering and classification, and then how it is transformed into usable forms such as published reports, statistical returns, histories, gazetteers, legal codes, and encyclopedias. Some of the investigative modalities of the colonial project are quite general, such as historiography and museology, although they might include very specific practices such as the location and description of archaeological sites. Other modalities such as the survey and the census, were more highly defined and clearly related to administrative questions. Most investigative modalities were constructed in relation to institutions and administrative sites with fixed routines.” Bernard S. Cohn, Colonialism and Its Forms of Knowledge: The British in India (Delhi: Oxford University Press, 1997), 5.

27 An excellent discussion of these developments in eighteenth-century British historiography can be found in Mark Salber Phillips, Society and Sentiment: Genres of Historical Writing in Britain, 1740-1820 (New Jersey: Princeton University Press, 2000).
that knowledge operationalized in a spatial context very different from the one in which it was acquired?

It should be obvious that Cohn’s remarks about “transforming” indigenous knowledge into forms that could be used by the colonial state’s apparatuses and my questions about how knowledge travels between places require a close look at the working of “language” in several registers. It was Buchanan’s wont during his journey to travel eight or nine miles every morning, pitch his tent in a likely village, and spend the rest of the day assembling and quizzing the locals about matters social and natural. He knew no Kannada or Malayalam, the desa bhashas (“country languages”) of the regions he passed through; his Bengali servant and interpreter only Bengali and Sanskrit; his Madras servants the “Malabar” (Tamil) of the Madras region. How then was communication effected? This is a question about linguistic matter per se. But Wellesley was asking Buchanan to do more than communicate with the natives and translate their answers into English. He was asking him to textualize that information, in effect, create a third language, which could give the colonial state power over indigenous knowledge.28

The Governor-General’s Instructions required him to form an understanding of the life experience of the peoples in the territories he passed through, so that the knowledge could be appropriated, “transformed into usable forms,” as Cohn put it, for the benefit of the Company Bahadur. The ultimate aim of translation was the smooth exercise of governmentality (“the condition of the inhabitants in general…will engage your particular attention: you will also enquire how far their situation…may have been

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28 The amount of labor and expense that would have been involved in translating the manuscripts Buchanan brought back from his expedition can be gauged from the estimate submitted to the Public Department by the missionary William Carey. Enclosure to Buchanan’s letter of 12th April, 1805, Consultation No. 54, Public Department, NAI, (Reproduced on next two pages.)
affected by the different changes in the government”). The information gathered was to be embedded in the routines and practices of state apparatuses such as the Board of Revenue; but for that a second translation was needed: Buchanan’s questions to his native informants and their replies, the native manuscripts he collected, the agricultural activities he witnessed, had to be explained in terms both he and his superiors in the administration could understand and use, for which a transaction had to occur between two knowledge forms, the indigenous and the European. Buchanan’s training before he left for India occurred in Scotland, so it is reasonable to assume that the knowledge-making protocols that traveled with him had their origins there, too. Developments in eighteenth-century Britain, meanwhile, had linked Scotland to India in a special way.

**Public Department 1805**

**In Mr. Buchanan’s letter of 12th April**

**Consultation 18th April**

**No. 54**

An Estimate of the probable expence of translating fifty four Inscriptions, and making Extracts from several other manuscripts, collected by Dr. F. Buchanan

Expence of translating the Inscriptions

<table>
<thead>
<tr>
<th>Description</th>
<th>Expence</th>
</tr>
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<tbody>
<tr>
<td>A Kurnata translator – 3 Months at 150 p. m.</td>
<td>450</td>
</tr>
<tr>
<td>A Bengalee Pandit to assist in the Translation – 3 months at 30</td>
<td>90</td>
</tr>
<tr>
<td>A Copyist to make a fair copy 2 Months at 50</td>
<td>100</td>
</tr>
<tr>
<td>Stationary and Incidental expences</td>
<td>50</td>
</tr>
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</table>

Total: 690
Extracts from manuscripts & S. (?)

1. Khallidi Raya
2. History of the arrival of the Portuguese in India
3. Ramanaja Acharya Churitra
4. Account of the Chittraul Polygars
5. History of the Mysore Rajas
6. History of the Ilmany (?) Rajas

The above six Manuscripts are short works which may be translated in about four Months, and will require

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
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<tbody>
<tr>
<td>A Karnata translator</td>
<td>600</td>
</tr>
<tr>
<td>A Bengalee Pandit</td>
<td>120</td>
</tr>
<tr>
<td>A Copyist</td>
<td>100</td>
</tr>
<tr>
<td>Stationary and incidental Expences</td>
<td>80</td>
</tr>
</tbody>
</table>

900

The longer works are

1. Shunkur Acharya Churitra
2. Bussna Pooran (Vishnu Purana?)

These two Works could not be translated in less than twelve Months. Extracts from them may be made in two Months at the Expence of

450

2,040

Brought forward

2,040

Copies of these works (excepting the two last) cannot be made in Bengal for less than

1000

S. Rs. 3,040

This Estimate includes nothing more than the bare expence of Assistants, Stationary, and incidental charges.

April 10 1805 Signed Wm Carey
In 1707 the Scottish and English parliaments joined together in a Treaty of Union to create a fledgling British state. The new union, always a little unstable, was threatened by various incidents of Scottish disaffection, including the Jacobite rising of 1715 and riots against the Malt Tax in 1725. First minister Robert Walpole’s solution was to appoint the Earl of Islay, the younger brother of the Duke of Argyll, as Secretary for Scotland in 1725. Islay was to deliver political stability north of the Border and the votes of Scottish MPs in exchange for a free hand with patronage and the authority to govern Scotland. Fundamental to the working of his patronage network was access to India posts. The East India Company was an independent corporation but ministers could always manipulate it to provide a source of patronage in exchange for periodic renewal of its Charter and a variety of commercial favors. The result was a huge influx of Scots into the Company by 1750.29 Between 1774 and 1785, forty-seven percent of writers (the lowest rung in the Company’s civil service) appointed to Bengal were Scots, and they were overwhelmingly present as officers in the Company’s army. According to the historian T. M. Devine, of the fourteen regiments that helped garrison Company territories in India between 1754 and 1784, seven were raised in Scotland and led by Scottish officers.30 Scottish physicians, moreover, were everywhere in the Indian empire.


From 1720 to 1757, all the Principal Medical Officers in Madras were Scots, and by 1800 they constituted forty per cent of the Presidency’s total medical establishment.

This embarrassment of Scottish medical personnel in the Company’s service was evident as early as 1731, when John Drummond of Quarrel, a major patron of Scots in the Company protested to his brother about recommending more Scottish surgeons to him: “I have told you once and again not to recommend any Surgeons to me, for all the East India Company ships have either Scots Surgeons or Surgeon’s mates, and till some of them die I can, nor will look out for no more, for I am made the jest of mankind, plaguing all the Societys (sic) of England with Scots Surgeons.”31 Of these a considerable number were from Edinburgh University’s Medical School. A table compiled by Tim Robinson tracking the number of students who took Dr. John Hope’s botany classes at Edinburgh between 1761 and 1786 shows that 70 out of a total of 1537 or 4.6 % (a conservative estimate for various reasons) joined the Indian Medical Service, among them Buchanan.32

The next section therefore examines the teaching imparted to these students at Edinburgh, and the reasons for the intimate connection established between agricultural improvement and the scientific disciplines taught to them. The connection profoundly affected the way natural history was “done” and written about in both Scotland and India.

31 Quoted in McGilvary, East India Patronage, 113-114.
II

Edinburgh

I look upon Natural History as necessary to form an accomplished Gentleman tho’ too much neglected in their education, and I likewise esteem it necessary to form an accomplished Physician.

John Walker (c. 1789)33

A visitor to Edinburgh in 1762, the year Buchanan was born, would have noticed a great deal of talk about “improvement.” The immediate referent for the word would have been the activities of Scotland’s great landowners, men like the Earl of Hoptoun or Henry Home, Lord Kames, and their imitators among the gentry and upper tenantry, who spearheaded those changes on the land that came to be termed the agricultural revolution.34 The word had a broader cultural significance however, understanding which is key to explaining aspects of British colonialism in India.

“To improve,” according to the 1755 edition of Samuel Johnson’s Dictionary, was “1. To advance anything nearer to perfection; to raise from good to better. 2. To advance in goodness.” The adjectival form, “Impro’vable” meant “Capable of being advanced from a good to a better state; capable of melioration.” Examples of usage followed. Johnson’s first example was a quotation from the seventeenth century, invoking the Scale of Being: “Man is accommodated with moral principles improvable

34 It was the tenants rather than big landowners who actually brought about the changes.
by the exercise of his faculties. Animals are not *improvable* beyond their proper genius:
a dog will never learn to mew, nor a cat to bark.” An example of early eighteenth-century usage came from Joseph Addison: “I have a fine spread of *improvable* lands, and am already planting woods and draining marshes.” Turning to the abstract noun *Improvement*, Johnson linked it to immanent qualities of man or land in the context of an emerging capitalist work ethic: “Some virtues tend to the preservation of health, and others to the *improvement* and security of estates.” (Tillotson)³⁵ The discursive power of the word therefore came from the idea of perfectibility, of upward and onward movement, whether of things or men. It gave the Scottish Enlightenment, which I understand here as a set of cultural and material practices that produced a particular vision of nature, its distinctive character.³⁶ An original meaning for improvement that


³⁶ Debates about the Enlightenment in general and the Scottish Enlightenment in particular are many. They are ably summarized in Richard B. Sher, *The Enlightenment and the Book* (Chicago and London: University of Chicago Press, 2006), 11-24. Sher asserts the existence of a “common core” that united all the different European manifestations of the Enlightenment: “In my view, that common core resides not in a fixed doctrine or a universal reform program or an institutional structure or a particular field or school of thought but rather in a set of general values to which proponents of the Enlightenment adhered.” According to Sher these values “included improvement, or a commitment to bettering the human condition, morally and perhaps spiritually as well as materially… humanity and cosmopolitan sensibility, or a sense of sympathy and fellow feeling toward other human beings, and opposition to torture, slavery, and other practices judged to be inhumane; sociability, or an awareness of, and a preference for, the social character of human nature and human society… intellectualism, or dedication to cultivating the powers of the mind for understanding human nature, society, and the natural world, in accordance with Kant’s famous motto of enlightenment, “Dare to know,” and a concomitant belief in the power of learning as a means of bringing about improvement; and aestheticism, or appreciation for the arts, including painting, music, poetry, and imaginative literature.” (15-16)

I believe that the manner in which “the general set of values” was inflected according to local histories and contingent circumstances and produced distinct national practices was what defined (and validates historiographical discussion of) different Enlightenments. Hence, as discussed in Chapter I, a commitment to “improvement” assumed a specific character in Sir John Sinclair’s *Statistical Account* – the attempt to measure the “happiness” enjoyed by the Scottish people – which could not be foreseen by a commitment to common values. The singularity of Scottish ideas of improvement made the Enlightenment in Scotland a very particular affair, and importantly, its manifestation in British colonies like India very particular, too. Useful discussion of what made the Scottish Enlightenment Scottish can be found in
Johnson does not record, and which is particularly significant for my arguments about the nature of the Scottish Enlightenment, is given by Raymond Williams:

**Improve** is an interesting example of the development of a general meaning from a more specific meaning. It came into English, at first with many variations of spelling, from *fw en preu*, *oF*, *rw pros* – profit. In its earliest uses it referred to operations for monetary profit, where it was often equivalent to *invest*, and especially to operations on or connected with land, often the enclosing of common or waste land…The wider meaning of ‘making something better’ developed from C17 and became established, often in direct overlap with economic operations, in C18.\(^{37}\)

This could be glossed to mean that private profit led necessarily to the best use of nature’s resources, an interpretation that underpinned moves to restructure agrarian relations in late-eighteenth and early-nineteenth century Britain.\(^{38}\) This was a vision of agrarian improvement that joined Christian belief in the providential nature of natural knowledge (God intended man to know his works through natural history and natural philosophy) to those with the “philosophical” tools to interpret it: private landlords who formed the backbone of the Royal Society, and who could work for the benefit of all, by combining with yeomen and professional people in a moral community of agrarian “patriots”. Their affiliation in agricultural societies and improving groups of various kinds gave them a reach beyond parliamentary or local politics, turning them into the


moral center for British internal expansion; and, despite their ambivalence to overseas adventures, the domestic precondition for colonial overseas enterprise.  

Agrarian patriotism found expression in a particular kind of writing, internal agricultural travel narratives, best represented by the *Tours* of Arthur Young, appointed Secretary to the Board of Agriculture in 1793. The aim of Young’s *Tours* was to know the country and its resources in order to generate the kind of statistical information demanded by Sir John Sinclair, his mentor and founder of the Board (see Chapter I). Young’s writing was a far cry from the sort of picturesque descriptions of landscape produced by contemporaries to celebrate private property in land. He chronicled a working country, albeit in the interests of Whig landlordism:

All the country from Holkham to Houghton was a wild sheepwalk before the spirit of improvement seized the inhabitants, and this glorious spirit has wrought amazing effects: for instead of boundless wilds and uncultivated wastes inhabited by scarce anything but sheep, the country is all cut into enclosures, cultivated in a most husbandlike manner, richly manured, well peopled, and yielding a hundred times the produce that it did in its former state. What has wrought these vast improvements is the marling, for under the whole country run veins of a very rich soapy kind which they dig up and spread upon the old sheepwalks, and then by means of enclosing they throw their farms into a regular course of crops and gain immensely by the improvement. 

Young’s catalogue of “amazing effects” wrought by the “glorious spirit of improvement” had its basis in scientific inquiry into nature – mineralogy had to be understood before outturn multiples could increase. His narratives were a matrix for the scientific details of

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land improvement, but well before he had turned his thoughts to agriculture, the improver-cum-pedagogue and Edinburgh cleric, John Walker, had undertaken a series of “improving” tours of the Hebrides for the Commissioners of the Board for Annexed Estates in Scotland. His vision is clearly discernable in *A Journey*.\(^{42}\) Walker’s university lectures on natural history were widely attended (Buchanan took his course in 1783 – see illustration below), and in them he drove home the connection of natural history and agricultural improvement in the same way that his model Linnaeus had done in Sweden – by emphasizing the importance of locality and local natural objects (see below).\(^{43}\)

What was particular about the Scottish version of improvement? One way to answer the question is to look at the language of improvement eighteenth-century Scots employed, as an expression of modernity – a way of coming to grips with their present. For one group of historians represented by Nicholas Phillipson, the word became a master metaphor for a series of activities, public and private, undertaken to compensate for the loss of free political institutions in post-Union Scotland. Scottish intellectuals and the small and middling gentry challenged by the necessity to imagine alternative versions of civic and patriotic activity made improvement of the social, cultural and economic life of Scotland the focus of associational organization.\(^{44}\) Catching up to England was the goal: “Few landed Scots doubted that England began with a more polite and more desirable civilization than their own, or that it was a duty of patriotism to match and even


\(^{44}\) Phillipson, "The Scottish Enlightenment".
to outshine the southerners’ model whether it was in teacups, in good tone or… in farming." Protocols of Enlightenment sociability, improving clubs, debating societies and correspondence networks, went busily to work. It was in these institutions of civil society that the practices and politics of improvement acquired real purchase, turning them, as Bayly has noted, into the moral centers of internal expansion.

Early in the century there was the Easy Club ("Resolved at sometimes to Retire from all other Business and Company and Meet in a Society By themselves in order that by a Mutual improvement in Conversation they may become more adapted for fellowship with the politer part of mankind and Learn also from one anothers (sic) happy observations…"), which had Allan Ramsay, wigmaker turned poet for a member.46

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List of Students who took John Walker’s course in 1783: Buchanan is listed fourth from the bottom on the page. The page illustrates a variety of attendees including a divinity student, two army ensigns (one Dutch) and a philosophy student.

Centre for Research Collections/Edinburgh University Library, Shelf-mark: Dc. 1.18
Also see Matthew D. Eddy, “The University of Edinburgh Natural History Course Attendance Lists, 1782-1800”, Appendix VII, in Eddy, Science and Beliefs, 229-250.

Figure III.1
By the third quarter of the century, in Edinburgh alone, were the Royal Society of Edinburgh, the Select Society (which included luminaries like Adam Smith, David Hume and Lord Monboddo) and more pointedly, the Edinburgh Society for Encouraging Arts, Sciences, Manufactures and Agriculture, the Highland and Agricultural Society and a slew of professional and specialist societies, including the student-run Natural History Society of which Buchanan was a founding member.47

The development of Scottish stadialism, the idea of stages in the development and progress of societies, did not, however, eradicate respect for social and political variety. Take the work of Adam Ferguson, who taught moral philosophy to Buchanan’s cohort at Edinburgh; and who, like Buchanan, was born on the border between the Gaelic-speaking Scottish Highlands, and the Lowlands: he understood only too well that a political community, a civil society, existed even among clannish barbarians. Moral improvement, for Ferguson, was unconnected to economic progress. If material progress did not bring moral progress, there was then every reason to question an arrangement of societies in an ascending civilization scale – the clannish Highlander could teach the politically evolved Lowlander much. Ferguson does not make specific mention of the culture of Highlanders but their martial manners were doubtless at the back of his mind as he made his arguments about the political robustness of less “evolved” societies. This sensitivity to positive cultural variation meant that it was appropriate to question whether

“civil” was the same as “refined”, and thus to insist on the necessity of carefully studying
nations that embodied temporal and geographical variations.\textsuperscript{48}

Agrarian patriotism working as internal colonialism could also “jumble” the
stages of conjectural history. In a dissertation on the role of Scottish Enlightenment
ideology in underwriting social engineering in the Highlands, Fredrik Albritton Jonsson
has argued that “the crofting system as much as the doctrine of free trade formed the
principal inheritance of the Scottish Enlightenment in Britain.”\textsuperscript{49} What does this mean?
Briefly, that in order to compensate for the loss of Britain’s North American colonies,
Scottish projectors settled Highlanders on a couple of acres of land each, to provide a
pool of cheap labor for newly established industries in northern Scotland. They were
regarded as a special genetic pool whose martial qualities were to be maintained and
reproduced through simple living and manual labor in a hard climate. Thus frozen at an
earlier “stage” of development and protected from the luxuries of commercial life, their
recruitment for national defense was ensured. Jonsson considers the history of Highland
colonization a hybrid modernity, illustrated by the history of the caschrom, the crooked
spade of the Highlands, a labor-intensive agrarian technology, whose maintenance was
canvassed by none other than Professor of Natural History, John Walker. Together with
the introduction of lazybed potato cultivation and projected linen and kelp manufacture, it
formed a new social system in the Highlands “challenging the notion of a necessary
linear progression between primitive agriculture and modern manufacture.”\textsuperscript{50}

\textsuperscript{48} This paragraph is based on Fania Oz Salzberger, “Introduction” to Adam Ferguson, \textit{An Essay on the
History of Civil Society} (Cambridge: Cambridge University Press, 1999), vii-xxv.
\textsuperscript{49} Fredrik Albritton Jonsson. "The Enlightenment in the Highlands: Natural History and Internal
Colonization in the Scottish Enlightenment, 1760-1830" (Ph.D. diss., University of Chicago, 2005), 21.
\textsuperscript{50} Ibid., 205.
Walker’s involvement exemplifies a key point made by Jonsson: the prospect of colonizing Britain’s northern periphery would have been unimaginable without the involvement of Edinburgh’s *savants* who used their expertise as natural historians and chemists to produce resource inventories and surveys of upland ecosystems to legitimize capital investment in the schemes of Northern projectors. His students, notably Buchanan, would do the same in India, carrying out surveys of newly annexed territories and implementing lessons learned in the Highlands, in the interests of the EIC state. A wider analytic frame is required to understand this, to which I now turn.

* * *

Throughout the late eighteenth century the two most important knowledge-making institutions of the Scottish Enlightenment, Sir John Sinclair’s great project, the *Statistical Account of Scotland*, and Edinburgh University, deployed and taught those methods of surveying and ordering national resources and inhabitants – and counting them – which were defining features of Enlightenment culture everywhere. The second of these is taken up and discussed below to show how utilitarian action with improvement as its goal became the common language of post-Union Scots in both town and country.

Knowledge-making in Scotland occurred hand-in-hand with social reorganization. The making of new disciplines like chemistry or natural history at Edinburgh University’s School of Medicine, and the modes of inquiry pursued by Sinclair’s *Statistical Account* or the polymath farmer Andrew Wight’s agricultural surveys, had a
common goal: to restructure agrarian relations and create consolidated large estates in the hands of great improving landlords like Lord Kames, who it was argued, would spread technologically sophisticated agrarian practices downwards and outwards through Scottish society. The Scottish Highlands were a major theater for experiments in social engineering, although the course followed there was different from the standard diffusionist model pursued in the Lowlands, and marked by dissent and clashes of priority among improvers.51

At stake was the idea of Nature itself. The English Enlightenment’s preoccupation with the “nature of nature” has been widely commented upon, and understood as an expression of the confidence and stability of Augustan social relations. Gone was the Miltonian wilderness, Satan’s habitat. In its place stood Order. The Great Chain placed every creature in its proper niche, winding upwards to God and His Angels, providing aesthetic and spiritual pleasure, but also reinforcing commitment to the rule of property. If spiritual and temporal order could be understood by reflecting on the majesty of God’s Providence it could also be grasped by gazing at the private, well-ordered estate.52 As Roy Porter has captured it: “What passes these days in England for Nature – the chequerboard fields, hawthorn hedgerows and coppices which conservationists defend against developers – is largely the product of Enlightenment agri-business, landscape gardening and peasant-cleansing. In declaring ‘All nature is but Art unknown

to Thee’, Alexander Pope intended to be pious, but he was unwittingly providing the codebreaker to Georgian environmental history."^\textsuperscript{53}

A reconstituted idea of nature, one that required a body of experts to understand and explain its rational principles underpinned the ideology of large landownership. Enormous effort was involved in legitimating both the “new” knowledge and the agrarian practices that accompanied it. The hard work required generated a unique “public institutionalized alliance” between landowners and Scottish savants. This alliance, which produced a particular pedagogical practice—the linking of the lecture theatre to the agricultural farm—is explained in an early article by Steven Shapin on the social relations of Edinburgh science.

Shapin’s analysis is based on two (partly empirical) categories, the landed “audience” for Edinburgh science and the experts who “performed” for them. He shows us a context in which the intellectual and social boundaries between the two categories being permeable, the power of the landed audience worked to make scientific performers identify—socially and intellectually—with the concerns of their audience.\textsuperscript{54} This meant, on the one hand, that the University professorate, people like Buchanan’s teachers John Walker and John Hope, paid close attention to agriculture in their classes and aspired to


be landowners themselves: on the other, that important improvers like Lord Kames, were pleased to pretend to a “consistent” and “systematic” knowledge of agriculture as a mark of social status.\textsuperscript{55} Audience and performers perforce changed places from time to time, making Edinburgh science both “exoteric” and “reciprocal”. Shapin’s example, the composition of the “earth sciences (sic) sub-community” (those who cultivated geology, mineralogy, meteorology) in the Royal Society of Edinburgh between 1783 and 1820, is telling: forty-three percent were landowners compared to their overall representation in the Society, eighteen percent.\textsuperscript{56}

The “exoteric” style of Edinburgh science, which made its use in agriculture appear to everyone’s advantage, legitimized the scientifically minded yet practical farmer as the builder of the Scottish nation. Consider these passages from \textit{The Gentleman Farmer}:

\begin{quote}
[N]o other occupation rivals agriculture, in connecting private interest with that of the public. How pleasing to think that every step a man makes for his own good, promotes that of his country! Even where the balance happens to turn against the farmer, he has still the comfort that his country profits by him. Every gentleman-farmer must of course be a patriot; for patriotism, like other virtues, is improved and fortified by exercise. In fact, if there be any remaining patriotism in a nation, it is found among that class of men.\textsuperscript{57}
\end{quote}

He alone, in tandem with his scientific allies, would reduce agriculture to a system. Kames declared that he had, after a long course of reading and resorting to the book of nature, reduced “the theory of agriculture into a sort of system”.

\textsuperscript{55} Henry Home, Lord Kames, \textit{The Gentleman Farmer. Being An Attempt to improve Agriculture, By subjecting it to the Test of Rational principles} (Edinburgh: W. Creech and T. Cadell, 1776), Preface, xii.
\textsuperscript{56} Shapin, “Audience for Science”.
\textsuperscript{57} Kames, \textit{Gentleman Farmer}, xvii.
Many eyes are better than one; and if my theory shall be found erroneous, the many that have erred before, will serve in some measure to keep me in countenance. I am not however afraid of any gross error. An *imprimatur* from one of the ablest chymists of the present age, has given me some confidence of being in the right tract.58

Kames is here referring to Dr. Joseph Black, professor of chemistry at the Medical School during Buchanan’s time, who acted as a consultant on the book. But it is his correspondence with Dr. William Cullen, Black’s teacher and Buchanan’s professor of Practical Medicine, which best displays both the alliance of landowner and literatus at work, and the development of chemistry at Edinburgh as a response to the needs of contemporary agronomy. As early as 1749 Cullen was writing to Kames from Glasgow, about making chemistry useful to agricultural improvement:

> I now take the liberty you were pleased to allow me of consulting you about my plan for prosecuting the study, or, if you please, the improvement of agriculture. Your recommendation of this subject has very much strengthened my own inclinations that way… I wish to have your advice, and to know from you what experiments are likely to prove decisive and fittest to ascertain the principles of agriculture. That you may do this with more ease to yourself, and with more advantage to me, I shall now venture to lay before you my own plan on the subject… It is the substance of a few lectures I gave in my course of chemistry. As the course was intended to teach the elements of chemistry applicable to the arts in general, agriculture claimed a place; and though I was not well prepared on that subject, yet I thought it was proper to make a beginning, and at least to open young gentlemen’s views on the subject.59

Here Cullen is not only soliciting advice on the best mode of conducting experiments relating to agriculture, acknowledging that a great improving farmer may have experience he lacks (inviting Kames to “perform” for him) but indicating willingness to teach such

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58 Kames, *Gentleman Farmer*, xii-xiii.
aspects of chemistry as may benefit a future generation of improvers (“open young gentlemen’s views on the subject.”) Cullen was ready to make the emerging science of chemistry (defined by him as “the art of separating mixt bodies into their constituent parts & of combining different bodies or the parts of bodies into new mixts for the purposes of philosophy and arts…”\textsuperscript{60}) service agriculture and related arts. The declining importance of hypotheses about first causes which marked the Scottish Enlightenment meant that utility could now guide natural knowledge-making: chemical philosophizing could study “useful” ends. The idea, as Cullen informed his students, was to master practical techniques and gain theoretical understanding simultaneously, no easy feat, but vital, if chemistry were to become a modern science.\textsuperscript{61} His lectures on the five chemical principles, for example, discussed each principle in terms of associated chemical arts: the most important, salts, were exemplified through the manufacture of saltpeter and salt ammoniac; discussion of raw materials used in bleaching; the manufacture of sugar; and the use of lime in farming. As Jan Golinski has argued, doing so allowed him to project chemistry as a public science imbued with civic virtue. “By his efforts chemistry was constituted in a particular nexus of public spaces: lecture theaters, informal associations for civic improvement, the farms of aristocratic patrons, bleach fields and alkali factories.”\textsuperscript{62} And, one might add, the drawing rooms of the University professorate,

\textsuperscript{60} Quoted in A. L. Donovan, \textit{Philosophical Chemistry}, 98.
\textsuperscript{61} Ibid., 102. Donovan bases his discussion on the Cullen manuscripts held at the Glasgow University Library.
\textsuperscript{62} Jan Golinski, \textit{Science as Public Culture: Chemistry and Enlightenment in Britain, 1760-1820} (New York: Cambridge University Press, 1999), Chapter 2, at 37.
informal associations in their own right, where students landowners and literati freely mingled and broached improving concerns.63

The appropriation of chemistry as publicly useful knowledge allowed Kames to expand upon aspects of contemporary chemical doctrine like elective affinity in the second part of The Gentleman Farmer on “Theory of Agriculture”. Kames does not insist on the necessity of chemical knowledge, but an educated farmer, he hints, is a better farmer: “To be an expert farmer, it is not necessary that a gentleman be a profound cheymist. There are however certain chymical principles relative to agriculture, that no farmer of education ought to be ignorant of. Such as appear the most necessary shall be here stated, beginning with elective attraction and repulsion, which make a capital article in the science of agriculture as well as of chymistry”.64 Francis Home, Professor of Materia Medica at Edinburgh, and another of Kames’s correspondents, was more emphatic about the necessity for chemical know-how:

It [husbandry] does not like most arts lead to an account of itself; or depend on principles which its practice can teach. Something beyond this art is necessary to the knowledge of the art itself. The principles of all external arts must be deduced from mechanics or chemistry, or both together. Agriculture is in the last class; and though it depends very much on the power of machinery, yet I’ll venture to affirm, that it has a greater dependence on chymistry. Without a knowledge in the latter science, its principles can never be settled.65

63 Buchanan’s friend and classmate, James Edward Smith, future founder of the Linnean Society, heard all about the benefits of Norfolk husbandry from Lord Monboddo, at the home of Professor of Botany, Dr. John Hope. Lady Smith, ed., Memoir and Correspondence of the Late James Edward Smith, M. D., in Two Volumes (London: 1832), Volume I, 21-22 (letter from J. E. Smith to his father, James Smith, 2 November 1781).
64 Kames, Gentleman Farmer, 292.
And this, of course, meant that improvements in agriculture must needs depend upon those with the education and resources to follow the science underlying it, viz. the landed and the learned.

This art is, in general, carried out by those whose minds have never been improved by science, taught to make observations, or draw conclusions, in order to attain the truth; or by those who, although Nature has been very bountiful, cannot carry their schemes into execution, from the narrowness of their fortunes. The former can never know more than what they have learned from their fathers; the latter dare risk nothing, as their daily bread depends on the certainty of success. What can be expected from that class?66

Here, then, is a perfect illustration of the way the new idea of nature and the new social order were produced together in Scottish scientific thought. This thinking, however, soon turned into repressive political practice.

In an essay on the remaking of the idea of the earth’s fertility in Georgian Britain, Simon Schaffer has shown how Lord Kames transformed the meaning of the earth’s fertility from sacred bounty to a secularized and legally controlled good. Fertility as a quality of land was now the property of the owner rather than of godly origin, making food riots in times of scarcity a punishable offence rather than a legitimate response to blaspheming profiteers seeking to benefit from disturbances in nature’s economy.67 The tone Kames assumes is one of reasonable analysis as he examines the conflicting interests of landlord and tenant, suggesting restructured agrarian relations in the larger interests of agricultural (and national) improvement.

66 Ibid.
It falls here to be considered, whether the nature of the soil, good or bad, makes any difference upon the tenant’s share of the product. One thing is evident, that if he be not enabled to live by his farm, he must take himself to some other occupation; and to live with any degree of comfort, less he cannot have than L. 20 yearly, however mean the soil may be. On the other hand, he is entitled to no benefit from the fertility of the soil; because it adds neither to the expence of culture nor of living. Fertility is a quality of land; and a subject belongs to the proprietor with all its qualities. As fertility depends not on the tenant’s skill or industry, he is intitled to no benefit from it.

On the other hand, where a tenant, by superior skill or extreme diligence, raises on an acre a bushel more than usual, the profit ought to be his own: it is owing to himself, not to the fertility of the soil. Lastly, Suppose a lime-quarry, or a bed of shell-marl, to be discovered within a farm, or near it, it ought to be considered as an article for the landlord, in giving a new lease. The profit ought to be his, stating only an allowance to the tenant for the expence he lays out upon the manure. It is in effect adding to the fertility of the soil; which, for the reason above given, ought to benefit the landlord only.68

Kames’s ability to reinterpret soil fertility as subject to private ownership was underwritten by the knowledge purveyed in Edinburgh’s lecture halls. Even the future qualities of particular natural objects – a lime quarry or a bed of shell-marl – were to be considered resources owned by the landlord. The assumption was that vital knowledge such as the proportion of calcareous earth in lime and marle, or their conversion into quicklime for manure had to come from “above”; as did improved agricultural technologies such as the construction of more efficient ploughs.69 Any increase in productivity or saving in the expense of cultivation therefore belonged solely to the landlord.

69 Kames, Gentleman Farmer, Part I, 246-247, and Part II, 351-357, for theories and experiments regarding manures and their use. For Professor of Natural History, John Walker’s observations and experiments on shell marle, see “The history of Shell Marle”, in Essays on Natural History and Rural Economy (Edinburgh: University Press, 1808), 313-322 (published posthumously). Also see discussion in Sarah Wilmot, “The Business of Improvement”: Agriculture and Scientific Culture in Britain, c. 1700-1870, Historical Geography Research Series 24 (November 1990): 56.
Sarah Wilmot has argued that eighteenth-century improvements in agricultural productivity resulted from more efficient and extensive use of early seventeenth-century knowledge and practices rather than from advances in “scientific” agriculture. This makes the quotidian forms of dominance employed to embed and make real the “diffusionist model” (Schaffer’s term), of centralized expertise flowing out to lay consumers, only too understandable. William Marshall, improving landowner and propagandist for scientific agriculture, published his *Minutes of agriculture made on a farm of 300 acres of various soils, near Croydon, Surrey* in 1778. In it he frankly explained the need to domesticate laborers to the new husbandry through displays of superior knowledge and psychological manipulation, as in this example of a resisting ploughman:

*Minutes of Agriculture, 9-14 March, 1775* (Heading: Servants, Ploughing. Ploughmen.)

David [the ploughman] persuaded Thomas White (the Bustler) that he could not plough M. 2. with a small Cat’s-head plow, and White was fool enough to believe him, and sent him into another field. I ordered him back, and shameful work he made – His coulter stood within two inches and a half of the breast of the plough, and of course every handful of trumpery that accumulated choaked her and threw her out. His mould-board (put on under his directions) worked in the ground at least a foot behind the land-board. – This of course threw her out of land, and, in endeavouring to get her in again, this and the fin of the share threw her above ground.

I set the coulter as forward as the coulter-hole would admit – six or eight inches from the breast – and cut away the mould-board, under ground, to the same length as the land-board, leaving the upper part to turn the furrow; and never did plough go steadier nor make better work – and

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70 Wilmot, “The Business of Improvement”.
71 William Marshall, *Minutes of agriculture made on a farm of 300 acres of various soils, near Croydon, Surrey*. To which is added, a digest, wherein The Minutes are Systematized and Amplified; and elucidated by drawings of New Implements, a Farm-Yard, &c. The whole being published as a sketch of the actual business of a farm; as Hints to the Inexperienced Agriculturist; as a Check to the Present False Spirit of Farming; and as an overture to scientific agriculture (London: J. Dodsley, 1778).
perhaps with one third less draught. – I gave her to the plow-boy, not higher than the handles, and a better furrow could not be turned. The plowman’s behaviour must proceed either from ignorance or obstinacy. – If from the former, it is proof positive that few know how to set a plough; for he is esteemed the best ploughman in the country! If from obstinacy – but I believe it was from both – I took this method to cure it. – I remonstrated with him on the scandalousness of running away from a field which had been dunged for tares (vetches), and the season of sowing so far spent. He was piqued at the boy’s making better work than himself, and grew sulky. – I left him. – Coming into the Twenty Acres, the bull, broke-in yesterday, had likewise become restiff (he laid down, suffered himself to be dragged on the ground – they were obliged to turn him out of the team). – In the evening, gave a pitcher of ale, by way of christening, and ordered the bull to be called David. – Perhaps, this may get the fellow laughed out of his obstinacy. Remember to notice the effect.  

In the event the strategy worked perfectly (see entry 18, “Servants”, 16 March) demonstrating one form in which the model of gentlemanly knowledge was successfully deployed. The model was, according to Simon Schaffer, an important legacy of Enlightenment’s end. Its manifestations were several, but importantly, it affected the redefinition of agronomy in the eighteenth century as a *pattern science* for new notions of Nature. The meaning of the word agronomy changed by the mid-eighteenth century, from being a written account for purposes of rural administration to experimental-philosophical enquiry into the management of agricultural production. The new agronomy, in turn, provided the framework within which the late eighteenth-century scientific disciplines at Edinburgh formed themselves. Some of this has been shown in the discussion of the emergence of Chemistry at the Medical School, and more will be said below when I discuss the teaching of natural history at Edinburgh by the Rev. John Walker. What remains now is to give a broad idea of the map of knowledge that

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72 Ibid. (Emphases original.)
73 Schaffer, “Enlightenment Brought Down to Earth”, at 266. (Obituary for Roy Porter.)
74 Ibid., 260-261.
Buchanan and his peers acquired at Edinburgh, and which they used to orient themselves to the world around them.

The idea of the “mental map of knowledge” is Martin Rudwick’s, who uses it to explain how the sciences of the late Enlightenment were classified into different kinds of study, producing relationships between them quite different from modern ones. Classification originated in the three faculties of the mind, Memory, Reason and Imagination, which, as illustrated by Diderot’s famous “tree” in the *Encyclopédie*, generated three kinds of human knowledge, history, philosophy and poetry (this last encompassing all kinds of imaginative productions). One way to understand how this classification worked is to examine, as Rudwick does, the distinction between “literary” and “philosophical” sciences, the first concerned, roughly speaking, with the study of words and texts of all kinds and the artifacts related to them; and the second with natural objects and physical phenomena of all kinds. *Natural history* dealt with description and classification of natural phenomena and was studied by “naturalists”; *natural philosophy* concerned the causal relations between natural phenomena and was studied by “natural philosophers”. The dichotomy was not sharp, the same men often engaging in both forms of inquiry.⁷⁵

Agronomy organized the relationship between the sciences differently. To begin with, it straddled both literary and philosophical knowledge. Managing agricultural production involved studying property relations, so a consideration of textual evidence (including oral traditions), genealogies, origin myths and so on, fell quite properly within

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its ambit. Eighteenth-century Scots constructed elaborate genealogies to prove property claims (Buchanan did so himself to lay claim to his mother’s property). The best examples are, however, the land tenure accounts and district and village traditions collected as part of revenue settlement surveys in British India.\(^\text{76}\) Second, describing agronomy’s objects, for example the composition and efficacy of manures or the nutrition of plants, required an understanding of chemical causation.\(^\text{77}\) Third, the reasons for the fluid boundaries of eighteenth-century disciplines – the subject matter of “chemistry”, “natural history” and “botany” overlapped – is explained once we understand their relationship to agronomy as the pattern science. This manifested itself pedagogically in the way John Walker taught natural history; and institutionally, in the wrangle over the creation of a chair of agriculture by an alumnus, Sir William Pulteney, in 1790. The prospect of the emergence of agriculture as a discipline poached on several preserves at Edinburgh University, notably natural history and botany; and led Walker, who for years had taught georgics as a part of natural history, to protest his right to continue doing so to the University Senate.\(^\text{78}\)

\(^{76}\) Correspondence regarding Buchanan’s genealogy, GD 161/17/1, National Archives of Scotland, Edinburgh (hereafter NAS). For an overview of such accounts for Malabar compiled at the time of Buchanan’s journey, see “Report By the Bombay Commission of Malabar to the Madras Board of Revenue”, Mackenzie General Collection, Volume 50, APAC/BL. Also see Nicholas B. Dirks, Castes of Mind: Colonialism and the Making of Modern India (Princeton and Oxford: Princeton University Press, 2001), 86-87.

\(^{77}\) Matthew D. Eddy, Language of Mineralogy, Chapter 3, 84-112, for the way in which John Walker connected georgics to chemistry and mineralogy.

In practical terms this meant that medical students like Buchanan, while taking the classes necessary to obtain their MDs, were exposed to forms of knowledge and styles of knowledge-making that exceeded the requirements of an average early-modern medical practitioner. Unlike Oxford or Cambridge, Edinburgh was noncollegiate, nonecclesiastical and professorial. The University had four Faculties – of Medicine, Law, Theology and Arts – to which appointments were made by the Edinburgh Town Council, and in certain cases, by the Crown. Professors were paid very little or sometimes nothing at all by the university, so they were dependent for their emoluments on the class-fee system (the standard fee was three guineas). What a professor earned depended on the number of students in his class, and as class sizes were a major issue, Edinburgh’s faculty grew adept at addressing a wide constituency of interests. Auditors were the largest group among the students.\(^79\) A number of auditors of an improving bent took botany, chemistry or natural history classes: James Anderson, editor of the improving journal, The Bee, inherited the family farm at the early age of fifteen, and though his guardian thought a university education unnecessary for a future farmer, insisted on auditing William Cullen’s lectures in chemistry at Edinburgh.\(^80\) A quick look

\(^79\) According to Lisa Rosner, thirty-eight per cent of the 120 men practicing in Scotland without MD degrees in 1779 had been auditors at Edinburgh University. See Medical Education in the Age of Improvement (Edinburgh: Edinburgh University Press, 1991), 108.

\(^80\) Jessie M. Sweet, “Instructions to Collectors: John Walker (1973 [sic]) and Robert Jameson (1817); with biographical notes on James Anderson (L.L.D.) and James Anderson (M.D.)”, Annals of Science 29:4 (1972): 397-414, 407. Just as Anderson attended Cullen’s chemistry lectures in order to fashion himself into the sort of “philosophical” farmer that the new agrarian order demanded, a group of “India men” – young Scots who would carve distinguished Indian careers for themselves – also took classes at Edinburgh in order to improve their future prospects. Interestingly, they included important Orientalists like Sir James Mackintosh (1765-1832), the founder of the Literary Society of Bombay, who attended a variety of classes, while a medical student; and William Erskine (1773-1852) and John Leyden (1775-1811) who tacked back and forth between the humanities and medicine. They all had Dugald Stewart for a tutor, and were probably exposed to Stewart’s thoughts on conjectural history, which, along with the utilitarian ideas in vogue in the Medical School, helped them fashion a critique of the “high” Orientalism of Sir William Jones with its focus on Brahmanical culture. These Scottish Orientalists were sensitive to the languages and
at the course attendance lists for John Walker’s Natural History classes, shows, along
with the expected number of medical students, law students, philosophy students and
theology students, a sprinkling of Writers to the Signet, and others simply described as
“Esquire”, “Preacher” or “Farmer” – proof that some at least of Edinburgh’s aspirants to
gentility had decided that Natural History was indeed necessary to “form accomplished
Gentlemen”. 81

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There is a novelty, a cutting-edge feel, to the teaching of natural history at
Edinburgh, captured in John Walker’s opening remarks to his students:

I cannot proceed without a good deal of diffidence when I reflect upon the
difficulties that occur and the disadvantages I labor under. I am to teach a
science I never was taught. In the other sciences we are here regularly
instructed, the Lectures of Professors we can obtain and follow. But in
Natural History we have not here this advantage, for it never has been
taught in this University…

A complete system of natural history does not exist anywhere, it is not to
be collected from books, there are many blanks to be filled up, as many
objects of it are still buried in obscurity and there are many new parts of
such a system which have never been enquired into, or but little cultivated.
For these difficulties naturally follow from its having been prosecuted in
detached parts which have never been altogether collected into a regular
science…

81 See Matthew D. Eddy, “The University of Edinburgh Natural History Course Attendance Lists, 1782-
The term natural history is commonly used so indefinitely that I believe, it must be difficult to know what must be taught in any treatise on the subject.82

Walker knew he had to make up the discipline as he went bearing in mind the interests at stake in the enterprise, particularly his own. Teaching the natural history course at Edinburgh was a fraught endeavor because of the controversy that had surrounded his appointment to the post of Professor of Natural History. The Regius Chair of Natural History at Edinburgh had been established in 1767, and had been held as a sinecure by a physician named Robert Ramsay until his death in 1778. The fight over his vacant chair developed into one of considerable complexity and political significance, the end result of which was the founding of the Royal Society of Edinburgh.83 The chair was hotly contested by Walker and William Smellie, the son of an Edinburgh architect, better known as the editor of the first edition of the Encyclopaedia Britannica. Both men knew that their future as Edinburgh savants depended upon finding a formal niche at the University. Both also had support from different factions of the “landlord-literati alliance”, so addressing the concerns of patrons in the lecture hall had to be at the top of the teaching agenda of the chair’s incumbent. In the event Walker won the coveted chair; but matters did not end there, and the rest of his career at Edinburgh University was to be

82 John Walker, “Lectures on Natural History”, Dc. 217-21 (5 volumes), Centre for Research Collections, Edinburgh University Library (hereafter CRC/EUL), Volume 1, ff. 1-4. There are several manuscript versions of Walker’s natural history lecture notes at the CRC/EUL. They were probably originally composed between 1779-1781, when Walker first began to teach the course (Buchanan attended the course in 1783.) I have chosen the Dc. 217-21 volumes because they are carefully transcribed and easy to read. I have also consulted the published version of Dc. 10-33, in Harold W. Scott, ed. Lectures on Geology by John Walker (Chicago & London: The University of Chicago Press, 1966). For example, the quotation above can be found in Scott, “Introduction”, 1-2.
a struggle to establish his rights to an emerging piece of cultural property, the discipline of natural history.\textsuperscript{84}

The first key to Walker's teaching strategy lies in his pronouncement that a complete system of natural history does not exist anywhere, and that it cannot be collected from books. This might at first glance appear disingenuous. Natural history had never been formally taught at Edinburgh but it certainly had been a major part of medical teaching in Europe between the mid-fifteenth and mid-seventeenth centuries.\textsuperscript{85} The reason for Walker's insistence that he was engaged in a de novo undertaking can be found in the definition of natural history with which he began his first lecture:

Natural History is the arrangement, description and history of the works of Creation in the terraqueous globe ~ The history of the heavens is the subject of (word unclear) Science, that of Astronomy ~ Physics formerly called physiology and now Natural philosophy, is the knowledge of the properties of phenomena of nature; of the powers of matter and motion and their cause and effects ~ Natural History having for its object the sublunary works of Creation, to avoid being bewildered among such variety, it is necessary to proceed with all the precision we are able, and first to mark all the different Branches of the Science ~ It consists of the six following parts viz. 1. Meteorology 2. Hydragraphy (sic). 3. Geology, containing the natural history of the Globe in general, as mark'd by Hypocrates --- 4\textsuperscript{th} Mineralogy – 5\textsuperscript{th} Botany – 6\textsuperscript{th} Zoology: containing the fossil, vegetable and animal kingdoms ~ These comprehend the whole of Natural History: and they are comprehended in it ~ In the three first of these consists the natural history of the terraqueous globe in general: i.e. of the atmosphere – of the waters and of the earth ~ This triple division was antiently marked by Aristotle his book de Aere, aquis et locis ~ the three last comprehend the numerous

\textsuperscript{84} Ibid., 15.
\textsuperscript{85} Paula Findlen, “Courting Nature”, in Cultures of Natural History, edited by N. Jardine, J. A. Secord and E. C. Spary (Cambridge, UK: Cambridge University Press, 1996), 57-74. Findlen refers to Giuseppe Gabrieli (1494-1553), as “the first professor of natural history at the University of Ferrara”, holding the chair in “medicinal simples”, as natural history was then called. Luca Ghini (c. 1490-1556) was lured away from Bologna by Cosimo I de’ Medici, “to accept the first chair at the University of Pisa” (58-59). More details may be found in Paula Findlen, Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy (Berkeley: University of California Press, 1996). Walker knew of these developments and mentioned them in his lectures. Scott, "Introduction", 46.
individuals that compose the three kingdoms of Nature: Viz. – the fossil, vegetable and animal kingdoms. To give a more exact idea, I shall take a nearer view of the six branches, and draw the outlines of each, and point out more particularly the subject of our intentions —

Consider the six branches into which Walker divides his natural history: eighteenth-century conventions usually distributed natural objects – plants, animals, minerals – within a grid that made up the three kingdoms of nature, the Imperium Naturae; Walker, by contrast, begins with the familiar Hippocratean divisions, airs, waters and places. Why? The first explanation that comes to mind (following Hippocratean logic) is that for Walker the composition of natural objects was influenced by the “environment” in which they were formed, i.e., the natural history of the “terraqueous globe” had a vital role to play in the formation of the natures of the animals, plants and minerals which populated the globe. This is borne out by the closing passages of his geology lectures where he hints at the differences which arise from situation: air impregnated with the odors of certain flowers and fruits was highly phlogisticated, and therefore noxious to humans; rich soil was as often as not accompanied by unhealthy air, as in the southern shires of England; and the chemical composition of strata affected the atmosphere, primary mountains and soil being the most salubrious.

The importance of chemistry to the development of natural history at Edinburgh and the emphasis on the chemical composition of natural objects cannot be over-stated. Chemical investigations were a key aspect of Edinburgh’s Enlightenment culture. Chemistry’s pervasive influence in the medical school extended outwards to organize the

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86 Walker, Lectures, De. 2-17, ff. 21-25.
87 Ibid., De. 2-18 (Scott version, 212-213.)
public culture of the city, spilling forth from its laboratories into quarries, industrial spaces like bleaching fields, and the field excursions of naturalists. William Cullen, Walker’s teacher, famously observed that “[n]atural history is what acquaints with the native place”; significantly, the sentence was part of a passage that stressed the importance of a knowledge of the chemical composition of objects to a “useful” study of nature.

Natural History is what acquaints with the native place[,] & the Sev\(^1\) appearances of all the Subjects of Art or Commerce[,] it must appear to deserve particular attention & that it is Chemistry that teaches the various manufacture of these for the purposes of Life[,] Both together may be considered as important to Society [.]. They are necessarily connected together[.]. The chemist will often blunder if He cannot distinguish Natural Productions & at the same time The Naturalist will not be able properly to distinguish the Sev\(^1\) Similar productions of Nature without the Assistance of Chemical Exp\(^8\) [.].\(^8\)

Cullen’s pronouncement is an expression of the renewed interest in the work of Francis Bacon that marked Edinburgh pedagogy at the end of the eighteenth century, and the Scottish revival of Bacon’s “chaste and severe course of inquiry” that would provide the raw materials for a reformed natural history. Walker’s insistence that a complete system of natural history cannot be found in books can be read as a commitment to the Baconian agenda, and as the intellectual expression of the alliance between improving landowners and literati that had brought him the Chair of Natural history.

The aim of a reformed natural history according to Bacon was not to provide deracinated objects to wonder at, or an endless series of natural instances – an empiricism of particulars – but “a form of induction that shall analyse experience and take it to

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\(^{88}\) William Cullen, “Fragments of a Lecture by Cullen Concluding and Summarizing the First Part of the Course; Natural History and Its Productions”, Glasgow University Library, MS Cullen 258, ff. 2-3, quoted in Matthew D. Eddy, *The Language of Mineralogy*, 94.
pieces, and by a due process of exclusion and rejection lead to an inevitable conclusion.\textsuperscript{89} The making of natural knowledge, then, was a two-part process, each part acting to discipline and correct the other, so that sense experience could indeed be taken to pieces:

I mean it [natural history] to be a history not only of nature free and at large (when she is left to her own course and does her work her own way), -- such as that of the heavenly bodies, meteors, earth and sea, minerals, plants and animals, -- but much more of nature under constraint and vexed; that is to say, when by art and the hand of man she is forced out of her natural state, and squeezed and moulded. Therefore I set down at length all experiments of the mechanical arts, of the operative part of the liberal arts, of the many crafts which have not yet grown into arts properly so called, so far as I have been able to examine them and as they conduce to the end in view. Nay (to say the plain truth) I do in fact (low and vulgar as men may think it) count upon this part both for helps and safeguards than upon the other; seeing that the nature of things betrays itself more readily under the vexations of art than in its natural freedom.\textsuperscript{90}

Both Walker and Cullen perfectly understood Bacon’s insistence that nature was double-sided, exhibiting one view to those who studied its ordinary course, and another to those who altered and wrought it. That the second view (“low and vulgar as men may think it”) was essential, since it brought such hidden parts to light as could ameliorate man’s estate, each also stressed to students, emphasizing the chemical manipulation of natural objects. Cullen’s dictum (“[t]he Naturalist will not be able properly to distinguish the Sev\textsuperscript{1} Similar productions of Nature without the Assistance of Chemical Exp\textsuperscript{15}”) with its improving connotations was reiterated in the place Walker gave to georgics in his


\textsuperscript{90} Bacon, \textit{The Great Instauration}, 29.
lectures, and therefore to the joint importance of “airs, waters, places” and the original “passions” of matter in his natural history:

Of Georgics the first and most important branch is Agriculture which tho’ only an art in its practice may be justly considered a science in its Theory and principles and is intimately connected with the philosophical history of plants. Of this however we cannot propose to treat in its full extent, but only so far as it depends on the principles of vegetation. In this view we shall consider the nutritious matter of vegetables and what is called the Pabulum of plants. We shall treat of the nature of soils in general and of those in Scotland in particular, with their particular properties, names and distinguishing marks, and the particular plants each of them is fitted to rear. Of the operation of Natural and Artificial manures especially of Quicklime. Of the effects of tillage…

As attention to georgics necessitated a careful inspection of the nature of soils and plants in Scotland, Walker’s mineralogy (and botany) was closely concerned with place. This appeared, for example, in the way he constructed a mineral’s character naturalis – its natural (external) as distinguished from its chemical (internal) character – through situs, substantia, consistentia, figura, structura, partes, qualities and aer.” And again in the observational criteria that he laid down for his mineralogical fieldwork: “1. The Qualities, local Uses and indigenous Names. 2. The most common Productions generally neglected. 7. To mark the Circumstances of their native Situation. 8. Whether the Fossile is in the Place where it has been generated.” The ninth point hinted at the need for the chemical manipulation of rocks on site: “Proportion of Metals in the Ore – Size of Disposition of the Veins – Manner of working the Mines and smelting the Ores.”

Studying natural objects in situ through travel (in several senses) was thus the second key to Walker’s teaching strategy. Three related ideas, of place, locality and

91 Scott (Walker), Lectures on Geology, 31.
92 Quoted in Eddy, The Language of Mineralogy, 175.
93 Ibid., 105-106.
travel, in Walker’s lectures and essays, taken together, show how the epistemic commitment to Baconian induction converged with a distinctive clerical approach to the study of nature. That approach worked to reiterate the proprietal dimensions of natural objects within a framework of colonizing improvement.

The tradition of parson-naturalists as significant contributors to the study of locality in British national culture has been studied by Vladimir Jankovic.⁹⁴ According to Jankovic, the activities of eighteenth-century parsons such as Walker were a continuation of the practices of late-Stuart chorographers, men like Robert Plot and John Aubrey, who represented the “chorographic apotheosis of personal, first-hand inspection of evidence”. He argues that knowledge of the spatial and social physiognomies of regions through personal traverse and perambulation (surveying), when joined to other activities such as the creation of genealogies and descriptions of natural and architectural attractions, helped parson-naturalists underwrite the economic ambitions of eighteenth-century landed gentry.

A couple of points made by Jankovic are particularly important for my reading of Walker’s lectures: First, he notes that from the mid-seventeenth century, the concept of county chorography became more focused on natural rather than human history. In combination with the introduction of inductive methods, “[r]egional natural histories reflected the fact that both chorography and the Baconian program of natural history

investigated non-textual materials.” Second, giving an example of what he terms “antiquarian meteorology” -- two symmetrical lightning strikes of stone ornaments in Statford – he says:

By definition these gave as much, if not more, value to the place of natural events and its, as it were, proprietal implications than to the event itself and its philosophical analysis. For instance, such emphasis informed the eighteenth-century rural manuscript maps in which rustic draughtsmen reinforced proprietal claims with a kind of attention to detail that entailed the representation of, for instance, landmark trees cleft by lightning, stones with facial features, and other landmarks with individual traits.

Nothing exemplifies Jankovic’s first point better than an account of an Ash tree (Fraxinus Excelsior Lin.) in Walker’s essay, “A catalogue of some of the most considerable trees in Scotland”. The ash in question, an ancient and remarkable tree, was near the house of Bonhill in Dumbartonshire, the property of a Colonel Smollett. “Being a sort of family tree of the Smollets”, says Walker, and hence identified with it, every effort had been made to preserve it, including the building of an earthen bank around it. Details given of the tree include careful measurements of the sort that became increasingly familiar with the Statistical Account, and an account of a room scooped out inside it, floored, and furnished with a hexagonal bench, which could seat eighteen.

The idea of marking the land (creating landmarks) to signal appropriation or ownership, when joined to the idea of the traverse, passing one’s body over the land in order to identify it and identify with it, was, arguably, what set off patriotic travel from

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95 Jankovic, Reading the Skies, 81.
96 Ibid., 84-86. For the full significance of what Jankovic calls the “meteoric tradition” to Stuart chorography, see Chapter 4.
picturesque travel or the travels of the *curiosus*. In the latter two instances describing the land was not equated with the *national* good; they were, rather, aspects of personal cultivation. The promotion of national felicity required that the sort of “Verulamian particulars” Walker endorsed be *local* in nature:

In Natural History nothing elucidates so much as a demonstration of the several species, nothing tends so much to illustrate as a view of the bodies themselves. In this science more knowledge may be obtained by the eye than can be convey’d by the ear. I shall endeavour therefore always to exhibit specimens of the objects described tho to do this properly would require a public and extensive Museum. I must therefore content myself with having recourse to my own little private collection which tho considerable enough for my opportunities, yet is altogether inadequate for such a purpose.

We shall particularly always have an eye to the natural History of our own country that we may avoid the imputation of being Lynxes abroad and Moles at home. Our first step ought to be a thorough knowledge of the productions of the land we live on. Exotic rarities excite more surprise and perhaps better gratify curiosity, but our own country will always afford a more instant fund of entertainment and be of more or less advantage to the public.

In turning students’ thoughts to the natural history of their own country, “that [they] may avoid the imputation of being Lynxes abroad and Moles at home”, Walker was quoting a distinguished colleague.

In a famous oration of 1741, Linnaeus had urged the necessity for physicians everywhere “to travel in one’s own country”. The ostensible aim of the essay,

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100 Benjamin Stillingfleet, tr., “An ORATION concerning the necessity of travelling in one’s own countrey, made by Dr. LINNAEUS at Upsal, Oct. 17, anno 1741, when he was admitted to the royal and ordinary profession of physic.” *Amaenitates Academicae*, vol. ii, in Carl Linnaeus, *Miscellaneous Tracts relating to Natural History Husbandry and Physick*. To which is added the CALENDAR of FLORA, by Benj. Stillingfleet, the Third Edition (London: Printed for J. Dodsley, in Pall-Mall, MDCLXXV), reprint edition (Arno Press: New York, 1977), 3-35. Walker is quoting from p. 31 of Stillingfleet’s translation, of
delivered to mark his appointment as professor of medicine at Uppsala, was to endorse
the Hippocratean emphasis on experience in the training of young physicians: knowledge
of foods, dietetics, medicinal plants and the folk wisdom of country people all over
Sweden, could not but enhance the skills a young medic acquired at university. If the
essay found a place in Walker’s lectures, however, it was because it also served up a
trenchant critique of picturesque travel, and highlighted the emerging importance of
medical men as surveyors of the wealth of a nation.101 The barely disguised impatience
with which Linnaeus exhorted Swedish medics to place their training at the service of the
state was obviously not lost on Walker, who had done his share of traveling in Scotland
for similar reasons.

Walker’s initial labors in generating “useful knowledge” through patriotic travel
had been carried out in the service of the Commissioners of the Annexed Estates, the
body that oversaw the forfeiture of the estates of rebel landowners in the Highlands and
Islands who had taken part in the 1745 uprising, to the British Crown. While the majority
of such estates were sold to repay debts, the thirteen annexed to the Crown had their
profits set aside for the purpose of “civilizing” their inhabitants, and “promoting amongst
them the Protestant religion, good government, Industry and Manufactures, and the
principles of Duty and Loyalty to his Majesty, his Heirs and Successors, and to no other
use or Purpose whatsoever”.102 Walker, possibly at the instigation of Lord Kames,
proposed to the Commissioners that he make a tour of the Highlands to report on their

101 For Linnaean strictures on traveling abroad in search of picturesque diversion, see ibid., 12-14.
102 Quotation from the proceedings of the Commissioners’ meeting, “Introduction”, in The Rev. Dr. John
Walker’s Report on the Hebrides of 1764 and 1771, edited by Margaret M. McKay (Edinburgh: John
Donald Publishers Ltd.), 6.
condition, and was given a set of instructions drafted by Kames (very similar to the brief handed Buchanan by Wellesley), “to examine the natural histories of these countries, their population and state of their agriculture, manufactures and fisheries.”

The report that he submitted to the Commissioners in 1771 clearly displays the facility that Church of Scotland ministers trained at the “Enlightened” universities in Scotland had acquired, in making the sort of inquiries that turned them into the principal informants for the *Statistical Account*. It reveals the different levels at which a cleric like Walker could apply his knowledge, and the level of generalization to which he could raise skills acquired in the course of making the intensive local-parochial knowledge, whose ideological value to a developing capitalist class has been highlighted by Jankovic. Most importantly, it records a conceptual tension that Walker resolved in his university lectures by making georgics a part of natural history. And it explains why, for Walker, the history of the terraqueous globe was a vital component of natural history.

In a letter to the Commissioners of the Board of Annexed estates, a preface to his report, Walker explains the approach he adopted in digesting his findings for them:

> Many curious Discoveries in natural History occurred in the Course of this Journey. But here I judged it more proper to confine myself to a general Description of the Countries; of their Soil and Climate, and of the Customs and Manners of the People. To mark everywhere the Prices of Labour and of Commodities: the Nature and Extent of the Imports and Exports: and the Causes of Population and Depopulation. To describe the present State of Agriculture; Manufacture and Fishery, and to point out the most obvious Methods for the Advancement of these Usefull Arts. Natural History however could not be wholly omitted as it affords such frequent

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103 Ibid., 6.
104 Walker, like the more famous Gilbert White, did pursue the traditional natural historical avocations of a country parson, sometimes to the neglect of his pastoral duties, as evinced by a disapproving parishioner’s comment that “he spent the week hunting butterflies and made the cure of the souls of his parishioners a bye-job on Sunday.” Quoted in McKay, “Introduction”, *The Rev. Dr. John Walker.*, 3.
and favourable Opportunities, of turning the Truths of Science to the Purposes of Life. 

As The Report on the Hebrides, was written to persuade the Commissioners of the advantages of transforming the Highlands and Islands into an internal colony, it obviously brought Walker the realization that a narration of facts undertaken to realize “Patriotic Designs” had to create the basis for a study of natural objects that explained their truths for the “Purposes of Life”. An account of a mineralogical or botanical object, for example, had to include its agricultural or pharmaceutical use, its “useful” natural history. The criteria Walker developed to classify minerals exemplifies this, as discussed below. Similarly, the customs and manners of a people had to be amenable to enumeration or some other form of representation that lent itself to the drawing of useful conclusions for political economy – for example the causes of population and depopulation. This was one way to interpret the Baconian injunction to give full play to the “power of just induction” in the service of the useful arts. Walker put it thus in his account of Jura: “There is a particular product for every Country, which its Soil and Climate, and the Situation with Respect to a Market point out. This, however, is frequently overlooked or neglected by the Inhabitants, and another Product adopted than what nature dictates.”

The development of political arithmetic in Britain – the significance of counting births and deaths – and Walker’s use of it, has been explained in Chapter I. I conclude

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105 John Walker, letter to His Majesties Commissioners at the Board of Annexed Estates (accompanying his report), in MacKay, The Rev. Dr. John Walker., 33.
106 Ibid., 117. Walker is referring to the fact that the inhabitants of Jura raised black cattle, when the “ecologically” appropriate product for the island would have been sheep. Notice the use of the word “product” to represent a natural object, rhetorically signaling how colonization of the Hebrides by improving Lowlanders could benefit the Scottish economy.
this section with a discussion of Walker’s geology in order to show how his natural
history and the emerging social order in Scotland, in science studies parlance, were “co-
constitutive”. The discussion is focused on Walker’s construction of the strata making
up the earth’s crust, but it travels in unexpected directions: his interest in the tertiary or
accidental strata (he uses the terms interchangeably), for example, was connected to his
theory for internally colonizing the Highlands, as well as, more obviously, to his mineral
classification system.

Walker divided his strata, as was usual at the time, into primary, secondary and
tertiary, their chemical ontology being derived from the Primary and Secondary Earths
used to create his mineral classes. The theoretical underpinnings of the system came
from the work of three Swedish chemical cosmogonists, Torbern Olof Bergman, Johann
Gottschalk Wallerius and Axel von Cronstedt. The Swedes forged a connection between
mineralogy and geology through their chemical cosmogony, which posited the deposition
of the rocks of the earth’s crust from the waters of a primal ocean, a thick mixture of
minerals and water. The theory received analogical support from laboratory reactions.
The work of the Swedes had acquired purchase within Edinburgh’s medical faculty, so

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107 On co-constitution see Chapter I.
109 The three Swedes were part of what has come to be known as the Becher-Stahl tradition of chemical
mineralogy and cosmogony. Its subsequent development through the work of Abraham Gottlob Werner
and his followers, known as the Wernerian “radiation”, has been discussed by Rachel Laudan, From
Mineralogy to Geology: The Foundations of a Science, 1650-1830 (Chicago and London: University of
Chicago Press, 1987), Chapters 3 and 5. The catalogue of Walker’s library shows that he owned, among
others, the following works by members of the tradition: Wallerius’s Systema Mineralogica (1768);
Bergmann, Essays, 2 volumes (London, 1784); Bergmann of elective attraction (London, 1785); Wallerius
mineralogy, 8 vols. (1753); Bertrand, dictionnaire des fossiles, 8 vols. (Hague, 1763); Secondat, Sur les eaux
minerals (Paris, 1750); De Lisle, de Mineraux (Paris, 1773); Walker, A Catalogue of the Books in Natural
History, 1-19.
much so that Matthew Eddy has persuasively argued that it was the Medical School’s chemical mineralogy that laid the conceptual foundation for geology in Edinburgh.\textsuperscript{110}

Eddy demonstrates hitherto unsuspected connections between medical teaching at Edinburgh, the development of Scottish mineralogical terminology, and the emergence of geology. Clinical practices at Edinburgh were based on the belief that the materials composing the human body were substantially similar to the matter composing the globe. These similarities made it possible to understand, say bladder stones or calculi, in terms of the chemical mineralogy developed by Edinburgh’s chemical savants.

Pharmacological treatments for bladder stones drew on the chemical experiments carried out on stones found in nature, such that the vocabulary used to describe minerals and the human body became the same. Walker indeed had hinted at the possibility of such a connection in the section of his lectures on *Imperium Naturae*, when he observed that minerals sometimes approached the appearance of organized matter.\textsuperscript{111} With the unified linguistic context came another medical practice: physicians and medical students undertook fieldwork in different parts of Scotland to locate the ingredients for menstruums that could dissolve stones, particularly limestone deposits that contained Calcareous Earth. Eddy makes the fascinating point that Scotland’s geological terrain thus became configured in relation to minerals used to prepare saline and terrene solutions in medical laboratories. The result? “Experiments carried out on the various types of Calcareous minerals collected in the field would go on to influence how the Scots viewed the chemical composition of geological formations. A good example of


\textsuperscript{111} Walker, *Lectures on Geology*, 215.
this knowledge transfer is evinced in Black’s chemistry lectures where he uses the results from *calculi* experimentation to explain the composition of limestone strata.”

Another of Eddy’s examples is even more suggestive of the conceptual origins of Scottish geology in medicine. This one pertains to the transfer of the vocabulary associated with *calculi* experimentation to geology via Joseph Black’s explanation of the formation of limestone. Black averred that Calcareous Earth, which originated from compressed shells, was concreted by *gluten*, a medical term for the results of putrefaction experiments carried out on animal or vegetable matter, to form limestone. Two decades later John Walker would use gluten and congluten to describe the cemented matter that held the rocks of the *primary* strata together, strata which were not known to contain any extraneous fossil remains. This is highly significant for two reasons: one, before Walker’s natural history lectures, no *savant* had discussed geology as a separate topic of study in the Medical School; and two, Edinburgh’s medical professionals were obviously transferring terms from chemical mineralogy into geology. Gluten apart, Walker also used “concretions”, “petrefactions”, “congellations” and “incrustations” to describe the chemical composition of rock strata. Walker’s colleague, the botanist, John Hope, reflecting on the power of animal fluids to produce organic structures, reminded himself in a note “to Peruse a paper on the power of animal fluids to produce organic structures – it is from the fluid state, salt, metals, stones assume their regular figures – a short account of the lower class of animals – there is no word in our language for vegetable life”

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113 Ibid., 90-91.
114 John Hope, Remarks on lectures, *Papers of Dr. John Hope*, GD 253/144/14/8, National Archives of Scotland, Edinburgh (hereafter NAS). Does this remark of Hope’s indicate the beginning of the end of the Great Chain?
Edinburgh medics’ propensity to make natural knowledge in useful contexts, especially improving contexts, is perhaps clearest in Walker’s mineralogical classification, as well as in his discussion of tertiary strata in his geology lectures. The pressure to satisfy the demands of patrons like Kames and the prospective young improvers who attended his natural history lectures was built into his system of mineral classification.

Walker begins Lecture 27 (Classes Fosilium) with brief remarks on methodology: All fossils can be arranged according to two methods, the first strictly chemical, the second based on their natural character drawn from external appearance. A third method, the mixed method, partly composed of both, is the one he chooses to adopt, which “receiv[es] no chemical characters but those which are absolutely necessary: The others will be drawn from the natural appearance of the fossil.” Students are referred to Walker’s Schediasma Fosilium (partly reproduced below), where fossils are divided into eighteen classes, under three broad rubrics, Earth, Stones, Minerals. Walker then establishes the significance of his choice of method:

It has been usual for Mineralogical Classifiers to distinguish Earths from Stones; but this is allowed to drop into a method connected with Chemistry: and it is pass’d over by Cronstadt, whose arrangement is allowed by all to be the best chemical one that is extant: But as the system that we would wish to establish and adopt is not to be confined to Chemists, I have adhered to the old division and preserved the distribution into Earths, Stones, Minerals[..]¹¹⁵

The first class under Ordo Terrae, also Terrae, i. e., different types of soils, could in a strictly classificatory sense be considered redundant, since (as Matthew Eddy also notes) it was a smaller version of other chemical categories used elsewhere in Walker’s

¹¹⁵ John Walker, Lectures, Volume 3, Dc. 2.19, f. 5 (emphasis added).
system. It was crucial that the natural appearance of soils have attention drawn to them, however, since mineralogical writers had ignored them, as soils did not make an interesting display in cabinets of curiosity. In addition, they were difficult to procure, “and on that account their history is imperfect.” Obviously, the appearance and history of soils was of considerable importance to auditors who were not chemists, and for whom the exact chemical composition of soils was less important than an ability to identify them on sight.

A second set of lecture notes examined by Eddy, shows that Walker was deeply sensible of the natural historical interests of his unnamed constituency: “This is the Class which can have no Place in a Chymical Method: but it is necessary to retain the Earths in a separate Class for the Purposes of Natural History.” Eddy’s interpretive gloss of the statement appears entirely accurate: the “Purposes of Natural History” referred to was undoubtedly georgics; and his speculation, based on the existence of three different sets of lecture notes on Class I alone, that aspiring farmers probably audited the first part of Walker’s lectures without staying on for the rest of the course, entirely plausible. This would also explain the great pains Walker took to present his students with examples of particular soils, places in Scotland where they could be found, and the uses to which they were put.

117 Ibid., 137-138, n. 57.
118 “Ordo I. Figulino – Figuline Earths Is the common name applied because they have been used by Potters for their Pottery in all ages. – Genus Ist Argilla Clay Is the first genus and comprehends all the common sorts of Clay. The principal and indeed its leading characters (in which it differs from others) is this, that it hardens in the fire ~ It is likewise viscid and ductile in water ~ Pott found it an Earth when pure perfectly apyrous, but by mixing other Earths with it, is easily altered ~ Here is a specimen, which is the Argilla (Leneargilla of Linnaeus); it is perfectly white and is used in Liverpool for making China ~ When it is mixed with crystalline Earth, it vitrifies with a strong fire when raised to a violent degree: with smaller
Walker’s discussion of the Accidental (Tertiary) Strata, accordingly, comprises the largest part of his geology lectures, for the reason that their mineralogy was implicated in the formation of the world’s most fertile soils. From lower Egypt, Holland, the fenny parts of England, and the Scottish “cars countries” (low portions of valleys including floodplains), Accidental Strata always produced the most perfect soil. His intense “patriotic” interest in the “factitious strata of the globe”, of peat and marle, but especially of peat, led to careful analysis of the formation of these strata and experiments to determine their possible origins.

One meaning of the word “factitious” as used in Walker’s time meant soils produced by special causes, which were not part the original crust of the earth. “Stipple”, for instance, mould or vegetable soil, was the product of man’s art, created over time. It had only three essential ingredients, clay, sand and vegetable and animal matters: “No other articles are necessary for the formation of a perfect soil. You know likewise it varies exceedingly in different parts in respect to Colour, being sometimes brown, sometimes, grey, red, yellowish but in general it approaches to blackness, and the blacker it is usually always the richer.” Understanding the origins of stipple – in dunging (the infield was always darker in color on any farm), its density based on the nature of the subsoil – was the way to reproduce it. The same was the case with marle, though inquiry

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119 Walker, Lectures on Geology, 183.
120 Ibid., 189-190.
into its natural history dispelled vulgar notions of its creation. Marles were always found in mossy or boggy ground, and often full of small shells, from which circumstance it received its name – shell marle – and raised the possibility that it originated from the shells of snails. Walker was able to show through a mixture of observation and reasoning (a fine example of the inductive method he taught students, and reproduced below) that such was not the case.\footnote{Walker, “The History of Shell Marle”, Essays, 320-321.}
EXPERIMENT

When marle is long calcined, it grows black, but the shells that are in it, though likewise calcined, continue white.

Cor. This shows that he marle, and the substance of these shells, are of a very different nature.

OBSERVATIONS

Limestone, marble, chalk, and some earthy minerals, are all alkaline, and frequently filled with shells; yet none ever imagined that they had any such origin as that above ascribed to marle.

Beneath four feet of moss, we knew once a bed of gray marle, three feet thick, and full of shells. Under this, there was a stratum of clay and stones, a foot thick, and beneath that, two more feet of pure white marle, which had no shells.

It is a frequent case to fall in with a band of clay, in the midst of a bed of marle. The marle above the clay is full of shells, but none are to be found in the clay, or in the marle under it, so far as I have observed.

This is a presumption, that the marle under the clay, has another origin than shells, and is a native and sui generis fossile.

Some think, that where these shells abound in stagnating waters, they are a sure sign of marle; but this is quite a mistake. These shells are to be found in abundance, in the stagnating waters of almost every part of Scotland, and in may places, where upon repeated trials, no marle could be found.


Figure III.2
The natural history of peat as narrated by Walker, was freighted with the ideology of commercialization and internal colonization, offering one of the best examples of the co-production of natural knowledge and social order anywhere: its nature and properties were connected to its origins, since its formation was the clue to its use as a fuel and to the soil that lay beneath it. Its value for social engineering – soil reclaimed by displacing moss was to provide the subsistence for resettled Highlanders who might otherwise emigrate to the new world – made its density and rate of removal key aspects of its history.

Mountain peat formed through the decay of *Erica vulgaris* (common heather) was fuel; *Spagnum palustre* (flow or bog moss) was the lightest, easily carried by water; peat had antiseptic properties, which could interfere with the processing of flax as it inhibited putrefaction; on the other hand, it acted to preserve water, as Captain Cook discovered at Tierra del Fuego.\(^\text{122}\) On Kames’s Blair-Drummond property it formed a huge moss at the center of the estate, whose removal was studied by Walker and used to calculate labor productivity: “It is found in Blair Drummond moss, that a man can dig and throw to a distance of about five feet, with the spade a cubic yard of peat, for one farthing. This cubic yard weighs about ninety stone. He can dig and throw forty-eight cubic yards in a day, which amounts to the vast quantity of 4320 stone weight.”\(^\text{123}\) As Albritton Jonsson has noted, the “natural economy of peat” allowed the extension of the Highland colonia

project along habitat rather than military lines, collapsing internal improvement into the natural order itself.

Walker’s essay on peat, as discussed in the Introduction, marks the creation of a special kind of natural object of importance to colonization projects whether internal or overseas. This object expressed a set of relations between nature, art, human labor and its productivity, and its monetary value. It had its beginnings in seventeenth century English experimentalism, and it was the product of engine science. By metering and scoping both the peat and the labor required to shift it, Walker created an object simultaneously natural and political. This economy of peat once inscribed (graphed) through natural historical description (which embedded the practices of improving agriculture) made it an object of statecraft.

Patrick Carroll points out that the conceptualization of engine science, so vital to the story of Robert Boyle and experimental inquiry, was the result of a colonial imaginary: Richard Boyle, first Earl of Cork and father of Robert, was a notable exponent of planter ideology in sixteenth-century Ireland. The connection of the son’s scientific practice to his father’s role as one of the greatest colonizers of Ireland is undeniable to Carroll. There are no known connections between Petty’s survey of Ireland and John Walker’s natural history and its institutionalization in The Statistical Account of Scotland. But both were potent forms of governmental intervention that saw the increase of the wealth of a nation as the aim of state building. Petty succeeded in joining his analysis of the political anatomy of Ireland through the use of a variety of probes and

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125 Personal communication from Patrick Carroll.
scopes – classifying Irish lands, moralizing about the religious proclivities of the Irish, suggesting ways in which Irish diet and manners might be improved – to a discourse about wealth creation and the maintenance of the political community in peace and plenty. This was exactly the focus of Sinclair’s *Statistical Account*. Both authors (and John Walker) also cast their interventionist agenda in the discourse of colonizing and civilizing improvement. Material improvement – better agricultural practices through the meet disposal of man’s labor – was cast as *moral* improvement. If we turn now to colonial India in our period and examine the Company state’s policies to stabilize revenue assessment and collection, the continuities are obvious.

The Permanent Settlement instituted by the Marquis Cornwallis (Governor General, 1786-1793) sought to stabilize state-society relations in Bengal by vesting proprietary rights in land in superior right holders or *zamindars*. It was hoped that the creation of a loyal landed elite in the Bengal countryside along the lines of an improving British gentry would increase agricultural productivity and produce steady revenues.

Problems with the Permanent Settlement led to different experiments in south India. The *Ryotwari* system instituted there was a very different form of agrarian settlement based on making a revenue demand on the immediate cultivator. Its complexity lay in the

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127 The best way to understand the micropolitics of revenue assessment and the revenue “intelligence gathering” involved in making a *ryotwari* settlement is to read Thomas Munro’s letters to his assistants and to the Madras Board of Revenue. See especially, *Letter from the Principal Collector of the Ceded Districts, dated 30th September 1802, on the modes of conducting a Ryotwar Settlement*; and *Letter from the Principal Collector of the Ceded Districts to the Board of Revenue, dated 30th November, 1806*, reproduced in *Britain in India, 1765-1905*, in 6 vols., edited by John Marriott et. al. (London: Pickering & Chatto, 2006), Vol. 2: “Land Revenue and Trade”, 218-225. Chapters Six and Seven in Nilamani Mukherjee, *The*
enormous amounts of information that had to be generated: careful land measurement, accurate determination of seed:yield ratios, knowledge of water sources, the location of markets and of local land tenure arrangements – all the details that Wellesley’s instructions to Buchanan mentioned as the requisite object of his labors in south India.

Wellesley’s demand for a report, a written account that translated the differences in the practices and mores of south Indians into categories familiar to the colonial state, was an invitation to create an interventionist discourse, a tool for colonizing Mysore, Canara and Malabar. The language of *A Journey* turned Bacon’s philosophy in combination with a civilizing and improving discourse, into an instrument for colonial administration. It turned natural history into state power.

III

**Mysore, Canara and Malabar**

Buchanan institutionalized the survey report as a particular form of writing about the natural history of the colonial milieu. Colin Mackenzie is usually awarded the palm for standardizing and institutionalizing colonial surveying methodology, being, according to

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Peter Robb, “the first to regard the survey as a means of providing an historical, economic and social understanding of India…” But he was a reluctant writer, leaving few textual accounts of his monumental collecting activities and surveying procedures for posterity. His Plan proposed for the Mysore Survey nevertheless contains a clear statement of the connection between national security, political economy and natural history:

The principal object of the Survey of Mysore being as I apprehend to obtain as soon as possible a clearer and better defined idea of the Extent, Properties, Strength and Resources of a country of which from obvious causes our ideas have been hitherto limited and indistinct and which now becomes important in assisting those Plans of Security, Improvement and Finance which so considerable an accession of Territory or Influence added to our ancient Provinces may require, and elucidating many objects of Natural History connected with commercial views and therefore interesting to the Company exclusive of the advantage in the improvement of scientific knowledge, the following Plan for carrying the Survey into Execution is submitted not as the grandest and most extensive which the present improved state of Science aided by the munificence of a powerful state might suggest but as the most comprehensive of those objects and the best calculated for sooner obtaining the General knowledge of a newly reduced Country by those means more immediately in our powers and for laying a solid foundation for future improvement while at the same time will facilitate the views of Government in earlier requiring a body of Information useful to assist its deliberations on objects intimately blended with its Internal arrangements or Foreign connections…

The Survey of Mysore should embrace two great leading objects, Mathematical and Physical leaving a third Great Division under which General Surveys of Extensive Countries are usually considered to those whose official stations and habitual train of investigating complex subjects will render it more easy to acquire the means of information not always within common reach and better qualified to form those clear and decided opinions thereon which can only render them publickly useful; tho’ it is

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128 Peter Robb, "Completing our Stock of Geography", 183. A discussion of Mackenzie’s methods can be found in Edney, Mapping an Empire, 175-179.
proposed that all the lights this survey can throw on subjects connected with them should not be neglected.\textsuperscript{130}

These two sentences splendidly illustrate why Buchanan was chosen by Wellesley to carry out a second survey of the Mysore territories. In the second sentence Mackenzie admits that while he can meet the mathematical and physical objectives connected with a general survey, he has not the training to investigate or produce the “complex objects” which would permit successful EIC state intervention in Mysore. He explained his methodological rationale thus in a letter to Lord Clive, Governor of Madras:

As it is however necessary, that I should myself enter into the execution of a considerable part of the Geographical Survey, at least, until the Frontier is completed, and my attention is also at the same time required to the Investigations accompanying it; the detached and distant branches; and to necessary correspondence; regular Periodical Reports cannot be made without loss of time. I should therefore rather propose to report at the completion of any considerable part of the Geographical Survey with a concise view of the Progress made in the other branches for which purpose the assistants employed should be also instructed to follow such a methodical arrangement of their labours as to give every facility to its being brought at a proper period in aid of these purposes. Should these first specimens of our labours, on this distant service, merit your Lordship’s approbation, it will be to me an additional motive to pursue with more confidence a work requiring my incessant application; but when the actual survey of the Frontier with the native powers is completed I shall then expect to have more time to attend to a series of Enquiries into the state of the country, which is in the meantime not neglected, as this Circuitous Journey gives a means of Investigation to favor which, instead of rapidly running along the mere line of Boundary I have from time to time been stationary at several points (as will appear in my Journal) to facilitate the acquisition of information; while the Boundaries of several of the advanced Purgunnans (sic), have been at the same time ascertained – \textit{when the nature of the advanced Frontier is concerned, and that it is liable to change and shift according to circumstances, I am hopeful this mode of surveying it will be also

approved of, as more generally useful at present, as well as in future emergencies.\textsuperscript{131}

Executing the survey, he writes, would leave him no leisure to write the periodical reports that his superiors demanded of him. He is aware of the importance of turning the material acts of surveying into writing – he recommends that his assistants be instructed to employ “a methodical arrangement” which could turn their labors into discursive instruments – but it is a task for the future. There being little reason to suppose that Mackenzie’s survey would be written up soon, or that it would be cast in a language that would enable the Court of Directors and other EIC grandees to “see” the justice of Wellesley’s war, or the material wealth about to drop into their coffers as a result of it, the Governor-General had to find another candidate who could accomplish the task. And who better than a student of John Walker, fully equipped with the intellectual and practical training to assess the resources of a predominantly agrarian society?

Thus in the afternoon of the 23\textsuperscript{rd} of April 1800, Buchanan set out from Madras, “in the very hot, dry weather, which usually prevails at this season”, enroute to the old Mysorean capital, Seringapatam (Srirangapattinam), where he hoped to procure sufficient authority from the Raja of Mysore’s Dewan to commence his inquiries in earnest.\textsuperscript{132}

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\textsuperscript{132} Francis Buchanan, \textit{A Journey}, Volume I, 1.
There is a strangeness about Buchanan’s Journey to twenty-first century eyes. His questions are not ours. In one famous instance, picked up and commented upon by the Orientalist Alexander Hamilton in the Edinburgh Review, Buchanan inquired of a native if he knew the exact location of heaven: “Then assembling a number of the inhabitants, he interrogated them on the extent of their farms, -- their rent and produce… their opinions concerning a future state, and their notions of heaven, particularly, it should seem, with respect to its geographical position; for he tells us repeatedly, that he found none amongst them who could tell where it was situated.” Hamilton’s sarcasm was directed not at the apparent absurdity of the question (there was nothing absurd to the eighteenth-century intellect about investigating the exact location of heaven) but the lack of intelligence with which Buchanan went about his business. It was highly unlikely that a European observer passing through the territories recently ravaged by the Company’s armies would in a matter of hours elicit reliable information from his informants. (Hamilton’s review is a defense of the authority claims of the Calcutta

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134 Discussion and speculation about the physical location of paradise, for example, were common enough in the eighteenth century. Charles Withers explains that they were manifestations of the “tensions between sacred belief and rational understanding informing the Enlightenment as a process of reasoning.” They were also bound up with the European encounter with the Pacific, and theoretical debates about presocial “primitive” peoples. Explorers and travelers keen to link sacred history to contemporary geography and thereby verify Biblical accounts of creation often asked the natives they encountered if they knew where paradise was located. Withers, “Geography, Enlightenment and the Paradise Question”, in *Geography and Enlightenment*, edited by David N. Livingstone and Charles W. J. Withers (Chicago and London: University of Chicago Press, 1999), 67-92.

135 Ibid., 90-91.
Orientalists: to know India you must labor to acquire its languages and the history of its people. Buchanan had done neither.¹³⁶)

Critique by Orientalists aside, the nature of Buchanan’s questions should act as a check on scholars today who view Buchanan’s data through a presentist lens, and use them to draw conclusions about pre-colonial India and the effects of colonialism on the nineteenth-century economy.¹³⁷ “Statistics” to late-eighteenth century savants meant something very different from its meaning today. When Buchanan spoke of statistics he used it in Sir John Sinclair’s sense, to represent the wesen (being) of the state. Sinclair aimed not to generate “quantitative” data in our modern sense, but facts whether verbally or numerically communicated, which could help politicians decide the quantum of happiness enjoyed by a people. The objective of statistical accounts was comparability. They were meant to allow politicians to assess the strength of one state against another, through intangibles like national character and the “prejudices” of a people, as much as through material resources.¹³⁸

The sentiments and thoughts of a people had a great deal to do with how they effected the “trucking and bartering” so crucial to commercial life,

¹³⁶ Ibid., 91-94.
¹³⁸ Sinclair. Closer to the project, Benjamin Heyne, the naturalist attached to the Mysore Survey, published his Tracts, Historical and Statistical on India; with Journals of Several Tours through Various Parts of the Peninsula: also an Account of Sumatra, in a Series of Letters (London: Robert Baldwin, 1814), a few years after A Journey appeared. Heyne’s Tracts 1 and 2, Statistical Fragments on the Carnatic and Statistical Fragments on the Mysore, 1-91, show how such comparisons could be facilitated through collating and editing the sort of information Buchanan collected.
and to how quickly they took to those improvements in the land which were vital if commercial activity and labor productivity were to grow.\textsuperscript{139} So for instance, servile behavior, or a blind dependence on others in matters such as subsistence did not bode well for their prospects of ascending the ladder of civilization and could count as an important “statistic” about the natural history of their mind. And similarly, when Buchanan described the untouchable \textit{Nayadis} of Malabar, who refused to perform any kind of labor, preferring to subsist “on the labour of the industrious”, he was generating a statistic about group \textit{mentalité}.

\textsuperscript{140} He was also employing the rhetoric of the civilizing mission much as the Boate brothers had done a century earlier, when they described the passivity of the native Irish in the face of nature. The Irish took what nature offered without any effort to culture or improve it.\textsuperscript{141} Likewise, the Nayadis’ moral standards would only improve once they were forced to recognize the nobility of labor.

The use of tables, a key methodological aspect of statistics, had a long history in Britain, beginning with the Baconian reform of natural knowledge-making. Tables were vital for statistical analysis, if unruly amounts of information were to be tamed and made amenable to comparison. Tables, however, didn’t have to be numerical in form. Tables of verbal descriptions were common in the late eighteenth century (see Walker’s table in Chapter I) though the switch to numerical representation of facts could confer certainty and an increase in their power to persuade.\textsuperscript{142}


\textsuperscript{140} Buchanan, \textit{A Journey}, Vol. II, 414; also see Rothschild, \textit{Economic Sentiments}, 10-11.

\textsuperscript{141} Carroll, \textit{Science, Culture and Modern State Formation}, 68-71.

Here’s the point: we should not expect to see in Buchanan’s text the seeds of present day statistical analysis. A more appropriate (and useful) approach would be to maintain the historical integrity of Buchanan’s questions and categories by posing questions about his method, and ask how it facilitated the creation of a language that allowed Europeans in India and at home to “see” the newly-conquered areas in the south.\footnote{143} This was precisely what Walker had done as he toured the Hebrides and wrote up his report for the Commissioners of the Annexed Estates: his language allowed the Commissioners to see all the advantages of transforming the Highlands and Islands into an internal colony. It was a skill he brought into the classroom and communicated to his students, as Buchanan’s *Journey* amply testifies.

The text of *A Journey* also reveals aspects of the construction of an early colonial sociology of India. Its form helps answer questions that have puzzled anthropologists and historians of India about the processes through which caste became, in the nineteenth and twentieth centuries, the chosen site for differentiating a stream of data about various aspects of Indian society.\footnote{144} There exists a huge literature on the history and sociology of caste in colonial and post-colonial India, which is impossible to summarize here.

\footnote{143} The thirst for information about India back home in Britain is discussed in Bayly, “Knowing the Country”, 33. Bayly notes that through the eighteenth century the Company routinely processed information from discrete administrative records into widely disseminated printed packages. From the 1790s periodical literature – *Asiack Researches, Asiack Annual Register* etc. – filled out the government gazettes, “and fed the products of Indian reports and newsletters to the wider European public”. The Company also fully or partly financed the publication of tracts and reports by its functionaries in India – *A Journey* is one of the best examples – including the well known volumes of the *Oriental Repertory*, edited by the Company hydrographer Alexander Dalrymple. As Dalrymple noted in *A Plan for the Publication of A REPERTORY of Oriental Information* (London, 1790), 4, “The Publication is meant to extend to every thing that can promote the Publick Knowledge of the East.” (Emphasis original)

\footnote{144} Scholars who have addressed this point include, famously, Bernard S. Cohn, “The Census, Social Structure and Objectification in South Asia”, in *An Anthropologist among Historians and Other Essays* (Delhi: Oxford University Press, 1994), 224-254; Arjun Appadurai, “Number in the Colonial Imagination”, in *Orientalism and the Postcolonial Predicament*, edited by Carol A. Breckinridge and Peter van der Veer
Two words common to many South Asian languages are usually translated as “caste”, varna and jati. Varna (lit. color) is best understood as rank, and the four varnas, Brahman, Kshatriya, Vaishya and Sudra constituted a normative social order, which in practice probably never existed anywhere. This rank system, called the varnashramadharma, indicated who, in theory, could participate in the moral universe of the Hindu. As many scholars have noted, however, textual iterations of varnashramadharma were one thing, and practice another. In order to understand practices on the ground we have to consider the other term that is often translated as caste: jati. Jati, simply expressed, means birth group. This form of corporate affiliation decided whom one might marry or dine with, i.e., the family alliances that a lineage could form with larger groups known as gotras or clans, and groups with whom acts of sociality such as dining were possible without violating boundaries of collective or corporate rank.

The varna hierarchy and its underlying premise that all Hindus are born into fixed social units defined by corporate moral essences that lock them into rigid social-occupational roles, was used by nineteenth-century colonial administrators to argue the absence of social and political dynamism in pre-colonial Indian polities. Their arguments took different forms but made the same claim – that India required the intervention of


145 For an accessible account of Hindu dharma (duty, moral precepts), and the aims of Hindu life, see Wendy Doniger, The Hindus: An Alternative History (New York: Penguin Press, 2009), Chapter 8, 199-211.

colonialism to usher in modernity and associated moral values such as individualism and social equality, as well as an independent domain of the political. Modern historians and sociologists have variously rebutted this claim pointing out that caste in its modern form was the outcome of the working of colonial politics. Those who do so identify two broad phases in the “colonial construction of caste”: the period before 1858 when East India Company administrators were feeling their way to a knowledge of the social forms of “traditional” India; and after 1858, when the administration of the Company’s territories passed into the hands of the British Crown, which institutionalized those “cultural technologies of rule” (the census, the colonial surveys) that had been under construction in the first phase, and that turned caste into the primary category for sociological knowledge-making in British India.

The freighted role of caste in the politics and culture of postcolonial India has lent urgency to questions about the historical origins of “caste society”, prompting anthropologists such as Susan Bayly and Nicholas B. Dirks to excavate the processes through which caste as we know it today became a fixed fact of life on the subcontinent. Both scholars agree on the late colonial as the critical moment of transformation, but Bayly also convincingly argues that in the centuries immediately preceding British conquest, between 1650 and 1850, uncertain political and economic conditions urged individuals and groups in different parts of the subcontinent to embrace ritualized schemes of social stratification. British rule, according to her, intensified the

147 Dirks, Castes of Mind, 52.
148 See especially Dirks, Castes of Mind.
149 Bayly, Caste, Society and Politics. Bayly historicizes modern anthropological accounts that have both challenged and built upon Louis Dumont’s structuralist arguments about caste, by showing caste formation over time. She explains that the three conceptual principles regarded as central to the making of caste
movement towards the ritualization of social life, although like Dirks she marks a qualitative change in the period after 1857.

The strong case for the “colonial construction of caste” is made by Dirks, who has pointed out key differences between the early-colonial and late-colonial states’ forms of understanding and producing social order in south India. Dirks draws the substantive details on which he bases his arguments on Colin Mackenzie’s Mysore survey, and importantly, on Buchanan’s Journey. The Mysore surveys, he observes, rather than presenting accounts of stable hierarchies of castes, provide a disorderly and overlapping series of categories, with which to distinguish the peoples of the territories surveyed; from which he concludes that categories of social identity were far from fixed in the pre-colonial world. He mentions Kaneh Shumareh (enumeration of households) accounts collected by Buchanan, with their unsystematic recording of social groups, as one piece of evidence that there was no autonomous sense of a caste system in the early colonial society, priestly hierarchy, kingship and ascetic renunciation, did not work with equal force in the period 1650-1850. Instead there were distinct stages through which ritualized schemes of social stratification were brought into being. In the case of the emergence of Kshatriya-centered norms of caste, the king, i.e. the man of prowess, developed through a two-stage sequence. First, candidates for kingship were able to bring priests and ascetic supporters on board to affirm the martial and regal form of the caste ideal, while also supporting actions by their associated elites, who invoked varna and jati principles to differentiate themselves from non-elite tillers and arms-bearers below them. At the same time, the previously casteless bhakti faiths and the cults of Sufi pirs acquired caste-like features as they received the patronage of chieftains and their client groups, who developed jati-like affinities through their participation in them. Jati titles, too, proliferated as rulers of Mughal successor states employed the Rajput practice of granting titles to distinguish acts of merit and bravery. In the second stage, Brahmmins and those who espoused Brahmanical codes of purity and pollution in a bid to stabilize their identity acquired quasi-independent status in certain professions, which later gave them purchase on positions in the colonial administration. But see Bayly, chapters 1-3, 25-143, and 5, 87-232. Dirks discusses the historical evidence for the importance of political power and the working of political systems in the making of caste and caste relations through a study of the Tondaiman dynasty of Kallar kings in Pudukottai in modern Tamil Nadu. See The Hollow Crown: Ethnohistory of an Indian Kingdom (Bombay: Orient Longman, 1989). A brief statement of his arguments can be found in Castes of Mind, 65-78.
period. This is entirely accurate. But if we are to understand how the survey acted as a cognitive instrument for Buchanan we have to turn to his Edinburgh education.

The absence of privilege accorded to caste in Buchanan’s *Journey* was the result of employing political arithmetic. Political arithmetic, as already mentioned, involved counting births and deaths to throw light on various medical and political issues. Late-eighteenth-century theories of state building emphasized the advantages of large populations so political arithmeticians sought to construct categories (e.g. deaths through diseases) that would facilitate the generation of population data that would permit state-by-state comparisons through quantification and tabulation. The greater the population the healthier the state the argument went (a connection was often made between despotic governments and low population density). The creation of such categories was contingent on the number and variety of sources used, and the categories themselves were rarely stable. What was needed was the estimation of past populations, factors causing changes in population, and the knowledge of cultural practices that could inhibit or increase future populations. In Britain, it was fairly common to use hearth tax rolls to begin researching population, so it was natural for Buchanan to turn to south Indian *Kaneh Shumareh* as a point of departure for making calculations about population density. That this was how he viewed these accounts, and not as evidence of how to classify society according to its definitive social groups, is clear: “[Mr. Ravenshaw] also favoured me with a statement of the population made up about this time; and reliance may be placed on its accuracy with respect to numbers… The different casts are detailed in the

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150 Dirks, *Castes of Mind*, 117.
151 Rusnock, *Vital Accounts*.
usual confused manner, with which they are spoken of by the native officers of revenue.”\textsuperscript{153}

He was at pains throughout his survey to record territorial variations in the domestic practices of groups later treated as homogenous castes in order to speculate on how such differences could affect population dynamics. His description of the differences between the Nairs of north and south Malabar in Volume II of \textit{A Journey} for instance, is a valuable corrective to later Orientalist stereotypes about them as a homogenous group, upon which many twentieth-century sociological studies were based.\textsuperscript{154} His evidence for the practices of “sexual intercourse” among southern Nairs is both a tongue-in-cheek comment on monogamy and Christian morality, as well as an observation on the demographic and economic viability of matrilineal societies:

\begin{quote}
It is no kind of reflection on a woman’s character to say, that she has formed the closest intimacy with many persons; on the contrary, the \textit{Nair} women are proud of reckoning among their favoured lovers many \textit{Bráhmins}, \textit{Râjás}, or other persons of high birth; it would not appear, however, that this want of restraint has been injurious to population… To this extraordinary manner of conducting the intercourse between the sexes in \textit{Malayala}, may perhaps be attributed the total want, among its inhabitants, of that penurious disposition so common among other \textit{Hindus}.\textsuperscript{155}
\end{quote}

\textit{A Journey} is an account of colonial knowledge-making about parts of south India in the fluid political circumstances of the first two years of the nineteenth century. Buchanan queries and records everything he sees or is told about the social organization of the areas he passes through. The analytical approach followed here locates Buchanan’s

\textsuperscript{153} Ibid., 5.
\textsuperscript{154} G. Arunima, \textit{There Comes Papa: Colonialism and the Transformation of Matriliny in Kerala, Malabar c. 1850-1940} (New Delhi: Orient Longman, 2003). Arunima also uses Buchanan’s \textit{Journey} to suggest that gender differences in property relations in Malabar were not institutionalized in the pre-colonial period, and that upper-caste women possessed distinct rights to property. See 34-36.
\textsuperscript{155} Buchanan, \textit{A Journey}, Volume II, 411.
questions about caste with the unfamiliar scientific questions that animate the text of *A Journey* – the location of paradise in Asia, or the possibility that census evidence for the excess of males over females in peninsular India could disprove the conclusions of political arithmeticians in Britain about the prevalence of polygamy in warm climates – in order to clarify what he was up to: he was using his remit from Wellesley to test and extend natural knowledge-making procedures taught to him at Edinburgh to a non-European natural world. ¹⁵⁶

Wellesley’s *Instructions* provided the scaffolding for *A Journey*, while its narrative structure shows the influence of Walker’s *Hebrides*, and the instructions Walker gave to students for keeping a daily journal of natural history.¹⁵⁷ The natural objects Buchanan describes, moreover, reflect Walker’s consistent interest in Bacon’s third division of natural history, which concerned nature restrained or transformed through man’s arts (of which more below). But it is the pattern of Buchanan’s thought, as it emerges in his remarks about his unfamiliar environs and the rhetoric he employs to describe it, which is of greatest interest. Before going to that though, a description of the structure of *A Journey* is necessary, so that we can understand how Buchanan developed

¹⁵⁷ Walker, interestingly, also prepared a list of instructions in 1793, for young gentlemen going out to India, in which he bade them “[t]o keep a regular journal from day to day, including… all other observations in natural history that may occur, -- particularly any remarkable appearances in the weather, respecting the winds, rain, thunder and lightning, calms, tornadoes, winds or water spouts.” The list is reproduced in Jessie M. Sweet, “Instructions to collectors: John Walker (1793) (sic) and Robert Jameson (1817); with biographical notes on James Anderson (L.L.D.) and James Anderson (M.D.),” *Annals of Science* 29:4 (1972): 397-414. Evidently some version of the information in the list was communicated to students in the natural history course before 1793, because we find Buchanan remarking on waterspouts encountered at sea en route to India, and dinoflagellates off Johanna (modern Comoros) on his voyage to Bombay. Both phenomena, described in two separate communications to the *Edinburgh Philosophical Journal*, appear drawn from journal entries. See *Edinburgh Philosophical Journal*, Vol. V, 275-279; and 303-304.
the survey, which had long existed in Britain, into a mode of representation that could make south India visible to colonial administrators.

Wellesley had instructed Buchanan to make agriculture the first object of his inquiries, and suggested the heads under which he was to report: esculent vegetables; cattle; farms; cotton, pepper, sandalwood, and cardamoms; mines, quarries, minerals and mineral springs; manufactures and manufacturers; climate and seasons of Mysore; and inhabitants. He was throughout to carefully compare Madras and Bengal, and to keep an eye out for the advantages that could result from the cross-continental movement of goods, customs or usages between the two Presidencies, as well as establish analogies on which a future uniformity in administration and revenue collection could depend.158 Accordingly, the three volumes totaling 1469 pages (Volume II being the longest at 566 pages) were organized through a series of headings pertinent to Wellesley’s questions.

Volume I begins with Buchanan’s departure from Madras, from where he continues in a westerly direction towards the Western Ghats and thence to Malabar, taking in parts of modern Karnataka and Tamil Nadu on the way. A Journey is a journal, so the heads of inquiry Wellesley suggested appear in the words of his reviewer and critic, Alexander Hamilton, “incidentally, as suggested by some local circumstance, or casual occurrence. Each day something is said of agriculture; and the subject is suspended to speak of the customs or religion of some cast or tribe; and these again recur very frequently in the course of the journey, with new particulars. Nowhere is one

158 Buchanan, A Journey, viii-xii.
subject fully discussed; and the impression left by one day’s observation is totally
destroyed in the next, to revive on a future occasion.”

Hamilton’s charge of poor literary skills appears well founded. In the first forty
pages Buchanan narrates each day’s journey through random headings which appear at
the side of each page. On the 23rd of April 1800, in the vicinity of Madras, he marks
“Accommodations for travelers” (“The inns or Choultries, which are common on the
road, evince an attention to travellers not to be found in Bengal”); “Improvements” (trees,
hedges, fruit trees), “Irrigation”, “Manner of Securing the Rent”, “Cattle” (“They… are in
better condition than the labouring cattle of Bengal…”), “Buffaloes”. On the 24th,
“Reservoirs for irrigating the rice-lands” appears, followed by a paragraph about “Mr.
Place”, the late collector; a familiar improvers’ rubric “Appearance of the Country”
(“The land is no where so steep as to prevent the use of the plough; but in most places the
soil is very indifferent”) is succeeded by a botanical specific, “Borassus flabelliformis”;
“Weights” and “Land Measures”; “Tank at Sri Permaturu”; “Abundance of Milk”
(another comparison to Bengal – the milk here is superior); “Asses” (an inferior animal
and impure) and “Chensu Carir” (an inferior caste and impure).

Moving on, the headings diversify. 28th April gives us again the “Appearance of
the country” but new headings about mineralogy and caste are added: “Hills of granite”
(around Arcot):

The heat on the glacis of the fort, where I encamped, was intense. The hills
in this vicinity are the most barren I have ever seen, those even of St. Jago
in the Cape de Verd islands not excepted. They appear to be composed of
the same granite, that abounds in the elevated and barren grounds on
which the road from Madras is conducted. They seem to be undergoing a

159 Anon (Alexander Hamilton), Edinburgh Review, 88.
rapid decay, and will probably continue to do so, till they are reduced to nearly a level with the circumjacent plain, when the decomposed parts, no longer rolling off, will cover them with a bed of sand, and prevent them from further decay, as is now the case in the wastelands already mentioned. In many parts of the valleys, formed by these hills, is found Chunam, or lime-stone nodules, which in Bengal is called Congcar.\textsuperscript{160}

Rocks and soil continue to be identified \textit{in situ} as ground is covered and summer days succeed each other. On the 3\textsuperscript{rd} of May, ascending the Ghats, Buchanan seizes an opportunity to describe rock strata and compare them to other strata of similar component parts:

The grand component part of these mountains is a granite, consisting of white felspar and quartz, with dark green mica, in a small proportion to the other two ingredients. The particles are angular and of moderate size. It seems to come near to the Gnanitello of the Italians (Waller. Min. II p. 423) and is an excellent material for building; as it is readily cleft by wedges, and is at the same time strong and durable.\textsuperscript{161}

Between May 8\textsuperscript{th} and 10\textsuperscript{th} as the doctor approaches Bangalore, we get descriptions of the rocks of the Deccan Plateau in the language of Edinburgh chemical mineralogy. Buchanan had begun to notice frequent vertical strata of gneiss, running north-south, intermixed with others of hornblende-slate, interspersed with small grains of white quartz. These strata, like the grey granite throughout south India were intersected at right angles with veins of quartz a foot-and-a-half thick, which also contained a reddish mixture of feldspar and quartz. These gave the lie to a well-known theory: "It has commonly been alleged, that large veins of these materials denote a country to be productive of gems; but the contrary is the case here, no precious stones having ever been found in Mysore."

\textsuperscript{160}Buchanan, \textit{A Journey}, 17-18.\textsuperscript{161}Ibid., 27.
Even more interestingly, clinical practices acquired at Edinburgh, which were based on the idea of substantial similarities between calcareous deposits encountered in the human body and in the earth, enter Buchanan’s soil analysis: two varieties of calcareous nodules in the soil of the region are tested with muratic (hydrochloric) acid, and found to dissolve readily with a strong effervescence, but deposit a fine sand indicating the presence of iron. Their appearance is described with great circumstantial detail bearing in mind Walker’s careful instructions for the construction of a mineral’s *character naturalis* through *situs, substantia, consistentia, figura, structura, partes, qualities, aer*:

The one [nodule] is externally of a grayish white; but its fracture has a dull purplish brown tinge, intermixed with shining particles, arising from its texture which is a mixture of compact and sparry. *Its fracture is splintery:* and it is *opake*. The *scratch* is of a colour *similar* to that of the stone, which is *hardish*. *Its luster is common*. The sand which it contains seems to be *quartz*, stained of a rust colour by iron. The other variety has, both externally and internally, a darker colour, and it has more numerous and larger *sparry* concretions. On breaking it are discovered many irregular cavities lined with small, white irregular crystallizations. It contains many black dots, probably fragments of *shorl*.

“There can be little doubt”, the doctor then concludes, transferring knowledge used to diagnose gout to the soil of Mysore, “that these nodules have been formed by a deposition from water, and are therefore a *tophus*, or calcareous *tuffa*.”

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162 Ibid., 43.
163 *A tophus* is a deposit of monosodium urate crystals in people with high levels of uric acid in the blood. *Tophi* commonly occur in conjunction with gout. The word was used to denote both a feature of the landscape and growths in the body as early as the mid-sixteenth century, but reference to its chemical composition, and hence the similarity established between calcareous nodules in the body and in rocks appears to be a late-eighteenth and nineteenth century phenomenon. The Oxford English Dictionary cites the following examples of such usage from the nineteenth century: “1860 R. G. Mayne *Expos. Lexicon Med. Sci.*, *Tophus… Med.* A name for the matter concreted in the joints of the gouty; also the calculous matter concreted in the kidneys and urinary bladder; also the tartar on the teeth. *Surg.* Term for a swelling particularly affecting a bone, or the periosteam: a tophi”; “1830 C. Lyell *PrinCe Geol I*, 211 Pallas…
Buchanan’s critics chastised him for his disorderly text, and the doctor himself deprecated his own want of method in the composition of the work. It is doubtful, however, that even had time permitted the desired abridgements, he would have curbed his prolixity; presenting copious observational details was a key part of the method he had learnt from Walker.

Walker’s mineralogical lectures had driven home the important effects of aerial acids and the air’s ability to conduct electricity on rocks. In his mineralogical journal Walker had remarked on the difference in the weathering patterns of the freestone between Berwick and Durham. The freestone used for the high road between Berwick and Morpeth was hard. “In those parts of Northumberland and the Bishopric where there is no coal, the freestone is of a grey colour, and of a durable substance. But where the coal abounds, as about Newcastle and Durham, the freestone is generally ochrous, of a yellowish colour, and wastes to a great degree in the air.” The wasting effects of the air had, for example, wholly disfigured Durham Cathedral’s fine carved statues. It was therefore important to notice and record changes in strata and rock composition over every few miles.

In an entry for the 18th of August, Buchanan remarked how weathering could change the visual appearance of familiar minerals like quartz or hornstone, as in the hills of Dorai Guda in modern Karnataka. Depending on whether the strata had been exposed...
to the weather at ground level or higher up, they were divided into plates like schistus or into rocks that decayed into roundish or angular masses. “All that I saw were in a state of great decay, so that it was difficult to ascertain their nature; but, no doubt, they are either earthy quartz, or hornstone variously impregnated with iron… but outwardly they are covered with a metallic efflorescence, in some places black, in others inclined to blue.”

Walker’s admonitions on the importance of place for an accurate natural history of minerals signaled that an examination of donated specimens or those collected for the naturalist could never replace the personal examination and careful recording of rocks in situ. This was evident as Buchanan tried to identify the “loose-grained” granite of which the walls of Mysore were composed: “Specimens of a fine-grained granite were also brought me from some quarry in the neighbourhood, consisting of black mica, grey felspar, and yellowish brown quartz, which gives the predominating colour. It is, probably, rather a gneiss than a granite, as a stratified appearance may be seen in one of the specimens; but, except in the rock, it is generally difficult to distinguish gneiss from granite.” Not to record minute perceived differences in natural objects encountered in the field was in effect to compromise their integrity. You had to write the object into being as you found it in order to turn it into a natural fact.

Buchanan’s commitment to a textual strategy that involved complex description and the prolix narration of particulars has, in the rather different context of early Restoration science, been conceptualized as a literary technology that enabled the “virtual witnessing” of the making of scientific facts. Indeed it was more. Steven Shapin has

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167 Ibid., 132-133.
argued, in the case of Robert Boyle’s experiments with the air pump, that it was a most powerful technology for the constitution of matters of fact. Boyle’s elaborate sentences, like the supporting visual representation of the air pump constructed through a dense laying on of lines, were meant to convince readers of the veracity of his experimental reports. Readers could be reassured that real experiments had yielded the findings stipulated and that Boyle could be trusted to reliably purvey testimony about them.168

Buchanan’s sentences, rich in adjectival clauses, worked rather like Boyle’s to construct natural objects on site, but they also had a second function: to allow Wellesley’s bosses in Leadenhall Street to “see” the natural objects in south India (inanimate or sensible) that would soon enrich the Company’s coffers; and to reassure them about the justice and propriety of the war against Tipu.169 Most important of all, they worked to create that language, which could translate the terrain and life worlds of an unknown part of India into terms that could convey a sense of control over the new land. This was recognized by William Erskine, a Scottish Orientalist, who on reading A Journey was moved to suggest that a similar survey of other parts of India would be useful: “A similar journey in the Company’s older territories is very requisite to give the public an idea of them. Very erroneous notions of this country have been given by many

169 It would appear that he succeeded if we credit the testimony of Buchanan’s twentieth-century editor, V. H. Jackson. In his introduction to Buchanan’s Patna and Gaya journal, Jackson explains how Buchanan’s detailed descriptions of the natural phenomena he encountered allowed him to discover the exact location of a lime quarry long since abandoned and unknown to the tribes who lived in the vicinity in the early 1900s. And again, in pursuing the exact place in a hot spring where Buchanan had measured the temperature of the water, Jackson located the spot with “absolute certainty” in 1909 because of the precision of Buchanan’s description. Francis Buchanan, Journal of Francis Buchanan kept during the survey of the districts of Patna and Gaya in 1811-1812, edited with notes and introduction by V. H. Jackson (New Delhi: Asian Educational Services, 1989), Introduction, vii-ix.
valuable writers, from confining their inquiries to men of learning and of the upper
classes, both of whom are singularly incurious and indiffl regarding the state of the
society and the manners of the most numerous classes.”

These subaltern proclivities were not universally admired. Alexander Hamilton’s
critique of Buchanan’s text had given short shrift to his declassé empiricism. His
narration of “facts” Hamilton’s review had claimed, created error rather than truth about
the customs and manners of the people of India. Hamilton’s ridicule, like the barbs aimed
at Buchanan by Colin Mackenzie and Francis Ellis and reported by Erskine, concerned
not only his lack of knowledge of Indian languages, but also his method. Buchanan
interrogated anybody and everybody he met. This was an odd way of going on, “because
the accurate views of the chief teachers of a religion were not presented by ignorant
priests at a distance from information [.]”

Hamilton, like Jones and the Calcutta Orientalists, insisted on an affective
engagement with the “high” culture of India, the culture of the great Hindu texts, and
their guardians, a group of artless Brahmin literati. The review was at pains to point out
that the majority of Brahmins were engaged in “secular business”; and that the calumny
directed at Brahmins was certainly misplaced in the case of Brahmin scholars:

It should be recollected, that this appellation [Brahmin] is that of a cast,
and not of a profession. Three fourths of the sons of Brahma are engaged
in secular business, and in no shape distinguished from other laymen, but
by a somewhat better education. The remainder are employed as family
priests, and in the cultivation of Indian literature. These men are never
seen by Europeans, unless sent for; they know nothing of what is passing
in the world; their studies include antient history, metaphysics and logic;
and letters may be considered there in the same state as in Europe during
the middle ages, excepting that the laity possess all the accomplishments

170 William Erskine’s Diary, 5-12 March 1811, BL Add. MS39945, f. 4 (recto) (emphasis original).
necessary for conducting civil occupations, and only have recourse to their priests in matters connected with religious rites. From this retirement, and disengagement from secular customs, one would naturally infer, that these Brahmins must be singularly disqualifed from conducting intrigues. In point of fact, we venture to appeal to all whose personal acquaintance with these calumniated men enables them to decide on the question, whether they have not uniformly found this class of Brahmins, the most candid, the most artless, and the most simple of mankind.\textsuperscript{171}

This is a view of Brahmins that Buchanan did not generally share. He often characterized them as liars and cheats in his letters and journals, and in one particularly acerbic passage in his Patna and Gaya journal he offered a description of Brahmin priests near Gaya that would have caused an Orientalist dismay: “The priests are quite ignorant, nor do they affect any extraordinary devotion. They live at Gaya and resort daily to the temple, where they go through the ceremony with as much indifference as a huckster retailing petty wares; but are to the last degree clamorous for money.”\textsuperscript{172} The tone is ungenerous, but there is nevertheless a methodological point at stake here. Buchanan’s approach to the members of a caste encountered in the course of his fieldwork was of a piece with his scrutiny of the rocks formations he encountered: it was important to be as specific as possible and to carefully note their location, manners and habits because members of a caste, like the mineralogical composition of rocks were particular to a place.

The doctor also records what Hamilton may not have wished to admit: that Brahmins attached to temples were often considered “low”; and that the worldliness of upper class Brahmins and their involvement in secular professions (they were useful men) could sometimes give the lie to Orientalist stereotypes of Muslim oppression of

\textsuperscript{172} Buchanan, \textit{Journal of Francis Buchanan}, 35.
Hindus. Thus he is surprised to discover “that the greatest complainers against the change of government are certain Brahmans” who under Tipu’s government “were in full possession of the revenue department.” Perhaps this discovery strengthened his resolve to be mindful of Baconian admonitions for the reform of natural history, for a few pages later he makes his methodological commitment explicit:

I have found that in different places, though at no great distance, there are considerable variations in the customs of the same tribes: a circumstance to which I request the reader’s attention. My descriptions of sects are only to be considered as strictly applicable to those of the places where they have been taken.

The caution was justified if we consider this statement in the light of everything Bayly and Dirks say about the historical anthropology of caste in South Asia. Both agree that caste was never a fixed fact of social life in India and that it was remade over and over again over time and territory. Bayly identifies a two-stage developmental sequence between 1700 and 1830 (see n. 170), the second of which produced what she calls the “Brahman Raj”, a period when post–Mughal rulers sought to legitimize their authority by encouraging Brahmins to settle in their dominions in large numbers. And in which the embrace of “pure” forms of worship and social refinement by the subjects of these rulers assisted corporate identity-making and the stabilization of status, a process in which varna types served as idealized reference points. Churning eighteenth-century conditions, according to her, solidified two forms of life, that of the service-provider,

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174 Buchanan, A Journey, 79 (emphasis added).
175 Bayly, Caste, Society and Politics, Chapter 2.
who could be either the literate priest or the specialist recorder-keeper, and the “settled man of worth”, who was either the virtuous tiller or the man of commerce.  

Such caste-making (arguably) remained inchoate at fin de siècle. Take the case of the assumption of titles by upwardly mobile jatis of Brahmins. These jatis could mimic each other’s successful bids for power without necessarily invoking an essentialist identity. The famous Maratha dynast, Shivaji Bhonsle, had actively recruited several Brahmin lineages to shore up his arriviste status. Under his successors one such lineage, the Bhats of Danda Rajpuri, acquired enough power to turn the office of chief minister in the Maratha state into a hereditary preserve, “adopting the title Peshwa for this paramount role of service to the Maratha polity”. The force of their example spread within and beyond the Deccan. Arriving at Srirangapattinam in May 1800 Buchanan met Purnea, Dewan (chief minister) of the recently reconstituted kingdom of the Mysore raja. An energetic Tamil Brahmin with political ambitions and very knowledgeable about “the affairs of the country”, he was called Sri Mantra by the locals, “the same title that is given to the Peshwa at Poonah. It is said to signify a person who has been fortunate from the time of his having been in the womb.” This self-fashioning did not imply that Tamil Brahmins necessarily felt a shared sense of caste identity with Maratha Brahmins, even if they found it expedient to borrow Chitpavan Brahmin titles. Maratha Desastha Brahmins, service providers par excellence, were diffused throughout the eighteenth-

\[176\] Ibid., 49
\[177\] Bayly, Caste, Society and Politics, 67.
\[178\] Buchanan, Volume I, 60.
century post-Mughal southern polities. Under the Muslim Mysoreans they occupied the key positions of *Amildars* (revenue collectors), displacing the local political elites who could have challenged Mysorean domination, and remained indispensible because of their skill: “The *Brahmans* who managed the whole of the revenue department, were so avaricious, so corrupt, and had shown such ingratitude to *Hyder*, that *Tippoo* would have entirely displaced them, if he could have done without their services; but that was impossible; for no other persons in the country had any knowledge of business.”180 Their comparatively recent arrival in the far south, and indeed the evidence for the recent immigration and status mobility enjoyed by different “nations” or “tribes” of southern Brahmins (the *Pancha Dravida*), is scattered throughout Buchanan’s text. On the 11th of February he interviewed certain “eminent” Tulu Brahmins at Udipi, who explained to him, that the *Tuluvas* “are a mixture composed of emigrants from each of the (Brahmin) nations or tongues that compose this division”. They mentioned both the territory and language of origin of each, indicating however, that although the Tulu Brahmins were a “separate nation”, “yet each subdivision confines its marriages to its own original nation; and contrary to the custom of the *Namburis*, a *Karnataka Tuluva Brahman* has no objection to marry the daughter of a *Brahman of Karnata* who never has left his own country.”181 The Tulus it is obvious were a *jati*-in-the making. The longer-settled Nampoothiris of Kerala held fast to their endogamy, marking their status difference by


rejecting affinal relations with Brahmans whose putative origins fell outside the pale of territorial acceptability — something the Tulus could not yet afford to do.

Similar stories of ongoing caste formation and caste and jati mobility abound in British and native accounts of the period, so that historical anthropologists have had their work cut out to explain the emergence of caste stereotypes in the second half of the nineteenth century. For Susan Bayly the explanation lies in the political exigencies of the period that forced the British to invent strategies to limit the growing political power of Brahmans. Part of the process was the British desire to break the power of the Brahmin Peshwas and their clients. This was exemplified, for instance, by the views of James Grant Duff, an influential Deccan strategist, who between 1818 and 1823 was the Company’s Resident at the former Maratha capital of Satara. Duff argued that the Peshwas were not and never had been legitimate rulers. They were Brahmans who had quitted their proper station in life as scribes and priests to usurp the rights of Shivaji Bhonsle’s descendants. Wily and corrupt, their behavior towards the British had been equally treacherous, so it was incumbent on the East India Company to remove them from power.

It was on this basis that both the Company’s officers and their Indian clients set about articulating the logic of caste as it came to be understood by later generations of orientalists, that is, as a scheme of absolutes which marked out rigidly separate spheres of operation for the ‘priestly’ Brahmin and the thread-wearing warrior dynast. This was not mere orientalist ‘discourse’.182

Bayly’s arguments, stressing the complicity of Indians in the construction of colonial representations of the Caste Other, are directed at least in part at refuting the

182 Susan Bayly, *Caste, Society and Politics*, 89.
ideas of Edward Said and his adherents among South Asianist historians and anthropologists. Caste stereotyping, so her argument goes, was an act of realpolitik that equally implicated Company functionaries and native collaborators. The British search beginning in the late eighteenth century, for purveyors of reliable information and *shastric* texts considered authoritative sources of native law, their push to discover a “natural aristocracy” who were the “real” owners of the land in India, was met by an interested native gaze that saw social and economic opportunities in pressing claims to ahistorical *varna* or *jati* status. If British judges were quick to abrogate revenue rights that appeared recent in origin, then it suited natives to be ancient Brahmin or Vellala lords who had possessed their lands from time immemorial.

Her nuance and empiricism notwithstanding, Bayly misses the point: the British may have felt uncertain how to proceed when confronted with the blooming, buzzing confusion of social relations on the ground. They did not, however, lose their epistemic confidence. Indigenes who collaborated in the production of information for the British (and benefited in divers ways) had little to do with the selection of methods to order, collate or interpret the information so collected, i.e., to shape epistemology. Even where there was an appearance of epistemic convergence, as in the encounter with the indigenous classificatory imaginary of caste, the colonial state’s deployment of caste essentialism occurred through the classificatory techniques of British natural history.\(^{183}\)

\(^{183}\) The practical *outcomes* of the use of natural historical classification could, however, be very different in Britain and colonial India. See Arjun Appadurai, “Number in the Colonial Imagination”, 318-319, for an argument that the Orientalist essentializing of caste in India carried a special social force which could only come about “when two theories of difference share a critical assumption: that the bodies of certain groups are the bearers of social difference and of moral status.” The consequence of essentializing the martial qualities of Highlanders resulted in their agrarian impoverishment and transformation into cheap labor in north Britain, while eighteenth-century *Kallars*, a caste group in Madras Presidency whose members had an
At a certain point in her argument Bayly quotes examples of “orientalist reportage” by two Britons in India, William Ward and William Crooke: “… the Hindu is mild and timid, rather disposed to melancholy, and effeminate pleasures.” “The life of the Rajput in British districts is not calculated to develop the manly virtues… they have lost the taste for manly exercises which harden the muscles and develop the physique.” A historian of science would immediately recognize the model for such descriptions in Linnaean natural history. Indeed, Crooke’s late-nineteenth century account of the loss of manly virtues in Rajputs settled in comfortable British districts perfectly aligns with John Walker’s environmental arguments about the necessity of crofting to sustain the Highlander’s martial virtues.

Hamilton’s review of Buchanan’s work demonstrates the confidence of two different epistemic positions confronting each other, Scottish Orientalism and what I will call Scottish empiricism, neither of which had epistemological roots in India. The review itself is evidence of the process of construction of “Brahmin-ness” as an analogue to “gentlemanliness”, i.e. of an act of “practical epistemology” through which social groups from which native informants could be recruited were stabilized by fixing the cultural and social roots of their veracity. Thus Hamilton’s plea for the moral unassailability of indigenous history as both bandits and warrior-kings, were stabilized through colonial classification as “criminals” (despite the high status enjoyed by some of them) for resisting colonial power. But see Dirks, The Hollow Crown, 203-205.

My argument here is based on my reading of Chapters 4 and 5 of Steven Shapin, A Social History of Truth: Civility and Science in Seventeenth-Century England (Chicago and London: University of Chicago Press, 1994), 126-242. Hamilton’s construction of the “truthful” Brahmin scholar in eighteenth-century India echoed aspects of the construction of the Restoration gentleman-scholar as a truthful witness to natural facts. The normative claims made for all Brahmins in shastric texts was judged applicable to a particular group, alokika Brahmins, whose identity, recognized and legitimated by indigenes, could be drawn upon in fashioning native “legal experts” for the East India Company state. It was assumed that the “gentility” of such Brahmins, although exhibited in contexts removed from “this-worldly” activities, would
aloikka ("unworldly") Brahmin ritualists and textual specialists, who were quite distinct from the kind that conducted political intrigues and posed a threat to British power, also aimed to normalize them as "gentlemanly" truth-tellers, immemorial keepers of shastric knowledge. Such Brahmins were to be found in the great universities and pilgrimage centers of India where they lived "disengaged from secular customs", not in the little villages and upcountry towns Buchanan visited.

Buchanan’s stance, by contrast, was an extreme form of epistemological individualism where the testimony of Indians in general was concerned. Why was this so? The answer forces us to reach back to Scotland for one part of it and forward to Buchanan’s Indian milieu for the other.

I have already described the conditions of Buchanan’s intellectual formation in the lecture theatres of Edinburgh University, and in the drawing rooms of its literati where men who had a conscious sense of themselves as a distinct group met to reproduce their commitment to a shared set of practices. Among those practices was combined unease about one amongst them, the philosopher David Hume. Hume died in 1776, a decade before Buchanan’s time in Edinburgh, yet his influence was everywhere in the 80s. Boswell tartly reprimanded Adam Smith for his eulogy of Hume, and confessed to a degree of horror at Hume’s atheism, reporting nevertheless that several of the Edinburgh elite appeared receptive to his views, and that he himself read Hume’s Essays and Treatises (1753) in the Advocates’ Library after attending the Great Infidel’s hold up in the various public spaces where the colonial knowledge order was being constructed. Also see Kapil Raj’s important article “Refashioning Civilities”, on William Jones’s role in the resolution of the problem of identifying reliable native informants.

funeral.¹⁸⁷ Ten years on, few men would directly mention Hume’s influence on them, but his books continued to sell well and found their way into several eminent collections including the libraries in Edinburgh that Buchanan would have frequented.¹⁸⁸

It is difficult not to read the influence of David Hume into everything Buchanan says about natives’ propensity to lie, to excessive credulity, and to “stupidity”. His individualist rhetoric certainly had precursors – in the seventeenth-century Sprat, Oldenburg and Boyle, among others, made pronouncements about the need to carefully inspect testimony about natural facts, and to trust only the evidence of one’s own senses in making empirical knowledge. However, as Steven Shapin has noted, these same practitioners in other moods displayed a keen appreciation of the value of testimony and the role of trust in empirical practice.¹⁸⁹ There were prudential maxims laid down for the evaluation of testimony – Shapin mentions seven that were canvassed in seventeenth-century literature – which were accompanied by counter maxims, so that in the final analysis knowing whom to trust was a skill that insiders to a culture possessed, upon which both knowledge and social order depended:

Knowing how to evaluate testimony was, therefore, knowing one’s way around a cultural system, knowing how to go on in specific circumstances whose characteristics and exigencies no rule book could possibly envisage. Scientific practitioners as well as everyday actors, generally showed great facility in knowing how to go on in assessing specific testimony, yet that facility ultimately derived not from epistemological rules but from the deployment of uncodified skills.¹⁹⁰


¹⁸⁸ Sher, *Enlightenment and the Book*, Chapter 1, 43-95.


Trusting testimony, especially testimony about scriptural truths was a *moral* necessity, an essential requisite for civil order. Recognition of this, and of the legitimate boundaries of eyewitness and demonstration was to behave with *decorum*, to acknowledge that ways of behaving and judging had to be adapted to circumstances.\(^{191}\) David Hume stood such “epistemological decorum” on its head.

It is well known that Hume’s treatment of miracles in *An Enquiry Concerning Human Understanding* (1748) and his arguments about their existence (or rather non-existence) also presented a systematic discourse on the reliability of testimony to their existence.\(^{192}\) Hume’s criteria for reliable witnesses were stringent. The outcome of his skepticism was insistence that no testimony is sufficient to establish a miracle, and that there were historical and cultural reasons why certain people were more credulous than others:

> It forms a strong presumption against all supernatural and miraculous relations, that they are observed chiefly to abound among ignorant and barbarous nations; or if a civilized people has ever given admission to any of them, that people will be found to have received them from ignorant and barbarous ancestors, who transmitted them with that inviolable sanction and authority, which always attend received opinions. When we peruse the first histories of all nations, we are apt to imagine ourselves transported in to some new world; where the whole frame of nature is disjointed, and every element performs its operations in a different manner, from what it does at present.\(^{193}\)

Here, then, is a “strong” version of Scottish stadialism, which simultaneously critiques the historical accuracy of received opinion among civilized people and warns against the propensity of those “others” distanced by time or space from Enlightened

\(^{191}\) Ibid., 209.
Europeans, to mistake their testimony. Hume’s empiricist conclusion was that men were best off trusting the evidence of their own senses, i.e., their *own* experience, when it did not contradict the laws of nature. There is no reason to credit received opinion in one’s own culture, and even less in an unfamiliar culture, he says.

The passage far from being an invitation to exercise epistemological discretion when abroad is, rather, a reminder that those who occupied the lower rungs on the civilizational ladder were not adept at processing the evidence of their senses. Knowing your way around a cultural system – the claim that every Orientalist in India made about himself – was unlikely to produce any knowledge that could compete with first-hand experience. Hume, unlike Indian Orientalists, allowed no space for a notion of ontological openness that recognized accuracy in different *ways* of representing sense experience (see below). Buchanan agreed, transferring Hume’s arguments about the lack of robustness of testimony about miracles to judgments about the testimony of Indians in general. His locutions echo Hume’s, and his strategy for managing knowledge-making in uncertain conditions followed familiar maxims for acceptance (or refusal) of testimony. This example is taken from his *Patna and Gaya Journal*:

> The most sensible natives of the place have no tradition concerning the elevation on which the Baragara is situated, but think that it was made at the same time with the fort, which is an opinion quite untenable, the fort-ditch having evidently been dug into the heap of ruins. A Dosnami [ascetic] indeed pretends that the old name of the place is Hangsa Nagar and that it was built by a Hangsa Rajah; but he is a stupid fellow, and no other person has heard of such a tradition.\(^\text{194}\)

\(^{194}\) Francis Buchanan, *Journal of Francis Buchanan*, 110.
If “sensible” natives were those who understood the importance of first-hand experience, they were also those who did not know when it was appropriate to let reason override sense experience. In Europe, such discrimination set the learned apart from the vulgar. In India, it distinguished Europeans from natives. Canvassing a variety of opinion showed all the natives making the same mistake: the fort and the elevation on which it was situated were not contemporaneous, even if they appeared so at first glance; and none but a “stupid” ascetic had ever heard of a name for the place, and such a person could hardly be trusted to tell the rational or true from the irrational or fabulous in traditionary accounts. In any event this was one occasion (there were others) where Buchanan’s reliance on the evidence of his own senses and his refusal to pay a native the compliment of probable knowledge about his environment went awry. The “Dosnami”, the name given to one in authority among wandering Shaivite ascetics, could have been either a traveling merchant with considerable capital, or a mercenary in the pay of a local chief; in either case a “reliable” source of information about matters commercial or political. Buchanan made no mention of this encounter, which he recorded in his journal, when he compiled his Report on the districts of Patna and Gaya. Fifty years later the remains were definitively identified by the British archaeologist General Alexander Cunningham as the famous Buddhist Goose (hansa) Stupa and Monastery mentioned by the sixth century Chinese traveler Hiuen Tsang.

Buchanan’s biographer, David Prain, captures the force of this early colonial empirical moment albeit in hagiographic accents:

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A more comprehensive programme than this [the Bengal Survey] was probably never entrusted to a single officer in or out of India, and it is equally probable that no officer better qualified than Francis Buchanan to undertake the task ever lived. For this it must be recollected, was a real survey, undertaken on the spot by a competent observer, not an assessment, by an officer at the head-quarters of a Government, of reports submitted by district officials, but derived, when their source is finally reached, from the often hardly responsible statements of the village watchman.\footnote{David Prain, “A Sketch of the Life of Francis Hamilton (once Buchanan), sometime Superintendent of the Honourable Company’s Botanic Garden, Calcutta”, \textit{Annals of the Royal Botanic Garden, Calcutta} (Calcutta: Bengal Secretariat Press, 1905), xix-xx (emphasis original).}

The doctor used such relentless epistemological individualism to correct for the depressing mendacity and “obstinacy” that met him everywhere in his journey through Malabar:

I found no native who could or rather who would inform me of the names of plants. The obstinacy of the people of Malabar is astonishing and every man you meet suspects you have an evil design in every question you ask. Without therefore making some stay in the province and breeding up a man or two to collect plants and procure their names nothing [more] can be done than to collect specimens and describe such plants as you find in a proper state.\footnote{Buchanan to Roxburgh (no date), quoted in Prain, ”A Sketch of the Life”, xiv.}

And he put much ingenuity into creating systems to check the veracity of native informants. One of his odder efforts, to establish a criterion to distinguish Buddhist and Jain images from each other in the course of his Patna survey, involved studying the placement of the hands of figures. Sitting Jain images, Buchanan reckoned, had their hands “supine and across”. “Those standing have both hands down, with the palms turned forwards”.\footnote{Francis Buchanan, \textit{Journal of Francis Buchanan}, 104.} His pandit, Ramajai Bhattacharyya, however, dashed his hopes of
developing external criteria to circumvent the testimony of cultural insiders – Buddha images in Nepal, he informed Buchanan, had both hands crossed on their lap.200

The Doctor’s problems in obtaining information were simultaneously social and epistemological. He made his journey at an early stage in the process of adapting administrative practices from indigenous to colonial modes of rule, when resistance to conveying information about agrarian practices protected by caste barriers and knowledge of the sacred calendar, was at its height. But there was more to it than this. Consider a problem that dogged his steps as he made his way through Malabar: land measurement.

Land in Malabar was measured volumetrically. A *para* of land, called a *para kandam*, was the amount of land that could be sown with one *para* of rice seed. The *para* measure varied from village to village, and sometimes within the same village; so one *para*’s worth of land sown differed from place to place, and was very difficult to translate into standard linear measures. Every Malabar collector encountered by Buchanan offered him a different measure for one *para* of rice land.201 When analyzed in conjunction with his methods for estimating the population of a given area (using a universal multiplier as was common with political arithmeticians in Britain, and assuming a certain consumption of rice per head) the numbers did not tally.202 This was troubling: “for it must be observed, that Mr. Warden, after much inquiry, fixes the land sown with a *Poray* of rice at 58 feet square. According to these estimates, we have a country containing 60, 540 acres, and these by no means all cultivated, and yet maintaining 123,000 inhabitants.

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200 Ibid., 123.
This is at the rate of 1300 inhabitants to the British square mile, which appears to me impossible… That the population is not exaggerated, I have strong reason to think."203

Even a partial stabilization of the para measure was impossible in the absence of a survey to ascertain the extent of lands by actual measurement, which was first attempted in 1826.204 But there was a possible solution, which was to assume that the different para measures mentioned were empirically accurate for a particular type of soil, without attempting to convert them into linear measures. This was the strategy adopted by Alexander Walker, a noted Orientalist, in enumerating the stages of growth of taxable plants in Malabar (see Chapter I).

We do not know whether Walker, who was also a collector of Malabar, made use of the tables he painstakingly constructed in his report in making revenue assessments. But the presence of the tables in his report with their inclusion of figurative accounts of plant growth alongside their monetary values indicates his recognition of the facticity of what might have appeared trans-empirical to a cultural outsider. In saying this I borrow from Rao, Shulman and Subrahmanyam, who have argued with respect to historical writing in south India, that the distinction between fiction and fact is evident to native users of a language whenever they experience a given text.205 The three authors make their comment in light of claims made by scholars that early-modern south Indians lacked a genuine historical sensibility because of the absence of a prose tradition in which “history” could be written. They point out that a genre (such as poetry) is rarely committed to a single mode, and that in any genre one can identify historical and non-

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204 Panikkar, Against Lord and State, 33.
historical writing, which are distinguished by textural considerations such as markers, syntax, lexical choices and so forth. “Readers or listeners at home in a culture have a natural sensitivity to texture. They know when the past is being treated in a factual manner.”206

It is my contention that Walker, who was fluent in Malayalam, knew how to “read” poetry for facts. In other words he was willing to embrace an ontological openness that recognized accuracy in different ways of representing the natural world. This was a move that Buchanan who was wedded to precision could not make.

As a propagandist for Wellesley’s conquests, however, Buchanan’s representations of native life and conditions in south India had the desired effect. The Orientalist, William Erskine, not the most sympathetic reader of A Journey, conceded as much: “The accounts of the different casts, & of the devastation of the Country from the former wars are curious. – His agricultural & botanical details must be both curious and valuable in spite of all their errors”, he wrote when half way through reading Volume II.207 “Finish Buchanan’s Journey, a work which adds considerably to the knowledge formerly possessed of India”, he continued in an entry for 5-12 March. “It presents a curious view of the great variety of sects and religions – Much of the South of India was before untrodden ground – & the difference between the manners and opinions of the South and North is very striking.208

But why were Company Directors eager to publish it? The value of Company stock fluctuated with the news out of India, and this was especially the case with the

206 Ibid., 5.
207 William Erskine, Diary, 28th February and 1st March 1811, BL Add. MS 39945, 3 (verso).
208 Ibid., 4 (recto).
Mysorean wars. News of British defeats sent stock prices plunging. In 1799, when Tipu was finally defeated by Arthur Wellesley, the future Duke of Wellington, Company stock stood at under 150 pounds. The Court of Directors required news of positive developments in India to reach those sections of the British public that invested in empire. The first years of the nineteenth century saw a gradual climb in stock values, assisted almost certainly by the news sent back to England of Buchanan’s survey and the riches about to fall to the EIC. By 1807 when A Journey was published shares were at 200 pounds. The Court of Directors never again offered to publish anything written by Buchanan, confirming what I suggest here. Wellesley’s minute on the Natural History of India, with which this chapter opened, concludes:

The Governor-General proposes that the observations of Dr. Buchanan on such subjects as the natural history of animals as may be collected, together with the drawings of each subject, be transmitted once in each season to the honourable the Court of Directors, with a request to the honourable Court to direct the publication of the work, in such manner as they may deem most proper.

The Court of Directors, of course, did not publish any research on the natural history of India unless its value to the company’s commerce or the administration of its Indian possessions was clearly established.

Natural historical knowledge-making, however, proceeded apace through the agency of the colonial survey. And this is why the historian of science seeking details about the flora and fauna (including people) of the colonial milieu must turn first to the

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210 Ibid.

Board of Revenue records and surveys for the three presidencies, Madras, Bengal and Bombay, where the wealth of eighteenth-century India was reported in intricate detail. The original manuscript of Buchanan’s *A Journey* is missing from the Buchanan Papers in the Oriental and India Office Collections in the British Library. Copies of it can be found, however, in the obvious place, the Board of Revenue Records of the Madras Presidency held in the Tamil Nadu State Archives, Chennai.

**IV**

John Walker, lecturing to his students at Edinburgh, remarked that the term natural history was used “so indefinitely” that he hardly knew what to teach as part of the subject. This was disingenuous, because once he had won the coveted Chair in Natural History he knew exactly what to do to establish his rights over it: teach the discipline in a way that solidified the “landlord-literati alliance” by affirming proprietal claims over natural objects. To do so he presented natural history as of a piece with agriculture. Agriculture, he taught, was useful knowledge that required schooling in the sciences of chemistry and natural history and “improved minds” to carry it out successfully. Pedagogical practices at Edinburgh confirmed this. Agronomy became the *pattern science* within which the overlapping disciplines of chemistry, botany and natural history formed themselves at the university.

The teaching of these “useful” sciences was a characteristic of the Scottish Enlightenment, whose civic culture produced a vision of nature as a set of rational
principles to be decoded by experts. This vision of nature in tandem with the new historical disciplines that emerged at the same time taught Scottish *savants* to see the world’s cultures as different stages in the progress towards commercial society. The result was a natural history fashioned to assist a colonizing state. Walker himself had surveyed the Highlands for the Crown in the wake of The Forty-Five. The idiom he created through his reports was a first step in fashioning the survey as a language of power. And as an engine of colonization it reached its apotheosis in Buchanan’s surveys of British India.

The language of *A Journey* was as much a product of the Scottish Enlightenment as conjectural history or the emergence of crofting in the Highlands. The Doctor knew its value, and fretted about slippage and loss in translation: “I am afraid, however, that the reader in pursuing the foregoing accounts, will have formed an opinion of the native agriculture still more favourable than it deserves,” he wrote about his descriptions of agrarian practices near Srirangapattinam. “I have been obliged to use the English words ploughings, weedings, and hoeings, to express operations somewhat similar, that are performed by the natives; and the frequent repetitions of these, mentioned in the accounts taken from the cultivators, might induce the reader to imagine that the ground was well wrought, and kept remarkably clean. Quite the reverse, however, is the truth.”²¹²

He need not have worried. His language would be appropriated and strengthened by English Utilitarians, who would make it the dominant idiom of colonization in nineteenth-century India.

Chapter IV

Making Knowledge, Making Patrons, Making the State:
William Roxburgh in Madras

I

“Indeed he also says, that nothing will induce him to make a much longer stay in India, than being possessed of improveable Land Property, which cannot be taken from him, when it is improved; but that he may then reap the fruits of his Labour, and be certain that the benefit will devolve to his children, or to whoever else he may see it convenient to make it over.” ¹

This chapter explores the dynamic between state-making and natural knowledge-making in East India Company India. It does so by following the fortunes of two Scottish medics in the Company’s Medical Service – William Roxburgh, who at the apex of his career was Superintendent of the Calcutta Botanic Garden; and Francis Buchanan, who institutionalized a particular style of “doing” natural history in British India, which was discussed in the last chapter. The two underwent the same training at the University of Edinburgh’s Medical School, took many of the same classes, and were passionately interested in botany and natural history. Both went to India in hopes of returning to Scotland with a large fortune. Roxburgh did; Buchanan didn’t. Explaining why offers us a window into the dynamics of state formation in the early modern British Empire, both at home and abroad.

In the following pages I examine the relationship between natural knowledge-making and the British state in the eighteenth century, and state formation in colonial India, where forms of natural knowledge-making developed in Britain played a constitutive role in the Company state. My story is located at the intersection of three

¹ Letter from Andrew Ross to the Madras Board of Revenue, 20th June 1793, Roxburgh Correspondence, Natural History Museum, London (hereafter RC/NHM), f. 23 (recto).
different axes of analysis, which use the idea of the empire-state, the concept of the familial state, and the concept of “logistics” or control of the natural world as a way to build state power.

The East India Company was simultaneously a commercial entity and a state. Philip Stern has called the seventeenth century EIC a “Company-State”; and his point is well taken: thinking of early modern corporate entities as governments in their own right, as performers of “stateliness” forces us to confront the messy, fragmented, and contested character of the European states of the period. The types of absolutist states that social theorists of the seventeenth and eighteenth centuries described were prescriptive rather than descriptive entities; each early modern European state deserves deconstruction on its own terms in order to recover its dynamics.² Stern exposes the continuities between the seventeenth and eighteenth-century Company states. Yet he does not tell us how the Company’s commercial practices affected its governance. What made the hyphenated entity, the Company-State, a distinctive political economic order? What aspects of its corporate being organized its stateliness?

This chapter sets itself the task of understanding how the Company’s sovereign powers converged (or “colluded”) with its commercial functions, and fixes on the private trade of Company functionaries as one site of such convergence.³ This was the trade that Company servants carried out on their own account, using the protection and the privileges accorded them as EIC employees to build personal fortunes. Such trade played

³ See Nicholas B. Dirks, “Economy”, in The Scandal of Empire: India and the Creation of Imperial Britain (Delhi: Permanent Black, 2007). Dirks borrows from Edmund Burke in speaking of the “collusion” between the Company’s sovereign powers and commercial functions (159-160).
a critical role in the emerging colonial order in eighteenth century India, cementing and stabilizing chains of command.⁴

The Company’s medical men were prominent players in this trade. They were experts in natural history, in marshaling the facts about nature that underpinned a variety of trading operations. As discussed in the Introduction, the epistemological practices of Company surgeons comported with the needs of their merchant colleagues. Roxburgh’s success as a colonial man of science lay in his recognition that that fine-grained experiential knowledge of natural objects he produced was vital to his merchant colleagues’ trading fortunes. He was quick to see that his botanical knowledge could not only be useful in developing commodities for the Company, but in building his private fortune and giving him access to the puissants who influenced state policy in India and Britain.

The EIC state was built by drawing on techniques of statecraft honed in contemporary Britain. But eighteenth century India was no tabula rasa. The waning Mughal Empire had been replaced by a series of successor states, both in the north and the south of the country, with their own traditions of statecraft and institution-building. The Company thus inserted itself into a dynamic political environment, which had a profound impact on the shaping of its state.⁵

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⁵ Sanjay Subrahmanyam, *The Political Economy of Commerce Southern India 1500-1650* (Cambridge: Cambridge University Press, 1990), 31-44, is a clear-headed summary of the historiography on state formation in south India. For the Mughals, see the essays in Muzaffar Alam and Sanjay Subrahmanyam,
The period has produced diverging historiographical interpretations. Historians of British imperialism such as C. A. Bayly view this time as a relatively stress free transition to colonial rule, in which new institutions of governance were developed, which sat lightly atop indigenous institutions that had emerged over the previous half century. Others, notably Sudipta Sen, have argued that such explanations deny the specific nature of the administrative intervention undertaken by the colonizing state. In order to fulfill its ideological and mercantile imperatives the Company had to significantly rearrange the institutions it encountered, both agrarian and commercial, producing a new colonial terrain that was maintained through force of arms.  

While the Company’s declared intention was to make India a zone of free trade, the exigencies of establishing its monopoly made it intolerant of alternative types of trading privileges, which were forcibly removed. This “permanent settlement of market places”, through which zamindars’ control over markets and passages of trade was suppressed with the backup of the army set the tone for early Company-State politics. Factions within the Company’s governing elite acted to maintain the commercial upper

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7 Sen, *Empire of Free Trade*, Chapters 3 and 4. Sen’s elegant book, based on colonial records and Persian, Hindustani and Bengali sources, is a valuable corrective to reified understandings of the colonial state. His narrative captures markets in Bengal in the very process of being taken over by colonial power and reformed within the new framework of regulation and order that would characterize the institutions of the Company state.
hand, resorting to armed force if necessary, and violating the integrity of neighboring states as they did in Madras in the 1770s. There members of the Madras Council who were creditors of a regional ruler, the Nawab of Arcot, and deeply implicated in Arcot durbar politics, imprisoned their president, Lord Charles Pigot, when he withheld consent to Arcot’s invasion of nearby Tanjore (Thanjavur). Conquering Tanjore was a necessary step to increase the nawab’s tax base so that he could repay the loans from Messrs. George Stratton and Henry Brooke, which supported Company troops at Arcot. Such growing sub-imperialism coupled with the increased volumes of trade and commerce flowing through regional polities such as Arcot created fertile terrain for private trade.

It also meant that at Madras, at least, decisions about governance would usually err on the side of protecting commerce.

The Company’s men on the spot who learnt to navigate the tensions between local revenue officials, landlords and peasants, chiefs and retainers, weavers and merchants, would operate successfully in the interstices. They knew which locals to bribe and how to identify producers to service their private trade. Their patrons among the Presidency’s great merchants, meanwhile, supported their activities in exchange for information that greased their supply chains. And if matters spun out of control the Company’s sepoys could always be marched out to restore order.

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Consider Frederick Cooper’s concept of the empire-state, a polity without a clear national core or contiguous territorial existence, which functioned both as a zone of exploitation and a space for moral debate about issues raised by colonization – the legitimacy of slavery, forced labor, religious conversion, western education. Empire-states, he claims, were neither nations nor empires clearly divided between a national core and a subordinate periphery. If the early-modern British state were indeed such an empire-state we would expect to see the British Isles and its colonies functioning as continuous spaces for the ideological and political projects of the period, even if these were beset by the ambiguities created by the working of colonialism on the ground. And this is what we do see in the case of the ruling ideologies of the Company state, by its efforts to introduce social and economic reform into its territories in India. The revenue and market reforms initiated by Warren Hastings and Charles Cornwallis at the end of the eighteenth century aimed to establish the rule of property in the Company’s territories by make personal property sacred “in the pittance of the poor as in the possessions of the

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11 Sudipta Sen’s essay, “Liberal empire and illiberal trade: the political economy of “responsible government” in early British India”, in *A New Imperial History: Culture, Identity and Modernity in Britain and the Empire 1660-1840*, edited by Kathleen Wilson (Cambridge: Cambridge University Press, 2004), 136-154 captures the contradictions and conflicts of interests that resulted from the working of liberal imperialism on the ground in India. Uday Singh Mehta’s book-length analysis of a “self-consciously universal Liberalism” born in a substantially European context meeting unfamiliar conditions in the Indian empire and responding to them, also fortifies the concept of an empire-state. See Mehta, *Liberalism and Empire*. 
The outcome of the Permanent Settlement in Bengal was the creation of an absentee landlord class in the Bengali countryside, and not the hoped-for pattern-card zamindar improvers. Conditions on the ground, especially the dislocation of indigenous property relations contributed to this, but the need to accommodate the institutions and structures of previous states clearly did not determine the decisions taken by the Company’s government in forcing through the new property regime.13

Take another example, that of the ideology of improvement and the institutions that grew out of it. British improvers both at home and abroad, as Richard Drayton has noted, acted in the belief that they knew better than those on the ground how to steward land and resources. “Improvement” as profit, property or moral betterment exercised a hold on the imagination of colonizing Britons that played out in various ways. While William Roxburgh was unable to conjecture a career in India husbanding the Company’s resources without his own land to improve (see epigraph), the botanic gardens he helped set up also worked to consolidate imperial terrain as space without a clearly-defined center:

Botany flourishes most abundantly, the Queen studies diligently under Aiton, the ship which we are sending to Otaheite to bring home the bread-fruit to the West Indies will be bringing plants from thence, the Garden at St Vincent flourishes a new one is established at Bengall & an intervening proposed… & probably another will soon be starting at Madras.14

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13 The classic work on the subject is, of course, Ranajit Guha, A Rule of Property for Bengal: An Essay on the Idea of the Permanent Settlement (Paris: Mouton & Co., 1963). Also see Sen, "Liberal Empire" and Sen, Empire of Free Trade. There has been lively debate on whether the Company state was an indigenous or European formation. The state-of-play on the question is summed up for south India in a recent article by David Washbrook, “South India 1770-1840: The Colonial Transition”, Modern Asian Studies 38 (July 2004): 479-516. This chapter does not directly engage with the question.
The notion was made explicit in a letter from Roxburgh’s partner-in-trade, Andrew Ross, who envisioned a bright future for the Doctor’s experiments with coffee in his garden at Samulcottah:

… the demand of the [merchants] this year at Mocho is great & doubtless they would be highly gratified if it should be reared with success in their own limits – and became one of the important articles of Trade.\textsuperscript{15}

Now consider the main claim of Julia Adams’s book on the early-modern “familial state” in Europe: Adams argues that the notion of “father rule”, which had paternal authority and patriarchal power at its core, created elite ideologies where masculine creativity and power went beyond mere lineal reproduction to encompass “a more general sense of political husbandry and direction”. Practically speaking, father rule played out in England through extended family lineages embedding themselves in government posts and the Parliament, sons succeeding fathers in heirloom seats, so much so, that as John Cannon put it, “To trace all the relationships which made the opening of an eighteenth-century Parliament a family reunion for many members would be impossibly time-consuming.”\textsuperscript{16} Roxburgh certainly understood his role as a functionary of the East India Company along familial lines. It was not only that he took every care to promote his own lineage within the Company state but also that he carried out his activities as Company Naturalist under the sign of stewardship, even if the principal focus of his labors was enabling the production of commodities for export. Return had to be made to the land that gave so much:

D\textsuperscript{r} Roxburgh whose attention to Botanical pursuits and particularly to the Cultivation of useful vegetables you are well acquainted with has written

\textsuperscript{15} Andrew Ross to William Roxburgh, Madras 26\textsuperscript{th} July, 1793, RC/NHM, f. 90 (recto).
home a request that he may be supplied with some Trees of Pimento or all spice the Produce of which he thinks likely to be usefull & advantageous to the natives of India.

It being judged here by myself as well as others that the Doctors request was likely to produce if acceded to beneficial Consequences to the inhabitants of Madras & to furnish an opportunity of returning in some degree the Obligations we have received by the valuable Plants that have been from time to time Sent from thence to Europe The Pimento trees have been Procurd & Planted in Proper Boxes for their Voyage.

I therefore request Gentlemen that if you Join in opinion concerning the utility of the Pimento Trees to the People of India & the Propriety of making returns for the valuable Plants receivd you will be pleased to order that they may be sent out in one of the Companys Ships...

“Father rule” worked through patronage relations with landed property as their base. We know that in the case of the Anglo-Scottish Union of 1707, the co-optation of members of the Scottish landed elite into the Whig oligarchy was crucial to stabilizing the new British state. But the singular role that the Scottish patronage machine played in creating the British state also affected the Scottish diaspora in the colonies. This was particularly true of Madras Presidency in the 1780s and ‘90s, where colonial patronage politics worked (albeit in a small way) to effect the management of the British empire-state from the “periphery”. Sir Archibald Campbell of Inverneil, who was appointed Governor of Madras in 1785, had personal electoral concerns at home and a relationship with Henry Dundas, friend and advisor to the younger Pitt, that required nurturing on the Madras frontier. Scots were disproportionately represented among Madras’s armed personnel; but Campbell increased their weight in the civilian sector, appointing David Haliburton and John Balfour (unconnected to him by ties of kinship or locality, but nevertheless “Scottish”) to the newly created Madras Board of Trade; aided the fortunes

of Benjamin Roebuck, a Company writer; and promoted another Scott, Hugh Maxwell, as taxation supervisor. According to Andrew MacKillop, these Madras contacts would have generated some sense of obligation to Dundas in six Scottish seats, over 13% of the country’s entire parliamentary representation.\footnote{Andrew MacKillop, “Fashioning a ‘British’ Empire”, explains how each of these men had connections in Scotland who supported the Dundas clique.} Inverneil’s stay at Madras was brief but he used his time there to create conditions that would prove propitious for the likes of Roxburgh to advance themselves in the 90s.

Though the military-fiscal British state acquired a more impersonal bureaucratic cast by the end of the eighteenth century, its central institutions, as John Brewer has remarked, remained a compromise between political clientage and administrative efficiency. Government service continued to run in families and many a state servant remained attached to an individual patron. The way forward in state or society remained patronage, with administration remaining informal and susceptible to outside advice.\footnote{John Brewer, \textit{The Sinews of Power: War, Money and the English State 1688-1783} (London: Century Hutchinson, 1988), Chapter 3.} State policy was often decided by what Thomas Ertman has called “shared rule”.

Shared rule, the presence of both a strong monarch \textit{and} a strong Parliament in England from as early as the 1300s, produced a pattern of consultation and co-operation aimed at maximizing the state’s military effectiveness.\footnote{Thomas Ertman, “Variation in Early Modern State Structure”, in \textit{Rethinking Leviathan: The Eighteenth Century State in Britain and Germany}, edited by John Brewer and Eckhart Hellmuth (Oxford: Oxford University Press, 1999), 49.} The concept has been glossed to include practices in which different individuals and interests collaborated or opposed each other in order to solve social problems or implement policy, so that as an analytic it
implies looking at the state “neither from the top down, nor from the bottom up, but at the points of contact… negotiation not coercion is the key concept [here].”  

In India the concept was embedded in the East India Company’s forms of organization. In the late-seventeenth and eighteenth centuries the head of factory—the agent or governor—acting in council transacted Company business. All matters were to be decided through debate and consensus, hence the name given to the inscriptional embodiment of the process, the Consultation Book. * Consultation and Letter books were more than the material expression of the political and economic relations in any factory—they were constitutive of them. Decisions became decisions only when written down (and read). The “Madras Revolution”, for example, became a decision through the documents selected for inclusion in the Consultation and Order books for August 1776, which would have made it possible for its principal reader in London, the Court of Directors, to defend it should they have so desired (they didn’t). The “Revolution” was the trial of strength between the Governor of Madras, Lord Pigot, and the majority in his Council, who unseated him for refusing to acquiesce in the takeover of the princely state of Tanjore by neighboring Arcot, as already described. The documents sent to London included a proclamation by the self-constituted majority in Council; Lord Pigot’s charges against them; and the report of the acting Commander-in-Chief (which narrated his gentlemanly procedure for arresting Pigot). The Standing Order attached to the proclamation declared:

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21 See John Brewer and Eckhart Hellmuth, “Introduction” in Rethinking Leviathan, 12.
* Today a major primary source for dissertations such as this one, and one wont to trip up scholars who do not stop to reflect on the rationale of colonial modes of documentation.
Whatever shall be agreed upon by the Majority shall be esteemed the Order by which each One is to act, and accordingly every Individual Person, even the Disputers themselves, are to perform their parts in the prosecution, and in doing so they do their Duty, and must not be blamed.  

Similarly, the governance of Company settlements such as Madras had to take account of the views of resident free merchants with whom Company merchants had tie-ups in various commercial matters. As the settlement’s infrastructure for trade including the remittance of bills of exchange to England, the use of native boatmen for landing and shipping goods, and the weekly post service, was used by Company and independent merchants alike, it was in everybody’s interest to collaborate. In January 1775, for instance, the free merchants of Madras (including Roxburgh’s future ally, Andrew Ross) petitioned the Government of Fort St. George on the necessity of regular postal communication between Madras and Bombay: “To lighten any additional Expence to the Company which might arise from a fixt Dispatch, all Letters might be charged with such a moderate Postage as would not prove any discouragement to a frequency of Correspondence. And this Tappy should also be open for all persons whatsoever, without any Distinction, whether British Subjects, Natives or Strangers…” This was forthwith attended to.

In the Britain of the period, meanwhile, shared rule meant that policy was sometimes set through quasi-public quasi-private institutions such as the Board of Agriculture; and wholly private individuals like the Justices of the Peace could carry out state administration; or effectively direct state policy, as for example, did Joseph Banks, the President of the Royal Society.

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Banks is a particularly interesting case: he never held formal public office, but his success as informal advisor to a variety of government agencies and institutions saw his elevation to the Privy Council in 1797. The source of his almost despotic power as a *savant* was his agricultural wealth, and it was this wealth that earned him his social and scientific *entrée*. He was the epitome of an idea with great purchase in the late Enlightenment, that of an individual or a nation taking command of resources, their own or others’, for the improvement of the world. The spirit of the idea was captured by Robert Kyd, Roxburgh’s contemporary and founder of the Calcutta Botanic Garden, in a quote on the importance of stewardship by individuals and governments in the making of state policy, which he placed on the first page of his statistical memoir of Bengal:

“Policy in its genuine signification being the art of ordering all things for the benefit of the Citizens of the state, plainly leaves every man; (sic) at least the Liberty to study it if occasion serves, it does not prescribe it as a duty; the *Will or Inclination* of doing which is what we call public spirit.”

“The perfection of policy considered in this light is so to improve the natural advantages in the possession or in the Power of the Society to which it is applied, as to make all without distinction, who compose that society as happy as it is possible, and to place this happiness on the firmest Basis, so as that neither the ever mutable tempers of men or the inevitable vicissitudes of time should affect it. We know that in this world perfection is not to be attained but it ought notwithstanding to be aimed at, because without keeping this unattainable perfection steadily in view, we cannot proceed far in what is to be attained, and for this purpose perhaps Providence indulged to us such an Idea. Policy then is the Common Sense of Government (or rather Common Sense as applied to Government) is everywhere requisite serving in some nations to restrain, in others to excite, in all to methodize, and direct the “Endeavours of a Nation”.

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25 The point is exhaustively discussed in John Gascoigne, *Science in the Service of Empire: Joseph Banks, the British State and the Uses of Science in the Age of Revolution* (Cambridge University Press, 1998), especially Chapter 5, 111-146.
27 Robert Kyd, *Memorandum for forming a Memoir or Report of the state of the Provinces respecting Agriculture, Productions, Commerce, Population and Manufactures*, in MSS/EUR F95/1/APAC/BL Miscellaneous Papers of Robert Kyd, f. 162 recto and verso (emphasis original). It is unclear whom Kyd is quoting.
Banks’s interest in stewarding agricultural improvement and increased food production through technical expertise expanded to encompass an ever-increasing range of activities and people, so that he became the expert of choice, the go-to gentleman, on almost any matter of policy: African and Artic exploration, colonial administration, sheep breeding, East India trade, currency reform or the uses of botany for economic government. Individuals in British society, especially the landowner-*paterfamilias-*naturalist as in this case, could thus become powerful state actors, “sites of passage” for channeling its power through their actions. Banks, indeed, has been apostrophized as a “center of calculation” by David Philip Miller, and it is as such that he enters this story.\(^{28}\) His enormous success in disciplining individuals and institutions to do his bidding made him a formidable patron.\(^{29}\) Any eighteenth-century British naturalist who attracted and held his attention could be sure of a secure foothold in science and society, and it was to Roxburgh’s credit that he quickly recognized this fact. Buchanan, meanwhile, appears not to have competed successfully for Banks’s attention (he gifted Banks his Burmese

\(^{28}\) David Philip Miller, “Joseph Banks, empire, and “centers of calculation” in late Hanoverian Britain”, in *Visions of Empire: Voyages, botany, and representations of nature*, edited by David Philip Miller and Peter Hanns Reill (Cambridge, England: Cambridge University Press, 1996), 21-37. On “center of calculation” see Bruno Latour, *Science in Action* (Cambridge, MA: Harvard University Press, 2002), Chapter 6, 215-257. Briefly (and reductively), the concept of “center of calculation” implies a fixed point to which useful knowledge from a distance is brought back. Latour uses the example of eighteenth-century voyages of discovery to explain the working of such centers. These voyages brought back information about distant places to a central point such as a European metropolis, creating a “cycle of accumulation” in the process. Each new cycle of accumulation built on and contributed to the previous cycle’s stock of knowledge. Creating such accumulations at a center required mobilizing knowledge through transportable “inscriptions” such as maps, which rendered it both “stable” and “combinable.” The end result was the extension of European imperium to different parts of the world.\(^{29}\) William Jones’s relict, Lady Anna-Maria Jones, was the recipient of his forceful attentions when she dared to suggest that the Royal Society give up its claim to a portion of the Jones MSS in favor of housing the undivided collection at the British Museum. See Anna Maria Jones to Lord Spencer, 13\(^{th}\) March 1797 and 20\(^{th}\) March 1797; and her note on a letter from Spencer of the same day. *BL Add. 75981*, British Library, London.
plant collection who did nothing with them) although he was certainly a client of a lesser luminary, Sir James Edward Smith, founder of the Linnean Society of London.

If naturalists in Britain acquired power by informally putting their knowledge at the disposal of policy makers, their activities on behalf of the East India Company state were institutionally mandated. The nexus between natural knowledge-making and state-making worked differently in colonial India. It proved expedient, once the Company began directly collecting revenue in the territories under its control, to set up a Board of Revenue, whose officers would oversee the assessment and collection of the revenue. Territorial revenue divisions, known as “Collectorates”, were placed under covenanted officers known as “Collectors”. These Collectors, part of the Company’s civil service, were invested with powers to conduct detailed inquiries into the revenue resources of the areas in their charge, in order to “settle”, i.e. fix, the Company’s revenue for a given period of time. Assessments of the cultivation of an area, its land tenure system and its natural resources, information that in Britain may have been collected through the Board of Agriculture (of which naturalists like Banks were members) became part of the formal duties of the colonial Collector.30 The European division of every Collector’s establishment included, significantly, a surgeon, often a Scot, to whom fell the task of apprising the Collector about the area’s natural history.31 The formal responsibilities of Collector and surgeon were, however, in potential conflict with their private interests.

31 B. B. Misra, The Central Administration of the East India Company 1773-1834 (Manchester: Manchester University Press), 158. For the conditions under which an Assistant Surgeon could be seconded to assist a Collector, see Lord Cornwallis’s Minute of 1788 on the Indian Medical Service, “Rules and Regulations for
Covenanted officers in Company service received abysmally low salaries. A writer, the lowest rung in the Company’s civil service received 5 pounds a year; on reaching the status of head merchant after approximately ten years of service the sum rose to 40 pounds. A young surgeon would have started out at approximately 27 pounds a month. At a time when the span of an Indian career was expressed in the adage “two monsoons are the age of a man”, young hopefuls did not head east for what the Company paid them. They were lured there instead by the prospect of riches acquired through private trade in Asia. Their right to trade privately was made explicit in the covenants they signed when first taking up employment. The entrepreneurial avenues this opened up created the legendary fortunes of the eighteenth-century “nabobs”. 

There always existed the possibility of conflict of interest: Company Directors in London, with reason, frequently voiced their nervousness about Collectors prejudicing the commercial interests of the Company through a monopoly of local trade. In the 1730s the value of private British investments in the inland and seaborne trade of Bengal approximated that of the Company itself. And yet the system worked, driven by the synergy between Company business and private trade.

Medics, like other Company employees, rushed to build private fortunes. D. G. Crawford’s *A History of the Indian Medical Service* is replete with details of doctors

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35 Hejeebu, "Contract Enforcement", makes a strong case for the synergy between Company business and private trade, although she does not realize the significance of what she calls “insider hiring” - patronage relations – and its nexus with private trade/Company duties. She leaves untheorized the relationship between family and kin ties, and the dynamic of official/private trade.
working as civil and political officers who remitted huge sums to Britain, and others who transitioned easily from doctor to merchant. The fortune-hungry medic was a familiar enough figure in eighteenth-century colonial society to be satirized in the *Calcutta Review* of 1854 as the “Philosophic Surgeon”

who, on his way to his indigo factory, would inquire of the native doctor – “Any thing today” – and, upon receiving the ready answer, “All’s well, Lord of the World! only five men dead,” would exclaim cheerfully – “good, very good” – and canter gaily about his business.37

Crawford’s evidence could be dismissed as anecdotal were it not for the fact that by 1841 the Court of Directors expressly forbade medical officers from “business as bankers, traders and indigo planters”.38 The Scottish medic-on-the-make, then, was a social type in early colonial India.

Their training as natural historians gave these men an edge. They had the expertise necessary to find the goods involved in the country trade: silk, cotton, indigo, spices such as pepper or cardamom, bazaar medicines, minerals; and to judge their quality; they knew where to locate plants and minerals in the interior of the country, and the rivers and waterways down which goods could be transported.39 They had, in short, what Chandra Mukerji has theorized as logistical power, “the ability to mobilize the

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37 “ART. VIII – Alphabetical List of the Medical Officers of the Indian Army; with the dates of their respective Appointments, Promotion, Retirement, Resignation, or Death, whether in India or Europe; from the year 1764, to the year 1838. Compiled by Messrs. Dodwell and Miles.” *Calcutta Review* 23:45 (July 1854): 217-254, at 242.

38 Judicial and Revenue Department, Aug. 17th, 1841, in Crawford, *A History*, 82.

39 Benjamin Heyne, the Danish medic in the Company’s employ, for example, produced statistical essays on the natural features and productions of the Northern Circars, including details on the use of the Godavari river to transport men and goods. See Tract XVII, “Observations Made on a Tour from Samulcotah to Hydrabad”; and Tract XVIII, “A Brief Account of the Circars on the coast of Orissa”, in Benjamin Heyne, *Tracts Historical and Statistical on India with Journals of Several Tours Through Various Parts of the Peninsula, Also an account of Sumatra, in a series of letters* (London: Black, Parry and Co., 1814), 247-281; 282-287. Also, Chapter II of this dissertation on Francis Buchanan’s *A Journey*. 
natural world for political effect”.\textsuperscript{40} Mukerji has shown how logistical power (as distinct from strategic power), acted as a distinct historical force for change in seventeenth-century France. Its deployment in the building of the Canal du Midi produced an impersonal territorial state as its unintended consequence, jeopardizing Louis XIV’s patrimonial rule.

Both Roxburgh and Buchanan, especially Roxburgh, rather like Mukerji’s\textit{ gabelliste} and engineers, acquired the knowledge required to change the material environment and define the emerging territorial politics of the Company state. Arguably, Roxburgh came close to wielding a power that could have taken him beyond the patronage relations that structured the EIC state. Instead, he used his logistical knowledge to affirm and stabilize his status as the client of powerful men. Explaining why, as this chapter tries to do, locates the dynamism of the Company state in the politics of private trade. One of the features of the clientelism associated with patrimonialism is the absence of separation between private and official. This feature marked the trading practices of Company employees, who as already noted, used the resources of the EIC state to create their private fortunes. In the story told here these practices produced an unexpected outcome: the formalization of emerging natural-knowledge-making institutions at the same time that natural knowledge began to be seen as a tool for regional political integration. Private trade made the institutions of the colonial state cohere.

II

Consider two different types of knowledge-makers, the botanist and the naturalist, which John Walker, Professor of Natural History at Edinburgh, placed before his students in his lectures:

It is the business of a Botanist to methodize and distinguish plants.
It is the part of a Naturalist to be acquainted with their properties.
It is the task of a Botanist to discover unknown plants with a view to their future usefulness.
It is the business of a Naturalist to discover useful qualities in those that are already known.\(^41\)

The Naturalist, Walker seems to say, is a useful man. He is acquainted with the properties of plants, he understands their application to productive ends, and he promotes those material improvements upon which the future prosperity of the state depends. The Botanist, on the other hand, is an underlabourer, clearing the brush. He finds new plants. He methodizes. He makes the knowledge upon which the naturalist “improves”. The differences between the two, and the way they were understood by Francis Buchanan and William Roxburgh respectively, may have decided each man’s fortuna.\(^42\)

The naturalist of Walker’s definition was much in demand at the end of the eighteenth century. The state’s military effectiveness at home and abroad was contingent

\(^{41}\) Scott (Walker), Lectures on Geology, 28.
\(^{42}\) I do not mean to imply that Walker underestimated the importance of botany for state-building. He wished only to coax botanists out of the “narrowness of their Fortunes”. A two-volume set of his miscellaneous papers at the Centre for Research Collections, Edinburgh University Library, John Walker, Papers on agriculture, natural history etc., Dc. 2.39 1-2, includes a document titled, significantly, Novum organum Botanicum, a series of suggestions for establishing a universal nomenclature of botany “and the compilation of a complete system of Botany Under the auspices of the Royal Society of London.” This astonishing document gives evidence of Walker’s keen awareness of the importance of botanical knowledge as logistical power, and its nexus with commercial imperialism, as well as his recognition that Britain possessed crucial advantages that could turn it into a “center of botanical calculation”: “Tho’ by our situation detached yet by our Commerce we are placed in the Center of European Correspondence. -- Our Merchants, Factors and sea captains, many of them Men of liberal Education, and forward to further Philosophical Designs. -- Our Climate favourable beyond all the Baltick Kingdoms. -- In a word, there is no place upon Earth, that has the advantages of Britain, for the Execution of such a Design”. Volume 2, f. 95.
on the control of material resources, so any *savant* with a taste for natural history and the necessary vigor to pursue his goal, could fashion himself into an expert for the British state. Walker’s own career was a lesson in such self-fashioning. Though his initial forays into the arena of “improvement” were privately undertaken, he *did* work directly for the British Crown when he was appointed a surveyor for the Commissioners of the Annexed Estates, the body which oversaw the confiscation of the lands of rebel Highland landowners after 1745. His unpublished papers show the wealth of thought he put into devising questionnaires and surveys about Scotland’s natural resources, some of which were undoubtedly appropriated by Sir John Sinclair, to whose *Statistical Account* Walker contributed two parish surveys. But there were bigger fish in the state’s pool of experts, namely Sir Joseph Banks, who would play a major role in Roxburgh’s inclusion within the inner circle of the British state’s scientific *puissants*.

In India, a Company surgeon who was a naturalist in Walker’s sense could do a great deal to promote himself. The trick was to recognize that the nexus of natural knowledge-making with commercial imperialism produced a series of entanglements which could be manipulated to build social capital. Assistance to factors with order rolls to fill could produce friendships with members of the Board of Revenue or free merchants at the Presidency capital, Madras. These relationships could smooth preferment to a civil (as opposed to military) station of the Indian Medical, which was vital to carrying out both botanical research and private trade. Merchants who required aid in finding commodities for their trade could help in turn by remitting profits to

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43 One of which, the “Statistical account of the parish of Collington”, is reproduced in *Essays on Natural History and Rural Economy*, 535-614.
Britain, as Andrew Ross, Madras’s most prominent free merchant, did for his clients. Assiduity in locating resources for Company trade could bring recognition from *savants* in Britain who lobbied for “scientific” appointments and research assistance for their protégés in India.

Roxburgh may have been unaware of all this when he was appointed Assistant Surgeon at the General Hospital at Fort St George in 1776. By 1781 he was appointed to a small garrison town, Samulcottah (modern Samalkota in Andhra Pradesh), in the Company’s Northern Circars in southeast India. (See map) The Circars, however, were a principal site of the EIC cloth trade, and so a fine place from which to study Company trading in action. He would remain at Samulcottah until his move to Calcutta in 1793 to assume charge of the Calcutta Botanic Garden.

The cloth trade in south India had a complex structure. Cotton was cultivated in a few areas in the interior districts from where it was carried to weaving centers on the coast, so that cotton and yarn remained important items of internal commerce throughout the eighteenth century. Much of the cotton that reached the Circars, though, came overland from the Deccan, brought there by caravans of pack bullocks organized by *Banjara* nomads. (Roxburgh, to his credit, was instrumental in recommencing the visits

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44 Andrew MacKillop, "Fashioning a "British Empire".  
of the Banjaras, disrupted by war, to the Northern Circars.) The cloth merchants who procured goods for the European companies usually resided in the port towns but they had an intimate knowledge of the weaving villages dispersed throughout the hinterland. They would either travel themselves to these villages, providing cash advances to weavers to produce specific types of cloth for European markets, or operate through brokers who did the contracting for them. There were different stages to the technology of cloth production and a separation of functions both social and technical, which required careful scrutiny and supervision.\textsuperscript{48} Company servants seldom made direct contact with the weavers, relying entirely on the commercial expertise and local knowledge of indigenous merchants to fill their orders. It was up to the latter to manage their risk by making sure that the weavers, a feisty lot with strong bargaining power, adhered to Company specifications for the quality and dimensions of cotton piece goods. In the event they did not, they stood to lose more of their initial investment than the EIC.

It was through manipulating the institutional arrangements for purchasing cloth that private traders cleaned up.\textsuperscript{49} Weavers in pre-colonial south India, as Prasannan Parthasarathi has shown, had rights and privileges not accorded to merchants. They could break contracts with merchants, were not obliged to return their cash advances, and would up and leave their villages if better locales beckoned. They were also masters at disguising poor-quality cloth, which took less time to weave, to look like the more expensive article. If the Company’s merchants rejected cloth pieces as not up to sample, other Asian merchants and European private traders were on hand to snap them up.

\textsuperscript{48} K. N. Chaudhuri, \textit{Trading World}.
\textsuperscript{49} Chaudhuri, \textit{Trading World}.

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\textsuperscript{49} Chaudhuri, \textit{Trading World}.
These men, who had not risked capital advances to weavers, were ready to pay high prices and accept inferior cloth, confident of their ability to sell it. The conditions of production for weavers would rapidly deteriorate through war and famine by the end of the century, but high profits from private trade were still possible, especially for those traders with friends in the interior willing to exert themselves in their interest. It is in a letter written by such a one, Andrew Ross, that we learn of his friend, Dr. William Roxburgh.

The letter is addressed to David Haliburton, whom Archibald Campbell had appointed to the Madras Board of Revenue, and who by 1793 was Acting President of the Board of Revenue, and his colleagues. It accompanied a proposal from Roxburgh to rent the Corcondah district of the Northern Circars. “I cannot easily excuse myself from bringing to your notice in this separate address”, writes Ross,

the intimate knowledge of which I am possessed of the many conspicuous proofs which this Gentleman has given, of his being eminently qualified for the prosecution of the important Improvements, which he expresses it as his intention to bring forward, in the Lands which he applies for, of trust that such a conduct will not be deemed improper, or superfluous (sic), in a Friend, with whom he has been for several years in the habits of an intimate and uninterrupted correspondence, and to whom for the last six years of his residence to the Northward, a communication has constantly been given of every material circumstance relative to his Pursuits and Enquirys, as Professor of Botany and Natural History in the service of the E. I. Comp’y.

Ross was a man of substance even by the standards of a Madras nabob. He was a sometime mayor of Madras; part owner of the row of banksalls a half-mile long that...
graced the waterfront of Madras’s Black Town; and of a spacious house on Charles Street inside Fort St. George, which he offered to let to the Madras government, “at the moderate Rent of eighty Pagodas per month for five years” to accommodate the members of the Madras Council when they met to fulfil their judicial duties (he was himself the Foreman of the Grand Jury), with offices, accommodations for a family, godowns, stables and outbuildings; he was public-spirited (though always with an eye to his own interests), offering to pay for a bridge at Marmalon (Māmbalam), where he owned property; and when he died at the age of seventy-nine in 1797, after a residence in Madras of forty-five years, his house inside Fort Saint George alone was worth 15000 Star Pagodas.\(^52\)

In carrying out his duties as Mayor of Fort. St. George and of other political offices he held, Ross acted as a “portfolio capitalist”, the name given by Sanjay Subrahmanyam and C. A. Bayly to indigenous and Iranian merchants in the seventeenth-century south who joined commerce to political authority. Subrahmanyam and Bayly’s revisionism is aimed at undoing the historiographical separation of merchants from political power. At a time of caste fluidity and social mobility in the eastern Deccan, they argue, merchants such as the Persian Mir Muhammad Sayyid Ardestani (their archetype) were also nawabs, managers of entire “kingdoms”; multi-taskers who oversaw large prebends, kept their hands on local and overseas trade, and maintained substantial bodyguards. Such men utilized the capital of smaller-scale operators along with their

own, becoming conduits for indirect investment and thus “portfolio capitalists”. They were a serious threat to established authority. The Muhammad Sayyid himself, with his volatile combination of resources and ability to negotiate with the Mughal Aurangzeb and the Safavid Shah at Isfahan, was by the 1650s close to making the transition to.  

His lineal descendants, the British in the eighteenth-century Carnatic, drew on the resources of petty bazaar financiers and (if we are to judge by Ross) succeeded in entrenching themselves in regional society. Ross’s social and political clout in Madras Presidency made him, quite literally, a kingmaker. A succession dispute in Maratha Tanjore (Thanjavur) in the early 1790s saw adherents of Prince Serfoji (later Serfoji II) appealing to Ross for his intervention. Modi documents preserved in the Thānjavur Sarasvati Mahal Library describe how the Serfoji faction prepped Ross on the genealogy of the Tanjore Marathas so that he could make a convincing case for the young prince’s pretensions to Lord Cornwallis. If men such as Ross did not seize upon opportunities foras their compatriots were tempted to do in Achin (Indonesia) and Kedah (Malaysia), it was because they needed the Company’s military power, which followed in their wake, to provide the “protection” that guaranteed a surer return on Indian investments. Ross never held back in calling upon the military to support trade. The English expedition to Pulo Penang (Prince of Wales Island) in 1786, for example, had his hand on the rudder: extracts of letters published in the Oriental Repertory show his role in deciding (through

55 Subrahmanyam and Bayly, "Portfolio Capitalists", 422-423; Dodwell, Nabobs of Madras, 132-134.
Archibald Campbell) that Company troops should back up the expedition to claim this island so vital to the China trade.\textsuperscript{56}

Roxburgh, in getting such a man to speak for him, was signaling a social bond different from modern notions of friendship. To be a friend, a “loving friend” as letters in the diaries and consultation books of Fort St. George from the period have it, was to be a governor, i.e. a caring father, a solicitous patron. A late-seventeenth-century letter from London on shipboard conduct, for example, bade Company employees [not to]

give the aforesaid persons (belonging to your Ship) any occasion to leave you, but to encourage them all you can by confirming your Mate in his place, and countenancing him in his authority (to avoid any mutinous design among your men on acc\textsuperscript{1} of your differences) and giving both of them the accustomed privileges and civilities in your Ship and the usual civilities that ought to pass one to another during the tearme of the voyage, laying aside all animosities, referring your differences to the Rt. Hon\textsuperscript{ble} Comp\textsuperscript{y} in England and this is the desire and advice of Your very loving friends\textsuperscript{57}

Patronage politics in eighteenth-century Scotland were fraught in ways not replicated in England, manifesting an affect that reached beyond the structure of immediate social relations. There was no declaration of independence by a Scottish \textit{littéraste}, for example, to match Samuel Johnson’s protest to the Earl of Chesterfield.\textsuperscript{58}

\textsuperscript{56} See “Formation of the Establishment on Poloo Peenang” in Alexander Dalrymple, Volume II, 583-600, reproduced in Reinhold Rost, ed., “Miscellaneous Papers Relating to Indo-China” Reprinted For the Straits Branch of the Royal Asiatic Society From Dalrymple’s “Oriental Repertory” and the “Asiatic Researches” and “Journal of the Asiatic Society of Bengal”, Vol. I (London: Trubner and Company, 1886), 26-37, especially the euphemistic note on p. 27: “Mr. Ross had recommended to the Governor Sir Archibald Campbell, to direct some of the Company’s ships to call at Port Peenang, in their passage to China, as the means of giving countenace to the new settlement.”

\textsuperscript{57} Records of Fort St. George: Diary and Consultation book, Madras Presidency, East India Comp, for the calendar Year 1683 (Printed by the Superintendent, Government Press: Madras, 1894), 80.

\textsuperscript{58} The letter is too well known to require quoting in full. It is usually read as a sign of the freedom conferred on straitened English literati by the expansion of print culture. When Johnson first approached the Earl of Chesterfield he was unforthcoming, only to embrace him once the public success of the \textit{Dictionary} was assured: “Is not a patron my lord, one who looks with unconcern on a man struggling for life in the water, and, when he has reached ground, encumbers him with help? The notice which you have been pleased to take of my labours, had it been early, had been kind; but it has been delayed till I am
The Patronage Act of 1712, which gave Scottish lairds rights to appoint church ministers in local parishes, did, however, produce violent debates about ecclesiastical patronage. Dissenting Presbyterians in the Lowlands who would not bend the knee to heritor (landlord) privilege became rancorous seceders, and formed their own church gatherings rather than remain under ministers who were creatures of the landed classes. In the Highlands, on the other hand, clan traditions produced a political culture of voluntary subordination and loyalty to local elites who, it was expected, would secure connections with the patronage rich military-fiscal state. Arguably, these differences produced mentalités that became generalized in Scottish culture. Roxburgh and Buchanan had very different personal styles as clients, but it is also possible that their responses to higher-ups in the Company and in the scientific world in London were a manifestation of deeper currents in Scottish social life. Ironically, it was the Lowlander, Roxburgh, who succeeded in securing the good offices of his betters. Buchanan who had links to Callander, the traditional gateway to the Highlands, resisted the culture of political paternalism, except in the one important instance of his relationship with Governor-General Wellesley.

indifferent, and cannot enjoy it: till I am solitary, and cannot impart it; till I am known, and do not want it. I hope it is no very cynical asperity not to confess obligations where no benefit has been received, or to be unwilling that the public should consider me as owing that to a patron, which providence has enabled me to do for myself.” The Celebrated LETTER from Samuel Johnson, LL.D. to Philip Dormer Stanhope, Earl of Chesterfield; now first published, with notes, by James Boswell, Esq., (London: Printed by Henry Baldwin, 1790.


61 Buchanan spent his time after his return from India at Leny House, Callander, which he inherited from his brother in 1818. See Prain, Sketch, xxvi. He is mentioned in Volume XI of the Statistical Account as “[T]he most learned person, who is known to have belonged to this parish”, i. e. Callander. James
An important way in which patronage worked within the emerging social relations of the EIC state was through the exchange of natural knowledge. We know from Harold Cook’s research on the seventeenth-century Dutch merchant oligarchs, that openly interested knowledge-making about nature was an early modern activity that flourished alongside the work of gentlemanly naturalists whose credibility was thought to derive from their disinterestedness.\(^{62}\) The practices of merchants that inspired trust included a transparent desire for profit that converged with a lust for detailed knowledge and clear speech about the natural objects they traded. A thorough knowledge of the natural goods exchanged, Cook shows, was critical to the working of the seventeenth-century Dutch political economy. Cook’s dense scholarship is impossible to summarize here. The genealogy he establishes for the Dutch information economy puts us unsurprisingly in mind – given the Boerhaavian radiation – of the writings of eighteenth-century Scottish medical men who pleaded the connection between natural knowledge and utility. One passage in particular could have been written with Ross and Roxburgh in mind:

Above all, among the values shared by science and commerce were a certain kind of interested engagement with objective knowledge and an attentive appreciation for collective generalizations based on exacting information about the objects in with (sic) which they dealt. Exchange values, openly based on both passion and calculation, placed certain forms of knowing about objects, even living objects, front and center.\(^ {63}\)


\(^{63}\) Ibid., 57.
In the pages that follow the epistolary exchanges between Roxburgh and Ross are read to reveal the entanglements that led a hard-headed man of commerce to act as patron and broker for an Edinburgh médecin with proprietorial ambitions. Roxburgh’s natural historical expertise and its coveted forms of knowing about natural objects were exchanged for payment in two kinds of currency – property; and status, in the world of men, and of letters. A desire for profit and property joined the two men; but unexpectedly, there are hints that a passion for natural knowledge was not Roxburgh’s alone – it appeared to motivate the merchant as well. If Ross wished to extract information from his client about the objects in which he dealt, he was ready and willing to enable the collection of that information; and assist Roxburgh in stabilizing his claims about the natural objects with which he hoped to enter the world of naturalist-savants. His exhortations to Roxburgh to fashion himself as a naturalist (in Walker’s sense) set the latter on the path to property, and pomp in the world of early modern science.

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Roxburgh’s letters to Andrew Ross do not survive except as extracts published in Oriental Repertory Vol. II, but Ross’s letters to him are available in the manuscript collections of the Natural History Museum (Botany Library), London. They are exemplary, written by a man who knew just what was required of a patron, solicitous and knowing of his client’s circumstances and desires, but commanding, even peremptory, when necessary.

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64 William Roxburgh, Correspondence (large envelope), Botany Library Manuscript Collection, Natural History Museum London (hereafter RC/NHM).
The letter to the Board of Revenue of 1793, written towards the end of Roxburgh’s time in the Northern Circars, is a précis of Roxburgh’s accomplishments during a period of intense social and political turbulence in the Carnatic. Ross’s client, we learn, is doing a great deal to promote the Company’s interests in the Northern Circars. He has pursued the cultivation of indigo, sugar, “new Fever Bark” (*Swietenia febrifuga*), breadfruit, cinnamon and coffee, “and other articles of equal utility to the country and to commerce”; he has completed “elegant Botanical Drawings with their descriptions (in Number 500)” taken from nature; written a dissertation on the fever bark; a treatise on the cultivation and manufacture of indigo; another on the Hindu method of making sugar in the Circars; a third and fourth on the manufacture of raw silk and the cultivation of coffee; and completed, as well, instructions and drawings for promoting an inquiry after nutmeg and cloves. And if all this were not enough, the Doctor had gone above and beyond the call of duty, succoring the peasants of the neighboring zamindaries at a time of dearth, taking pains “in instructing the people of the Rajahs of Pettypore and Peddypore, who are his neighbours, in the art of manufacturing their sugars, by bringing people from Ganjam, where it is better understood (which he found it difficult to accomplish), to teach the process, with a liberality of disposition that does him much credit [.]”

The letter is at first glance a recommendation from a patron supporting a client’s request for accommodation from his superiors. But it is in fact much more, viz., an effort to push Roxburgh and his achievements out into the (limited) public sphere of the Company’s administration in India. The Board of Revenue, the addressee, was one of

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65 MSS/EUR D809/APAC/BL, op.cit.

66 Andrew Ross to the Madras BOR, 20th June, 1793 (emphasis original).
four boards – the Military Board, the Hospital Board and the Board of Trade being the others – set up at Madras during a period of institutional expansion under Archibald Campbell. In 1793 (while Ross was Mayor of Madras) its members included David Haliburton, Charles Nicholas White and Charles Oakeley. Any formal address to the Board, as Ross knew, would be included in the Revenue Consultations for the year, and copies would be sent to the subordinate factories on the coast, as well as to Bengal (where William Jones would doubtless see it) and London (where a copy was sure to find its way to Joseph Banks).  

Ross had maintained a private correspondence with Roxburgh over the years, a circumstance which he described in his letter to the Board, as an accident born of disinterested friendship on the part of a powerful local man for a countryman who was doing his utmost to promote the interests of “country and commerce”: “and this as well in the sentiments of friendship that subsisted between us, as in the opinion, that I should thereby be the more induced to render him from time to time, (as indeed it has been my best and unremitted endeavours to do), such assistance as it might be in my power to afford, in forwarding all his pursuits – and in rendering him those acts of kindness, in facilitating the Dispatch of his frequent intercourse with the Government here and with the Court of Directors, and his other connections in England, as my situation and constant residence, should enable me to accomplish, with less loss of time and fewer disappointments than could otherways have happened.”

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67 Ross and Jones corresponded on a variety of subjects; any recommendation from the former would have been taken seriously by Sir William. See Jones to Ross, Crishna-nagar, 2nd September, 1789, RC/NHM, f. 147 (recto).
68 Ross to Madras BOR, 20th June 1793, RC/NHM.
In reality there was nothing accidental about such private communication. Oakeley, White and Haliburton would have known exactly how to interpret Ross’s rhetoric, and to assess its import for their private endeavors.

Private correspondence was the flip side, “the constant shadow” of the collective decisions and public communications recorded in the Consultation books, which produced the public space of each factory. The business of recording every letter received or sent, of registering every action taken as consensual while noting dissenting positions, was meant to act as a check on the private interests of members of the Company administration. The aim was to detect if not completely prevent any one member of a Company board, usually the president or chief, from gaining the upper hand and shaping decision-making to his private ends. This was important in a context where Company resources were used equally for public and private trade; the same Indian merchants serviced both sides of the trade; and, as is evident from recent research, Company servants with greater seniority and responsibility gained the most from private trade.69

The streams of private correspondence which flowed alongside public communications, however, created a separate information network which worked to disrupt official channels and organize private trade and patronage relations outside Company spaces. As a free merchant, Ross’s private communications were no concern of factory chiefs or Company directors in London. Not so, Roxburgh’s. Roxburgh had done everything possible to direct useful information towards Ross, enabling his trading activities in exchange for the resources to carry on his researches and – importantly – his

69 Ogborn, *Indian Ink*, Chapter Three; Hejeebu, "Contract Enforcement", 511, Figure 2 “Remittances Increase With Seniority, 1746-1756”; and 512, Table 1 “Remittances Rise Over the Course of a Career".
own private trade. There is some evidence of Roxburgh’s private connection to the
President of the Board, Charles Oakeley, as well, so a letter from Ross reminding the
Board of Revenue of Roxburgh’s achievements and hinting at the loss to all of them
should Roxburgh decide to leave India, could not but have alarmed them.

Earlier Ross had brokered Roxburgh’s appointment as Professor of Botany and
Natural History to the EIC. The post had first been held by the Danish naturalist, John
Gerard Konig, and then by the Scot Patrick Russell. Banks had urged the appointment,
and indeed the creation of the post appears to have been part of Sir Joseph’s strategy to
build his power within the British state. Konig had disappointed Sir Joseph, pursuing
his botanical researches instead of making knowledge subservient to the “uses of Life”
(two much of Walker’s “botanist” in him), so the Court of Directors spelt out
their requirements for Russell:

We have perused Dr. Russell’s Letter to your Board of the 6th December
last, and approve of the plan he has therein laid down for rendering the
Botanical improvement of the Late Dr. Konig more immediately
subservient to the uses of Life, either with regard to medicinal applications
or to Arts and Manufacture. And you are to require from Dr. Russell, so
long as he shall continue to receive the Company’s Pay, an annual
communication of all his discoveries, which is to be regularly transmitted
to us that we may lay the same before the Royal Society. But whenever
Dr. Russell shall fail to make such an annual communication as you shall
deehn worthy of perusal of that learned body his allowance from the
Company must cease.

If your knowledge-making didn’t pay, you had no right to expect a pay.

The presence of an arch-improver as president of the Royal Society and a Scot as
governor of Madras was a fortunate conjunction for Scottish private interests. Russell

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60 See Patrick Russell to Banks, Vizagapatnam, 26th December 1784, DTC/NHM, Vol. 4, 94-96.
157-60; also, Public Consultations, Fort St. George, 4th November 1785, P/240/61/APAC/BL, 1102-03.
was an intimate of Banks, playful and warm in his letters to Sir Joseph.\(^{72}\) Roxburgh was more formal with his great patron, having met him but once before his departure for India.\(^{73}\) He had worked on the relationship with Ross’s help, but he was not yet in a position to be a serious supplicant for Banks’s favors.\(^{74}\) It was in Ross’s interest to change that. Stabilizing a circle of naturalists around him in the Presidency was a necessary step to staying abreast of the colonial information economy, without which he could not remain competitive; and strengthening the bonds between the young medics he patronized and Joseph Banks was equally necessary if he wished to remain *au courant* about doings at Kew and the Royal Society. When Russell resigned in 1789, he recommended Roxburgh as his replacement to Banks, noting significantly that he was “singularly qualified to be of essential service to the Company… more with a view to immediate utility, than to the extension of Pure Botany.”\(^{75}\) Here, however, patron and client ran into trouble.

The role and place of the Company’s medical service was a difficult tension at the heart of EIC state-making. The question whether it was primarily military or civil was debated throughout the latter half of the eighteenth century. Medics were lured out to India on warrants that gave them the freedom to choose their place within the service and generous scope to trade and build private fortunes. This changed once the late-eighteenth century imperial proxy wars in the Carnatic made the deployment of surgeons with

\(^{72}\) See, for example, Russell to Banks, Vizagapatam, 29 December 1782, DTC/NHM, Vol. 2, 228-31.

\(^{73}\) See Roxburgh to Joseph Banks, Nagore, 8 March 1779; Roxburgh to Banks, Samulcottah, 18\(^{th}\) December 1784; and Roxburgh to Banks, Samulcottah, 20\(^{th}\) Dec 1784, in BL/ADD MSS 33977, ff. 93-95; 272-275; 277-278.

\(^{74}\) See Ross to Roxburgh, Madras, 6\(^{th}\) Oct 1791, RC/NHM, f. 128 (verso), recommending that Roxburgh spend more time on trials of his febrifuge: “This will also be grateful to your friends Dr. Russell & Mr. Dalrymple and to Sir Joseph Banks to whom I have not as yet forwarded your last letter.”

\(^{75}\) Public Department, Fort St. George to Court of Directors, 6 April 1789, E/4/319/APAC/BL, para. 16.
Company troops imperative. The Indian Medical was twice split into two separate services, civil and military, in 1766 and 1796, but the separation was found impracticable and the service was reunited on both occasions. Various arrangements were tried out until 1788, when Governor General Lord Cornwallis drew up a long minute on the Medical Service which sought to define and rationalize it by making Company physicians commissioned officers in the military. Defending the Company’s trade required such a step, and Cornwallis’s measure sought to ensure that a militarized structure of promotions and rank would limit civil medical employment. The rub lay in curbing the activities of medics, who as civil officers were often responsible for the natural knowledge-making that underpinned that trade.

In Madras Presidency, promotion from Assistant Surgeon to Surgeon now meant appointment to a regiment or garrison, catching out both Roxburgh and Ross. Roxburgh was appointed to the third European regiment stationed north of Samalkota, which would have made it impossible for him to pursue either trade or natural history – unless a case could be made for the vital importance of his services as Company Naturalist at Samalkota. This Ross successfully did, forwarding a memorandum from Roxburgh to Governor Campbell and repeatedly addressing the Board of Revenue on the subject of Roxburgh’s salary as Professor of Natural History. “So you have nothing to do now”, he wrote Roxburgh on the 7th of February 1790, “but to persevere cheerfully in the pursuit of your laudable Enquirys – for your own Credit, & the good of the Community & if I can any way forward your wishes by such humble means as may be in my power, I shall be

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well pleased.”⁷⁷ He was as good as his word; and his intervention helped the institution of Company Naturalist emerge in south India. By 1794, when Roxburgh was ready to move on to Calcutta to assume charge of the Calcutta Botanic Garden, it was clear that the Company’s naturalists would soon be (medical) men without other responsibilities to distract them.

Roxburgh had been rather hasty in making promises to one Dr. Wright (another Edinburgh-trained medic) that the latter could succeed him at Samalkota as botanist-naturalist. Ross, who was obviously aware that fledgling institutions were often concretized through the actions of the men first associated with them, cautioned Roxburgh not to be “more ready than is necessary…to do anything that may throw yourself…at a disadvantage by giving up or even yielding more that belongs to the line of Botanist & all its connections as well on this Coast as at Bengal…” To firm up the identification of the post of Company Naturalist with his client he engineered an opportunity for Roxburgh to be the one to draw up a plan of the responsibilities of the post and ensure that it be followed through. On the ⁴ᵗʰ of March Ross reported a conversation with Captain Alexander Read, who would become famous for his revenue administration of the Baramahal. It was Read, he told Roxburgh, “who suggested that a person of Dr. Wright’s abilities should be employed in a separate way – as you have been – & as Konig and Russell were – & that if he could speak of it to the Board that he would do – but that it would --- (word unclear) no purpose to do so, and that he thought you might without impropriety or Offence & recommend something of a Plan for such Enquirys & Researches, as might be pursued all over the great Territories of the country

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⁷⁷ Ross to Roxburgh, Madras, 7 February, 1790, RC/NHM
for Discoverys and Information into Botany Natural History and Mineralogy that may be submitted to the Court of Directors…”

The men in Ross’s circle were to make a concerted effort with the powers-that-were: “…you and I and everybody else would write also to Dr. Russell, Mr. Del --, Dr. L and you to Mr. (word unclear) & to Sir Joseph Banks which would probably [be] needed.” All was in train, then, for the office of Naturalist to become an essential part of the early modern colonial state. It would not be easy though; and the case would have to be made over and over again into the early decades of the nineteenth century each time a new naturalist was required to augment a state project of exploration or extraction.

But the process had begun, appropriately enough, through the relationship of a private merchant keenly alive to the importance of natural knowledge to his trade and an Edinburgh medic eager to rise above his station and take his place in the world of British savants.

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78 Ross to Roxburgh, Madras, 4th March, 1794, RC/NHM, f. 58 (verso)
79 Ibid.
80 This is seen in a letter of 1826 written by Captain J. D. Herbert (who carried out the first mineralogical survey of the Himalayas) to C. Lushington, Chief Secretary to Government, on the difficulties of dividing his responsibilities between surveying the mountains and studying their botany and zoology. “Anxious that the opportunities which my several journies had offered of investigating the Zoology and Botany of this tract, should not be altogether lost, I began… to give my attention to them; I found however in devoting much of my time to these subjects, my other enquiries were likely not to have justice done to them – Under this impression and in the hope of seeing a naturalist appointed to the Survey I have confined myself to the notice of such subjects as appeared more particularly striking to me…” Herbert then goes on to plead the expediency of appointing a botanist and zoologist to the survey. “Descriptions of 12 large views of Mountain Scenery by Captain J. Monson, Asst”, MSS/EUR E. 96/APAC/BL, paragraphs 16 and 17.
Between the 1780s and early 1790s Ross and Roxburgh set up their own configuration of power and knowledge. Two letters from Ross written in June and December 1788 condoling Roxburgh’s losses in the hurricane of the previous year, also establish the texture of their relationship. Ross is busy looking for books to replace the ones Roxburgh lost in the last year’s disaster (“I have looked repeatedly for Botanical Books since you suffered the loss of yours”) without much success (“I found the Botanist and Gardeners New Dictionary by Wheeler…I regarded the title merely – and if you find it of use I shall be much pleased.”), but it is on other matters that he writes -- he is eager for news of Roxburgh’s success with his pepper plantation. It is likely to become an article of consequence, its value enhanced by Tipu’s measures to keep it out of the Company’s reach, “so you will give me the most particular report you can of your success & before Oct’, (when a ship will probably depart for Europe) [...] I think it will not be amiss if you send me Musters to send home to my friend for the inspection of the Directors”.

Indigo was proposed as another article grateful to trade; also cotton: “I wish you to inquire whether Cotton of a good quality & in any quantity worth attention can be procured with (sic) Country about or the Northward of you at such a price as would answer for China”. He had received news from Bengal of the high prices currently paid for cotton from India in China. Could cotton, perhaps, be grown in the Circars? Had Roxburgh experimented with cotton seeds? Was labor cheap enough there to make it profitable? “You know what success the people at Bengal have had in this way lately --

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81 Ross to Roxburgh, 2\textsuperscript{nd} June 1788, RC/NHM, f. 156; also Ross to Roxburgh, 19\textsuperscript{th} December 1788, RC/NHM, f. 153.
82 Ross to Roxburgh, 23\textsuperscript{rd} December 1788, RC/NHM, f. 151.
& to the more advantage than from Bombay – & why you (who are so indefatigable and prudent) should not try your industry in this way is not known to me.”

Ross indicates the way forward, commanding his man to do his bidding, and Roxburgh must follow. Assisting Roxburgh’s prudence and indefatigability was no hardship. The collaborations that enabled Company state-making and knowledge-making – between free merchants, merchant-mariners and Company merchants; between members of missionary colonies such as the Danish one at Tranquebar (Tarangampādi) and East India factors at Madras; and between all merchant-officials and grandee naturalists such as Banks – meant that Ross’s tentacles embraced various shades and grades of men in India, Britain and the shipping lanes of the world. If Roxburgh needed books, Ross supplied them: “I have met with the 4 vols of Fourcroix’s Chemistry in one of the ships – & thinking it most consistent that Dr. Bell should not in such case be deprived of his own set – I have purchased the other for you tho’ it costs dear”; “In a list of Books I have seen the works of the Count de Buffon 9 vs 8vo cost L 4’ 5” 6” & have desired the owner to send them to me when they come ashore – & they shall be sent to you by the next opport with any other fit books that I may meet with.” If he needed a goad to keep him focused on his own interests, Ross applied it (“I am prompted by Dr. Berry (from a motive of friendship) to suggest to you that it is now proper that you should consider seriously what line it may be most eligible and convenient to you to pursue in respect to your future views & advantage in the Company’s Service as there is reason to believe that those who are your Infrs (Inferiors?) in rank will now… do all that they can to benefit themselves by the apparent diffidence which you expressed of taking

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83 Ibid.
84 Ross to Roxburgh, Fort St George, 28th June 1789, RC/NHM, f. 149.
an active part in the Medical or Chirurgical line & the seeming desire which you
expressed of being left to pursue your separate study of Natural History…”)
and also administered Roxburgh the occasional kick in the pants (“… and thus everything will go
smooth and as it could be wished – unless it is the time which has already been unluckily
lost (I much regret) & should now be retrieved as much as possible – without any of
those preposterous notions that you have now started of giving offence to the Gentlemen
of Masulipatam…”)

Above all, if he sought attention from Company brass, Ross was there to facilitate it. At different times, Ross mediated Roxburgh’s interactions with the Medical Board finessing the matter of his appointment as the Company’s Naturalist in the teeth of the Physician-General’s displeasure; drew the attention of superiors to Roxburgh’s efforts:
“I also took occasion to speak to Sir Cha’ Oakeley of the inadequacy of your allowance,
to your long and meritorious Services to the Comp’y and to the Public and to your constant
expences – which he readily acknowledged…”; and made sure that Roxburgh’s activities
were kept in full view of Company puissants: “I have asked Mr. Connely, Secy to the
Medical Board what is done in the Investigation you desired to be made into the quality
of your newly discovered Bark and & he told me that of the four Hospitals to which
application had been made an answer had been received from Mr. Maine of Trichinopoly
(Tiruchirapalli) alone & herewith I send you a copy of it – why the other three had not
given an opinion he cannot account for – tho’ surely it is very improper – nor the less so
that Capt Alex’ Reed (sic) (who is here on a visit from the unwholesome country of the

85 Ross to Roxburgh, Madras, 17th Feb, 1792, RC/NHM, f. 132 (verso).
86 Ross to Roxburgh, Madras 16th March 1793, RC/NHM, f. 110 (recto and verso).
87 Ross to Roxburgh, 13th May 1791, RC/NHM.
88 Ross to Roxburgh, Madras 5th January 1793, RC/NHM.
Burrah-maal) told me that he had applied for Bark both at Vellore – and here -- & that they have none to give him; & was much pleased when I found a small parcel of yours – & gave him 1/3 to send up to his District where the Europeans and others of his people are sickly and much in want of it as they know its virtues from 2 or 3 parcels that I sent last year to Tho’s Munro…

Their trading partnership continued to flourish, having expanded to include indigo, turmeric and tobacco. The merchant and his mariner-collaborators showed an exquisite and exacting awareness of the particulars of natural objects that made them desirable commodities:

“As to the quality [of turmeric], I have this moment found the following Mem, which I had laid by – “Samples of Turmeric set aside by Mr. Parkins Purser of the Rockingham, (from several parcels shown to him) as the best specimens that they produced, but inferior a good deal to that of China. The Colour of the short broken ps. he found to be the best, tho not so clear, bright & smooth, as they should be; the smooth even coat of the 2 bits which are dark in the inside, he approved of; & that the more there was of that appearance, the better; a shrivel’d & uneven coat or outside, is a disadvantage, but the inside Colour of these 2 bits is too dark. The Colour of the Amboor musters he approved of, tho inferior to the China sort. In selecting a parcel for Europe, he thinks that it will be best to garble it, & turn out the worst, the small shrivel’d ps., & what is too light and porous, & send none, but the best sort. The pc. which is the longest and crooked, has the best outside appearance in colour, & the smoothness of the Skin, but the inside is of much too dark & redish a colour; the most esteemed is the bright & clear yellow, and enquiry should be made whether it is not owing to the manner of preparing the Drug, (which is put into hot water when it is gathered, and perhaps not rightly managed) is not the cause of the darkness of the inside colour, which should be corrected, and a better mode found out an pursued.”

And that awareness was what Ross strove to cultivate in Roxburgh, whom he flooded with papers and extracts from letters, to keep his thoughts fixed on forms of

89 Ross to Roxburgh, Madras, 28th Sept 1793, RC/NHM, f. 67 (verso). Explain who these people are, and why Thomas Munro is so important.
90 Ross to Roxburgh, Madras 11th December 1789, RC/NHM, f. 164 (recto and verso).
knowing that placed plant commodities front and center.\textsuperscript{91} He succeeded. The Doctor’s plant classifications would always be accompanied by reflective excursus on the qualities of plants that made them marketable. In manuscript descriptions that would later appear in \textit{Flora Indica} (1832), Roxburgh mused on the marginalization of the wild dioecious vines that were two of the three included in his species \textit{Piper trioecum} (\textit{Piper trioeicum} in \textit{Flora Indica}). Some time after he described the male and female vines, he found the third bearing hermaphrodite flowers, or rather hermaphrodite and female flowers on the same amente. The pepper of the female vine did not ripen properly, whereas the female flowers on the hermaphrodite vine not only ripened perfectly, but also were exceedingly pungent, and “has been by Pepper Merchants at Madras, reckoned equal to, if not, superior to the best Malabar Coast or Ceylon pepper [\textit{Piper nigrum}], consequently this must be the sort that is found cultivated, the other two being I conjecture entirely neglected.”\textsuperscript{92} In the end Ross’s efforts to steadily discipline their exchanges in the direction of “interested” knowledge-making would prove his greatest reward.

Roxburgh’s attempts to stabilize Corcondah pepper as a commodity would fail, but not before his efforts had been placed before an interested British public (courtesy Ross) in the first and third numbers of the \textit{Oriental Repertory}, Vol. I.\textsuperscript{93} The objections of

\textsuperscript{91} Ross to Roxburgh, Madras, 26 June 1791, RC/NHM.
\textsuperscript{92} 34. \textit{Piper trioecum Roxb}, MSS/EUR F 23/APAC/BL, Roxburgh MSS. Also see Roxburgh, \textit{Flora Indica}, 51.
\textsuperscript{93} Between 1791 and 93, the EIC’s hydrographer, Alexander Dalrymple, a friend of Ross, published the four numbers of the \textit{Oriental Repertory} Vol. I. The \textit{Reperroy} was meant to keep the Company’s profile high at home at a time when EIC stocks fluctuated alarmingly with every new report of war in India. About half of the first number was devoted to puffing Roxburgh’s discovery and cultivation of pepper and indigo in the Circars. See Vol. I, 1-44. Roxburgh appeared less than grateful for Ross’s assiduity, however, in a letter to Banks: “Mr. Dalrymple having taken from my collection & published one of the principal members thereof will no doubt render the rest less valuable, however he did it from the best of motives…” Roxburgh to Banks, Samalkota, 30 August 1791, in Chambers, \textit{Letters}, Vol. 3, 277 (letter no. [194]).
the Masulipatam Chief and Council to his “lack of progress” on experiments with pepper were supported by the Court of Directors, a circumstance which even Ross could not finesse; but his other patron, Sir Joseph, had also been importuned for help. In April 1791 he wrote to Banks asking him to guarantee his identification of *Piper trioicum* as a “most complete instance” of Trioeccious Polygamy: “Should You conceive that I am not mistaken in what I have said above, I have to request You will be so good as [to] order a copy of this Letter to be sent to the Court of Directors, and if accompanied with a Note from Yourself they will be most perfectly convinced that my Description of this Valuable Vine is true…” We do not know the outcome, but it is possible to speculate that Banks had already turned his attention to the debates about sugar and the West Indian sugar monopoly which were agitating public discourse in Britain in the 1790s.

As Alexander Dalrymple noted in the first number of the *Oriental Repertory*, “We are struck with astonishment at the Events produced by the introduction of a *Vegetable!*” In any event Roxburgh’s *Piper trioicum* ceased to concern the Court of Directors whose “interested” gaze was now fully fixed on the prospects of sugarcane cultivation in India. Significantly, pepper was not one of the plants selected by Banks to figure in the volumes of *Plants of the Coast of Coromandel* (1795-1820), tomes whose declared intention was to acquaint the British public not only with useful plants growing on the Coromandel coast, but even “such as have hitherto been imperfectly described, although their qualities

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94 Court of Directors to Fort St. George, Commercial Department, 6 May 1791, E/4/877/APAC/BL, ff. 865-866.
95 Roxburgh to Banks, Samalkota, 28 April 1791, Chambers, Vol. 3, [letter 160], 219-220.
and uses may as yet remain unexplored.”

As Dalrymple’s observations on the eventful introduction of sugar to Britain appeared in print, a public meeting assembled at the New London Tavern in Cheapside constituted a committee to inquire into the extravagant price of the commodity (15\textsuperscript{th} December 1791). The committee’s report which was discussed shortly thereafter at another public meeting of the Consumers and Traders in Sugar (Jan 31\textsuperscript{st} 1792), castigated the monopolistic practices of the Company, which would not allow the import of sugar on the cheap from India by private merchants, to counteract the stranglehold of the West Indian interest on the British market. Public anger reached all the way to Henry Dundas, President of the Board of Control for Indian affairs, and to William Pitt, the Chancellor of the Exchequer. With the renewal of the Company’s Charter but a year away the Directors of the EIC must have been conscious of the need to appease the public. Yet they met the questions put to them by the committee with evasion at best. Among the questions that received no answer at all was this one: “10\textsuperscript{th}: Is it not known to the Court, that some late Regulations in favour of the Liberty of the People of Bahar, Benares, Oude, & Bengal, may have increased the cultivation of Sugar within three years

\begin{footnotes}
\footnotetext[99]{“Reduction of the Present Extravagant Price of Sugar. The Report of the Committee appointed on the 15\textsuperscript{th} December last at A Public Meeting assembled at New London Tavern, Cheapside”, MSS/EUR D09 (n. p.).}
\footnotetext[100]{“From the Diary or Woodfalls Register January 31\textsuperscript{st} 1792: Meeting of the Consumers and Traders in Sugar”, MSS EUR/D809 (n. p.).}
\footnotetext[101]{Jackson Barwis, Chairman of Committee, to William Pitt, Chancellor of His Majesty’s Exchequer, January 12\textsuperscript{th} 1792; William Pitt to Jackson Barwis, January 26\textsuperscript{th} 1792; Henry Dundas to Jackson Barwis, January 26\textsuperscript{th} 1792, in MSS/EUR D809 (n. p.).}
\end{footnotes}
100,000 acres or upwards?" A corporation about to carry out a commercial *coup de main* would hardly make its intentions public. All the papers relating to the Sugar Question, however, made their way within the year to Ross, who immediately dispatched copies to Roxburgh. The natural history of Indian sugar bade fair to become very big business indeed.

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Ross’s zealous care of Roxburgh was repaid by a pleasing character trait in his client that made his efforts worthwhile: the Doctor was biddable, almost filial in his obedience. As a “new man” he was a fatherless son, willing to give his fealty in exchange for “paternal” guidance. He had already solicited Banks’ protection, gifting baskets of seeds and boxes of growing plants in exchange for his backing with the Court of Directors. He had begun sending home his plant drawings and descriptions, he told Banks in December 1790: “I could wish you would be so obliging as to send for these drawings & descriptions, & candidly give me your opinion of them, which would enable

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102 Questions reproduced in “Reduction”, MSS/EUR D09.
103 Ross to Roxburgh, Madras, 5 January 1793, RC/NHM, f. 129.
104 Studying the place of sugar in the political economy of the British Empire has so far been a concern of scholars of British America and the Caribbean. There is a case, however, for examining whether Roxburgh’s successful cultivation of sugar in the Circars had a role to play in bulling Company stocks in the 1790s. See Nick Robins, *The Corporation that Changed the World: How the East India Company Shaped the Modern Multinational* (Pluto Press, 2006), figure on p. 88. Also, abolitionist sentiment was strong in Britain in 1791-92. Wilberforce’s first bill in Parliament had been defeated, but the British public’s concern with the moral implications of slave deaths in the Caribbean could have encouraged the lowering of tariffs on the import of sugar from India. Was sugar cultivation in India invoked during Parliamentary debates on abolition? For the testimony given at the hearings in the House of Commons on the unnatural deaths of slaves on Jamaican sugar plantations, and public sentiment in Britain about slave deaths in the years 1791-93, see Vincent Brown, *The Reaper’s Garden: Death and Power in the World of Atlantic Slavery* (Cambridge, MA: Harvard University Press, 2008), 157-200.
me to render them more perfect in the future. I have in all about 700 nearly completed, 200 of which are grapes. The whole I intend to send home as fast as they can be copied. Should the Directors think of publishing them, as Dr. Russell recommended, I must take the liberty to request you will be so kind as [to] grant your protection to the work."\(^{105}\)

His wish was spectacularly fulfilled in the three volumes of *Plants of the Coast of Coromandel*, whose title pages bore witness to Banks’s generosity and Roxburgh’s fidelity over the years: *Plants of the Coast of Coromandel; selected from drawings and descriptions presented to The Hon. Court of Directors of the East India Company by William Roxburgh, M. D. Published by their Order Under the Direction of Sir Joseph Banks, Bart.*\(^{106}\)

Ross, meanwhile, was the proximate patron through whom he was able to realize his commitment to stewarding the Circars as well as his dream of accumulating property that would devolve to his children. The two were interlaced, so that we could gloss Julia Adams’s observations on the patrimonial nexus of seventeenth-century state making to note that the *affect* produced by the convergence of paternal authority and patriarchal status in patrimonialism continued well into the late-eighteenth and nineteenth centuries and shaped the actions of men who were part of the process of colonial-state-institution building such as Roxburgh and Kyd.\(^{107}\) The emergence of a territorial state in colonial India did not exclude the working of familial ideology in ordering relations between male bureaucrats, and between them and those placed in their control through the contingency

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\(^{106}\) The volumes were published in 1795, 1798 and 1819 respectively.

\(^{107}\) Adams, *Familial State*, 29.
of history. It appeared most glaringly in colonial discourse about native races as children. This remains untheorized by postcolonialists and feminists, though a plethora of empirical instances could be summoned from colonial documents on which to build such a theory, including native petitions claiming state protection through invocations of familial intimacy.

In the case of Roxburgh and Ross, a mixture of mercantile and paternal imperatives drove them to explore the logistical value of building canals across the Circars to obviate drought. From 1790 to ’92 the area was gripped by a terrible famine brought on by a failure of the monsoon rains. The economic life of the region was severely dislocated, and Company profits took a tumble. Cloth manufacture was in steep decline, the spinners and weavers were mostly dead, and those who lived were too poor to buy the rice glutting the markets. A concerned Andrew Ross, fearful for his income, in consort with an equally worried Cornwallis, determined to assess the possibility of building canals from the Godavari and Krishna rivers to water the Circars and keep commerce going. Ross ordered Roxburgh to conduct the survey, which his client could not refuse to do because of his deep sense of obligation to his patron; and because he had put down roots in the region – he had a native bibi, and a son by her.

108 Bhavani Raman has described how family and patronage relations were important elements in the structuring of the EIC’s kacceri in early colonial Madras. She points out that Company officials reified and altered pre-existing familial networks, making the collector’s patronage the decisive element in kacceri appointments. Her discussion shows similar imperatives (information collection) at work in the lower echelons of the colonial bureaucracy that I describe among Company elites. “The Familial World of the Company’s kacceri in Early Colonial Madras”, Journal of Colonialism and Colonial History 9:2 (Fall 2008).

109 See Appendix 7: “William Roxburgh’s family”, in Robinson, William Roxburgh, 238. A tender parent, Roxburgh placed this natural son, John, in the care of his friend, Rev. C. S. John, the Danish missionary who ran a mission school at Tranquebar. John was taught botany and drawing with a view to a future career as a plant collector and gardener. C. S. John to Roxburgh, Tranquebar, 17 August 1792, MSS/EUR D809 (n. p.).
area and in his family’s fortunes were quite literally intertwined; and provoked the same response, a desire to quit India if he could not effectively exercise his paternal authority.

He was quick to let Banks know this, and to express his bitterness at the Company’s hunger for profits at the expense of rational estate management: “The Famine…which begins to rage with double force, owing to a failure of the usual rains, a continuance of such distressing misery constantly before our Eyes with/out/ the power of relief, is grievous beyond description, & often makes me think of returning to my native Country… how often have I in vain urged the propriety of introducing such vegetables as would yield to the miserable poor some sort of sustenance during these times.” A year later things were no better. “I have no doubt but the Company’s investments may still be got up” he wrote to Kyd at Calcutta, who had begun a botanic garden there to address just such concerns, “but as they are not a mere Mercantile Body, other objects ought to be attended to, & the queries you have put me in your last letter, convinces me that you are in Bengal possessed of some foresight.”

Kyd on his part was also in touch with Banks, and equally exercised about the Company’s lack of stewardship, though the alternative, Crown rule of India, with ownership of land confined to a small number of monopolistic planters as in the West Indies would be equally deplorable. His “visionary” proposal, which he boldly outlined to Sir William Jones a month later, was to force Company personnel to become improvers by making their tenure in India permanent, thus embedding the EIC state in

\begin{footnotes}
11 Extract of a Letter from Dr. Roxburgh to Col: Kyd 17th October 1792, MSS/EUR D809 (n. p.) (emphasis added).
\end{footnotes}
Indian society.\textsuperscript{113} This of course was Roxburgh’s wish – to possess improveable property and profit from his investments. But he had proceeded to attend to the improvement of the Circars even in the absence of rights in land (as Ross affirmed to the BOR) because by setting up his trade in cloth he inadvertently entered the region’s political economy. By the time he wrote to the Board of Revenue in May 1793 with his proposal to rent Corconda he had a good grasp of the micro-politics of the area, and was himself a political player to be reckoned with.

The Northern Circars were composed of “little kingdoms” ruled by warrior chieftains known as “poligars” (Tamil \textit{palaiyakkarar}). These little kings presided over vertically integrated polities controlled through strong ties of kinship. They mobilized resources through plundering each other’s territories, ensuring the loyalty of their retinues by redistributing the spoils through a system of gift giving.\textsuperscript{114} The depredations of the \textit{palaiyakkarar} were particularly severe during the famine years, as were retaliatory raids by neighboring hill people who descended on their \textit{zamindaries} with the intention of laying them waste.

The language of the Doctor’s letter to David Haliburton and the Board was dexterously crafted to describe his milieu and evoke a picture of an intrepid naturalist struggling with social banditry (and winning), in order to realize ideological and practical ends (make natural knowledge, increase Company profits, civilize his wild neighbors).

With this I have the honour to send a sketch of Corconda Purgunnah…A great part being wastelands, some of which is covered with Jungle, others very imperfectly cultivated from the circumstances of their being near the wild independent Purgunnah of Rampah (a long narrow strip of

\textsuperscript{113} Robert Kyd to William Jones, 18\textsuperscript{th} April 1791, MSS/EUR F95/1, f. 4 (recto).
Mountainous Country belonging to the Redewars of Polavarum commonly called the Cotapilla Purgunnah, separates the Corconda lands from those of Rampah) which exposes them to frequent depredations from those wild mountaineers, which not only prevent cultivation, but lessens the real value of those that are cultivated, & subjects the industrious renter of the adjoining lands, to be under the necessity of keeping up, at much expence, a respectable number of armed Peons to protect the Inhabitants and their property. I saw several villages, names Balliadepooda, Nagamapilla, Sheeperpilla, & Peddacondapoody, that had lately been reduced to ashes & the cattle carried off by those people…”

The situation and quality of part of these lands would serve very well for sugarcane, indigo and mulberry, Roxburgh temptingly advised the Board, and in the hands of honest husbandmen would provide a permanent bulwark against political disorder. Significantly, he gestured to his success in translating between incommensurable political economic systems. He had already established a friendly correspondence with the palaiyakkar of Rampah through his interest in the pepper growing there, he told the Board, and had embarked on an exchange of “fair words and presents” with this grandee. Ross’s letter of support would back him up by referring to his client’s success in teaching the people of the Peddypore and Pettypore palaiyakkarar the art of manufacturing sugar and helping them find famine foods. A transformation of vertical relations in the area was possible, was the message, with caste-specific solidarities changing to the social relations appropriate to improving agriculture. In other words, Roxburgh was doing everything possible to integrate himself into the region, making him the ideal renter for Corcondah.

115 Roxburgh to David Haliburton, Samulcottah, 8 May 1793, MSS/EUR/D809 (n. p.).
116 Sen, Chapter 3, Empire of Free Trade, 89-119, discusses the analogous problem faced by the Company of creating a homogenous terrain for trade, which required disciplining subordinates into giving up “corrupt” practices of accepting gifts and perquisites as part of indigenous trading conventions and substituting standardized customs and market duties.
His status within the *palaiyakarrar* economy had, in fact, been confirmed a few years earlier during another natural disaster, the hurricane that struck the Circars in 1787: he had had twelve candy loads of cloth (approx. 2 and a ½ tons) stolen from his bleaching green by a servant. The depositions taken by the Commanding Officer at Samalkota reveal the generous extent of Roxburgh’s establishment (washer men, palanquin boys, a multitude of other servants) and the scale of his trading, enough to provoke resistance at his commercial success and his place within the emerging colonial order. The value of the losses he sustained was calculated at 10000 pagodas (4000 British pounds), not an inconsiderable sum for a surgeon whose pay averaged 30 pounds a month. Here was a nabob-in-the-making, who, if he sustained his loyalty to his patrons, was bound to receive rich returns.

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The project for “Watering the Circars” as it became known in the exchange of letters between Ross and his colleagues suggests several things about the making of the EIC state: that building a territorial state in India was a collaborative enterprise between EIC officials (Oakeley, Cornwallis) and private merchants (Ross); that clientage relations between private men and Company men (Ross and Roxburgh) played an important role in the construction of the state; and that patron-client ties may have served to embed the

state in regional society by producing state authority as a patchwork of limited local relations. Nothing came of the venture. And it would be well into the nineteenth century before large infrastructural projects – building canals, dams and roads – became important activities of the colonial state. But the project provides a window on the personal and political relations through which “stateliness” was enacted at this early colonial moment. The general claim is that lateral ties (expressed through private trade relations) played a greater role than vertical relations (between the Board of Revenue and the staff of Collectorates, for example) in helping the early colonial state cohere.

Roxburgh’s recognition of the urgent need to improve the Circars did not mean he fell in without murmur with Ross’s plans. On the contrary, he was hesitant at the prospect of upstaging his colleagues at Masulipatam who may have wished to claim the credit and the limelight (and thus entry into the “public” space of Company politics) for carrying out the survey mooted by Ross. He was oddly situated, with one foot in the lucrative arena of private trade, and the other in the bureaucratic space of the Company’s government where he needed the good will of his confrères to survive. But he was overruled impatiently by Ross, who had taken charge by cutting through Company procedure and protocol with his proposal, laying bare the reticulation of private merchant and Company interests: “Sir Cha’s Oakeley has also rec’d an ans’r to his letter to Lord Cornwallis upon the Subject, who expresses the highest satisfaction at what is proposed & earnestly recommends the speedy execution of it – so that it does not seem improbable, that something will be determined upon, soon, for the trial of more expeditious means of furnishing supplys of water to those parts of the Masulipatam & the Guntoor Districts that Maj’r Beatson alludes to, than can be obtained from the slow process of Surveys and
Levels – which may be resorted to afterwards…”^119 If he wished to be nice in matters of rank and precedence he had better think again, and take a look at what was said of his Masulipatam colleagues in Mr. White’s Minute: “that they have at no time furnished any information that has been of use to the public and after this well founded Character they will now hardly expose themselves so far to find fault in any public manner with the laudable exertions of an individual who endeavour (sic) to bring forward what will tend to the good of the Country…”^120

White’s minute was, in fact, an indictment of the patronage wielded by the chief of the factory at Masulipatam and his council who enhanced their local authority (and private fortunes) by colluding with native revenue officials. And his recommendation that the Northern Circars be divided into collectorships along the lines adopted in Bengal, was meant to build the state’s power in the locality by separating commercial and revenue administration, and embedding Company revenue personnel, “that they might, by a residence and local knowledge with proper inquiries in the respective districts” prevent any future failure of stewardship. An oblique reference to the necessity of appointing “persons of moderation, industry, good capacity and of honourable character” because “[w]hen servants of the company holding such situations, aim at the rapid acquisition of a large fortune, many inconveniences must ensue” pointed directly to the conundrum of private trade.^121 Nevertheless it was through a relationship nurtured through such trade that information relevant to the appointment of collectors was

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^119 Ross to Roxburgh, Madras 13 January ’93, RC/NHM, f. 124 (verso) and f. 125 (recto).
^120 Ross to Roxburgh, Madras 16 March ’93, RC/NHM, f. 126 (verso).
^121 “Appendix No. 14: MINUTES of Mr. C. N. White (Member of the Board of Revenue at Fort St. George); dated 14th February, and 25th March, 1793”, in Fifth Report, edited by Firminger, Vol. III, 118-125; quotes at 121 and 122.
gathered – Ross gave Roxburgh that responsibility as well, as part of his survey of the Circars.²²

A notable aspect of “Watering the Circars” was Ross’s ability to draw information to him from Company personnel and then diffuse it in a manner that kept him in the “public” eye, while issuing a string of private commands to Roxburgh, which effectually turned the Doctor into his spy. Roxburgh’s protestations that he did not wish to survey the Circars behind the backs of his Masulipatam colleagues was countered with the remark that he need not consciously dissemble: “In saying all this I do not mean that you should appear avowedly as employed in this way – You go into the Country in Botanical researches in pursuit of Nerium – Fever Bark – other important objects of Natural History -- & in exploring these you meet with the other Subjects & examine them as every good man ought to do who has it in his power & meets with so much of public approbation as you have done…”²³ He thus connected parallel streams of information from Company sources and from Roxburgh and his local informants, much as his project sought to join the waters of the two southern rivers, the Krishna and the Godavari, flowing in opposite directions. He would later cannily direct part of his information channel above ground, releasing selected papers and correspondence to Alexander Dalrymple, the Company’s hydrographer, publisher and propagandist, who published them in the second volume of his Oriental Repertory – winning Roxburgh yet more “public approbation”.²⁴

The project itself was simple: The Northern Circars, five in number, Chicahole, Rajahmundry, Ellore, Kondapalli and Guntur (in modern Andhra Pradesh and Odisha),

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²² Ross to Roxburgh, 6th March 93, RC/NHM, f. 114 (recto).
²³ Ross to Roxburgh, Madras, 16 March 93, RC/NHM, f. 110 (verso) and f. 111 (recto).
composed a strip of land along the western side of the Bay of Bengal. The Eastern Ghats, a discontinuous chain of mountains cut through by four rivers including the longest river in south India, the Godavari, and the Krishna south of it, formed the western part of the Circars. Parts of the Circars lying between the two rivers were rain deficient and at the mercy of droughts and famines, so it was proposed to the Directors of the EIC that they consider building a canal system between the two rivers to direct their seasonal overflow to “water the Circars”. Ross was not the first to broach such a scheme but he was the first to receive the approbation of Government. Dalrymple’s narrative explained that at least two other such proposals had been brought forward, first by a Mr. John Sullivan in February 1779; and then by a Lieut. Lennon in 1788, “which, unfortunately for The Public, was not accepted”. The Public was to be more fortunate in the case of Ross’s proposal.

Both Sullivan and Lennon had evoked familiar tropes. Paternalistic care and profit: “Without the aid of such assistance, the Spirit of Industry would at times be excited in vain; and the endeavours of the husbandmen instead of being rewarded with plenty, would in such event be productive of want and distress…Happily the means of providing against so dreadful a misfortune in these Provinces, are within the power of Government, and may be attained without any Considerable expence, and with the advantage of occasioning a great encrease (sic) in their cultivation and productions”.

and precise information: “The proper Management of the Revenues of this Country can derive no greater Assistance from any thing, than good geographical plans of all the separate districts, upon a scale sufficiently large, to set clearly before the View the

125 Ibid., 57-66.
126 Ibid., 61.
different kinds of Soil, and the exact quantity of cultivated ground, to ascertain the precise limits and boundaries of each division, to remark the progress of neglect, or decay, and particularly to point out the possibility of Improvement, or Cultivation.**127 Lennon proposed to make the survey at his own expense, though he rather spoilt the effect of this display of public spiritedness by indicating that the emolument he expected was the privilege of sending down teak timber under the Company’s *dastak* for his private trade.128

Part of Ross’s success resulted from the Governor’s recognition that he was a center of calculation in Madras Presidency and a point of passage for information of various kinds. The bundle of papers he forwarded to Oakeley for his consideration contained letters between Roxburgh and Kyd, Anderson and Kyd, and interestingly a letter from a sea captain and free merchant, George Baker, commenting (at Ross’s request) on Roxburgh’s letter to Kyd.129 The accompanying memo to Oakeley was a single enigmatic sentence:

The three papers which I have now the honour of conveying into your hands, on the Subject of furnishing supplys of Water for the cultivation of the Country in the Northern Circars, *being of importance too conspicuous to require any observations from me,* I will only say that I consider it as my good fortune, that my intimacy with the three excellent & able men, from whom I have obtained them, gives me the opportunity of delivering them to you – which I do in the full persuasion that the very interesting

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127 Ibid., 58.
128 Ibid., 60; *dastak*: a handwritten pass used, in this case, by the bearer to exempt his goods from tolls and duties.
129 Extract of a Letter from Dr. Anderson to Col. Kyd dated Aug' 1792; Extract of a Letter from Dr. Roxburgh to Col: Kyd 17 October 1792; Mr. George Baker to Mr. Ross, St. Thome, November 13th 1792; Alexander Beatson to Sir Charles Oakeley, Fort St. George, 1st December 1792; Memorandums of Major Beatson 5th Dec' 1792; Dr. Alexander Anderson to Mr. Ross, 4th December 1792, in MSS/EUR D809 (n. p.).
designs which are there recommended, will meet with your best attention.130

Why was the matter of adequate water for the Circars of such conspicuous importance in the early 1790s? It was well known that drought and famine were cyclical occurrences in the area. Both Sullivan and Lennon had noted it in their proposals to no particular effect. The timing of the acceptance of Ross’s project, as well as the secrecy attending Roxburgh’s survey, is difficult to explain unless we link it to the politics of sugar and attendant questions of imperial security (How much would the British state have to spend on troops and ships to protect West Indian planters? Would the French attack British trade in the Circars if EIC sugar production in the area took off?) Several clues point the way. The cluster of dates linking the two issues is reinforced by Roxburgh’s arrangement of the papers relating to them next to each other.131 The inclusion of Baker in the circle of correspondents appears inexplicable until we notice that his “interesting design” explores the possibility of using the rivers for inland commerce and to transport goods to sea for export. A seasoned merchant-mariner, Baker’s paper included a peroration on fluid dynamics and the possibility of keeping the rivers open to large ships (for trade and defense) even when dams were built on them for capturing their waters.132 But even without these hints we would have the post factum evidence of Roxburgh’s famous paper on sugar cultivation in the Circars that tells us such

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130 From Mr. Ross to Sir Cha’ Oakeley, Fort St. George 16th Nov’ 92, MSS/EUR D809 (n. p.) (emphasis added).
131 See the order of filing these papers in AP MSS/EUR D809, Roxburgh Collection. An insertion in an unknown hand suggests the ordering was deliberate: “Suggestions on the means of furnishing supplys of Water for the cultivation of the Northern Circars; considered & approved by the Presid’ & Council of Fort St. George. 4th Dec’ 1792. NB The paper last inserted was not produced at the Board, but was shown to Sir Charles Oakeley, who expressed himself much satisfied with it.” The file contains all the articles and papers sent to Roxburgh by Ross concerning natural history and commerce.
132 George Baker to Andrew Ross, November 13, 1792, MSS/EUR D809.
was the case: “At a period like the present, when the importation of East-India Sugar has become so much an object of importance to Great Britain, in consequence of the present state of some of the best of the West India Sugar Islands (the reference is obviously to the revolution in Haiti), every inquiry that may tend to open new sources, from whence that wholesome commodity can be procured, at the cheapest rate, is of national import.”

The paper went on to provide comparative natural historical information about sugarcane grown in the Circars and in Jamaica, stressing the benefits (and undoubted profit) of cultivating it in India where cane had been grown and sugar processed “from time immemorial”, against the artificial methods followed in Jamaica.

The point here, though, is not the successful production of logistical knowledge but Roxburgh’s willingness to make that knowledge at Ross’s command. His predecessor as Company Naturalist, Patrick Russell, a man with a high social profile, would not have carried out a secret mission, however vital for imperial security, at the bidding of a private merchant. But then he would not have needed the return received.

On the 21st of March 1793, Ross acknowledged several articles sent to Madras by Roxburgh, as well as letters sent separately: “… I have now to acknowledge your very acceptable letters of the 12” 13” 14” & 15” which contain important information both public & private – of which you may rely that the best use will be made in each way –

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133 William Roxburgh, “An Account of the Hindoo method of Cultivating the Sugar Cane, and Manufacturing the Sugar and Jagary in the Rajahmundry Circar; interspersed with such remarks, as tend to point out the great benefit that might be expected from increasing this Branch of Agriculture, and improving the quality of the Sugar; also the process observed by the Natives of the Ganjam District, in making the Sugars of Barrampore.” Alexander Dalrymple, Oriental Repertory, Vol. II, 497-514. The paper was re-published in full or comprehensively discussed in several popular journals and books including Philosophical Magazine, First Series, 21:83 (1805): 264-275; The Scots Magazine or General Repository of Literature, History and Politics, For the Year 1803 Vol LXV or Vol second of the Third Series (Edinburgh: Alex Chapman and Co, 1803), 853-857; and George Richardson Porter, The Nature and Properties of the Sugar Cane with Practical Directions For the Improvement of Its Culture and the Manufacture of its Products (London: Smith, Elder & Co, 1830).
without any inconvenience arising to you from the communication of such circumstances as require a discreet reserve – for the greater security of which you have not done amiss in sending particular letters to me in the manner that I have received them for the reason which you assign & which it may be prudent to continue.” Return was made in kind in the same letter, Ross being quick to alert Roxburgh to the direction of the wind blowing from England: the Court of Directors were eager to promote silk culture, “&… will naturally encourage every body to pursue it with the more industry and earnestness, who may have the means and the desire of doing so Tomorrow – I shall endeavour to see what the Court of Directors say about your exertions…”134

What they said, especially their satisfaction at the musters of sugar sent to England from the Circars, confirmed Roxburgh in the Corcondah lease.135 (Ross had already pushed it through the Board of Revenue.) The Madras Government, especially the members of the Board would have been only too attentive to what Roxburgh told them: that the best situation for growing sugar cane in the Circars was also where he had carefully built a base, in the zamindaries of Peddapore and Pettapore. Corcondah was part of the zamindari of Peddapore, and in setting up the plantation there Roxburgh (and Ross) created a template for the Calcutta Botanic Garden, which would become the most important state institution for the study of natural history in colonial India. He would spend the rest of his time in India as Superintendent of the Calcutta Garden.

134 Ross to Roxburgh, Madras, 21st March 1793, RC/NHM, ff. 108-109 (emphasis added). The cultivation of mulberry for silkworm production was about to take off in a big way under the leadership of Dr. James Anderson (see above).
135 Fort St. George, Revenue Department, Letter of 3 July 1795 (answer to Letter of 2 May 1793), paragraphs 17 and 18, E/4/881/APAC/BL, ff. 674-691.
The nature of the trading partnership between Ross and Roxburgh had required Roxburgh to negotiate the political economy of the Circars, something that the area’s Collectors had only fitfully attempted. The members of the Board of Revenue appreciated and drew upon the circumstance in their “public” capacity even as they countenanced Roxburgh’s private trade and growing political clout as improving naturalist in the Circars.\(^{136}\) Roxburgh had been asked to report back in secret to Ross on the efficiency with which upcountry Collectors were carrying out the Board’s orders. His reports are not entered in the Board’s Proceedings, but their temper can be guessed at from James Anderson’s public correspondence on mulberry cultivation, which was being carried on at the same time.\(^{137}\) Anderson was busy implementing the Court of Directors’ “commercial and benevolent” goal to spread mulberry cultivation and silk production in the Circars as a means of stabilizing the state in a politically volatile region. The process Anderson described to the Board – distributing mulberry plants to villagers, compiling a list of the enthusiastic for the Board, offering rewards to the industrious – was probably an exact parallel of Roxburgh’s activities; and his animadversions on the laxity of Collectors (“the zeal, however, of those gentlemen, who may be stated volunteers, has hitherto exceeded anything exhibited by these gentlemen under your more immediate protection…”) an echo of Roxburgh’s sentiments.\(^{138}\)

\(^{136}\) See Revenue Department Proceedings, Vol. 2337, 1793 (Tamil Nadu State Archives, Chennai).

\(^{137}\) Anderson, another Edinburgh medic and member of Ross’s circle, was the Physician General of the Presidency. The “mulberry correspondence” of the Madras Board of Revenue was published, fittingly, in Arthur Young’s *Annals of Agriculture*, Vol. XXIII, No. 29, 225-254, as an example of the improvement of the Circars wrought by Company medics.

\(^{138}\) James Anderson to David Haliburton, Esq. President and member of the Board of Revenue, Fort St. George, Feb. 7, 1793, in *Annals*, by Young, 226-227; James Anderson to Sir Charles Oakeley, Bart. Governor in Council, & e. & c., *Annals*, by Young, 227-229.
The Doctor never ceased to defer to the Board, and his marked success in using his plantation at Corcondah to embed himself in the area while accepting the Board’s political authority, was one reason why the Court of Directors was reluctant to release him to Calcutta. “[W]e recommend it to you to consider”, the Court wrote to Fort William in 1795, “whether this Gentleman’s abilities may not be more usefully exerted in the several pursuits in which he was so laudably engaged in the Circars than as Superintendent of the Calcutta Botanic Garden.” Ross on his part tried to cushion the blow to his trade by ordering the Doctor to stay put in the Circars until the matter of his lease was perfectly settled, and to make his stay in Bengal temporary. The via media they adopted was to entrust Corcondah to an agent in the Doctor’s absence.

Joseph Banks, his other patron, was similarly conciliated with large donations of plants, and responded with fitting condescension, at least during the first part of Roxburgh’s career. He appears to have balked at Roxburgh’s efforts to turn the Superintendent’s post at the Calcutta Botanic Garden into a sinecure for his son, though Roxburgh received support from other quarters.

139 The Company’s medical personnel always had a big hand in conducting diplomatic relations with native powers; most famously, in the (possibly) apocryphal incident that marked John Surman’s successful embassy to the Mughal emperor Farrukhsiyar. Farrukhsiyar, it is reported, had withheld the farman granting customs-free trading rights in Bengal to the Company, until cured of an illness by William Hamilton, the surgeon who accompanied the embassy. See Philip J. Stern, *Company-State*, 202. Medical men could (and did) make a bid for limited sovereignty once they had established friendly relations with native rulers. In 1693, the surgeon at Fort St. David, Richard Blackwall, had assumed the government of Porto Novo under the Mughals, attacking Company factories from there. See Anna Elizabeth Winterbottom, “Company Culture: Knowledge, Information and Scholarship in the Early East India Company Settlements” (Ph.D. diss., University of London, 2010), Chapter 4.
141 Ross to Roxburgh, 22 June 1793; and Ross to Roxburgh, 24 June 1793, RC/NHM.
By the time Roxburgh died in 1815, he was publicly recognized as the perfect Company man. He had placed his knowledge at the disposal of the corporation he served, and his entrepreneurship became the gold standard by which other Company naturalists would be measured. The Royal Society for the Arts twice awarded him its Gold Medal, in 1805 and again 1814, “for his valuable Communications on East-India products”; and for “the different Products of the East Indies, and their several Applications to the Arts, Manufactures, and Commerce of the United Empire.”¹⁴³ He had struck gold in other ways, too, leaving a fortune of 50,000 pounds to be divided among his many heirs, including his ten surviving children. His son would receive a baronetcy and a coat of arms, elevating the family to the British peerage in 1850, by which time Roxburgh’s reputation as “the father of Indian botany” was also unquestionably established.¹⁴⁴

III

And what of Buchanan? Well, he was not biddable, except by the very great – and sometimes not even by them, as his relationship with Lord Moira and the Court of Directors showed. His chief backer through his years in India, Governor-General Richard Colley Wellesley, remained a sympathetic friend even in retirement. In 1808 he had placed his son, Gerald, who was going out to India, in Buchanan’s care.¹⁴⁵ Later he

¹⁴³ Transactions of the Society for the Encouragement of Arts, Manufactures and Commerce, 23 (1805), 407; and 32 (1814), 207, quoted in Robinson, William Roxburgh, 217.
¹⁴⁴ Memorial of John Roxburgh, 31st March 1819 (Enclosure G), E/1/140/APAC/BL, f. 311; and discussion in Robinson, William Roxburgh, Chapter 15, 217-220.
¹⁴⁵ Wellesley to Buchanan, GD 161/17/3, National Archives of Scotland, Edinburgh (hereafter NAS).
would stand godfather to Buchanan’s son, writing to accept the honor in 1817, and warmly acknowledging their intimacy: “No part of my Government in India affords me more matter of satisfactory reflection, than the opportunities of which I availed myself to render your talents & knowledge useful to the World”. Unfortunately for Buchanan, the empathy that existed between them was not reproduced in many of his other relationships. His irascibility, and his unease with the clientelism that drove Company politics strongly contrasted with Roxburgh’s complaisance, and hurt him when it mattered most. His career would prove a lightning rod for changes that marked the transition to “professionalism” in the world of British science, as demonstrated by the fate of his pretensions to succeed Roxburgh as Superintendent of the Calcutta Botanic Garden.

Roxburgh had assumed charge of the Calcutta Garden in 1793, on the death of its founder, Robert Kyd. The agenda he set for the Garden turned it into a major colonial outpost of Linnean systematics, but its primary function was as a center for research on commercially valuable plants. His son, William, meanwhile, was being encouraged to develop his skills as a plant collector in hopes that he could be eased into the Garden as his successor when he retired. For this he had sought Banks’s blessing, encouraging his son to meet the great man and supply him with plants, much as he himself had done. All may have been well, and young Roxburgh may have claimed his patrimony as colonial naturalist, had Buchanan not acted to further himself as botanist.

Battle was joined when both men were in London in 1806, with patrons ranged on each side. The first hint comes in a letter from Buchanan to his old classmate, James

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146 Wellesley to Buchanan, GD/161/19/9/1, NAS.
147 See Robinson, William Roxburgh, 41-62; and Sangwan, Strenght of a Scientific Culture.
Edward Smith, now the respected founder of the Linnean Society: “Roxburgh is pushing hard to get his son appointed as his successor and I am endeavouring to secure the succession myself. Could you obtain from Lady Hume either her interest for me or at least her being quiet; it might be of service.”¹⁴⁸ The younger Doctor’s outrage at the back seat being given to botany and science in the “succession” was soon palpable. The letter in which he expressed his feelings to Smith is a fine indicator of a generational shift underway in British science:

I am much obliged to you for the trouble you have taken in applying to Lady Hume and shall state to you fully the case. Young Roxburgh was some years ago appointed Assistant to his father which place he now holds and of which I shall not attempt to deprive him. Afterwards he was recommended by the Court of Directors to succeed his father should he be found qualified. On his father leaving India the son would have accordingly been appointed Superintendent of the Botanical Garden; but it was considered that a part of the duty of that office should be to describe the vegetable productions and to communicate these descriptions to the learned of Europe; and as young Roxburgh was not qualified for any such thing the appointment was deferred until the pleasure of the Directors should be known. What I wish therefore is to be appointed successor to Old Roxburgh whenever he chooses to retire. He of course wishes to get his son appointed and says that science is not necessary; that a cultivator alone is required. If Lady Hume will have the goodness to speak in my favour provided the appointment is still considered as open, she will do me essential service and she can do Mr. Roxburgh no injustice unless she be of opinion that science is not a proper requisite for the office.¹⁴⁹

There are signs that the Court of Directors had looked Buchanan’s way. “Everything at the India House has been settled entirely to my satisfaction”, he wrote to his brother John in January 1807. “I am appointed successor to Dr. Roxburgh whenever he chooses to resign or depart and in the mean time I am to be employed on the same

¹⁴⁹ Buchanan to Smith, 22 November 1806, SL/LS (emphasis original).
footing as while I was in Mysore.”150 “My prospects indeed are of a pleasant nature as my employment will be perfectly consonant with my hobby horse…” he crowed in February.151

In the event no such thing occurred. Roxburgh refused to resign, probably at Joseph Banks’s advice, and continued as Superintendent of the Garden until 1813. Sir Joseph’s hand in the succession dispute appears indisputable. There is evidence that he intervened with the Court of Directors, while counseling Roxburgh to temporize and hold on at the Garden. The Banksian vision of empire and improvement, which Roxburgh had ably served, was under attack and Sir Joseph defended it. Being a good botanist alone was not enough to earn you advancement in India; and it would be a while before young pretenders like Buchanan would prevail over ties of patronage established over decades.

The social relationships that Buchanan established during his career in India were not idiosyncratic. They were an indication of how he imagined the career of a colonial man of science working at the “periphery”. He made no efforts to put down roots in India, chose the society of fellow natural historians over other colonials, and never seized the opportunity to build a fortune through trade.152

There are signs that Roxburgh, who realized that private trade was more than a route to a personal fortune, but to status in the world of science, urged Buchanan to embrace commerce. We do not have his letters to Buchanan but we do have Buchanan’s replies to him. In one dated November 17, 1796, Buchanan appears to be replying

150 Francis Buchanan to John Hamilton, London, 21 January 1807, GD 161/18/4/1, NAS.
151 Francis Buchanan to John Hamilton, Portsmouth, 10 February 1807, GD 161/18/2/1, NAS.
152 Francis Buchanan to William Roxburgh, Puttahaut, Novr. 17th, 1896 (sic) (should be1796), MSS.BUC/NHM, f. 7.
Roxburgh’s questions regarding trading opportunities: “I have not yet done anything in the way of trade nor do I know that I shall begin especially as the regulations for separating the military and civil lines of the medical service have been abolished.”\textsuperscript{153} In another he indicates his desire to make money through practicing medicine, not through trading on the side: “As for trade none can be carried on at present for want of cash; but even were credit re-established I am extremely doubtful if I should enter at all into manufacturing.” The letter continues with a wish to make money through his professional activities, without having to bend the knee to a superior: “I would have no manner of objection to leave the place for any other where I could save 200 or even 150 if that were independent of the good will of a chief (sic)…”\textsuperscript{154}

Buchanan’s intense discomfort with the social relations upon which professional mobility in the colonial order depended came to a nasty head in a conflict over his plant collections with Governor-General Lord Moira. Buchanan regarded his botanical collections as a route to recognition in the world of metropolitan science. To this end he had distributed duplicate specimens and drawings to potential allies, who proceeded to use them, sometimes without acknowledgement, in their own collections and publications.\textsuperscript{155}

He was determined not to repeat this mistake when he left India by leaving his collections behind. Roxburgh was uncomfortable at such appropriation (see n. 98) but tolerated it because he understood the place of strategic “gifting” in maintaining clientele networks, and its role in building his public persona. Meanwhile, a state eager to confer

\textsuperscript{153} Francis Buchanan to William Roxburgh, Puttahaut, Novr. 17, 1796, MSS.BUC/NHM, 7.
\textsuperscript{154} Buchanan to Roxburgh, Puttahaut, 10 May, 1797, MSS.BUC/NHM, 17.
\textsuperscript{155} Buchanan to Smith, 14 February 1795, SL/LS, cited in Sangwan, Strenght of a Scientific Culture, 237.
the sacred right of private property on the natives of India and discomfited by the range and variety of property relations encountered on the ground, was grappling with the same issue vis-à-vis its employees and *their* intellectual property. To whom did natural historical collections developed by colonial men of science belong? Did they belong to the collectors themselves or to the state that had facilitated their activities while building itself?

Moira was adamant that Buchanan’s natural history drawings, more than 500 of which he “confiscated”, were the property of the EIC government since they had been created as part of “official business”. Buchanan, equally stubborn, claimed they were his personal property, but the Governor-General prevailing, he was forced to return home to Scotland without them. Part of the problem may have arisen from Buchanan’s asperity. The language he used to describe Moira’s behavior to his friend James Edward Smith was intemperate to say the least:

> Before I left India that vain empty creature Lord Moira seized on all my drawings of natural history which had been made by the painters attached to the statistical survey although I had applied for leave to carry them home to be presented to the Court of Directors… The Directors it is true have ordered the drawings to be sent home immediately but what the animal [i.e. Lord Moira] may do with them in the interim it is difficult to say.\footnote{Francis Buchanan to James Edward Smith, Callander, 27 October 1815, SL/LS, Letter 135, 228-9.}

But Buchanan genuinely lacked appreciation of the requirements for building natural-history institutions in a colonial setting. The matter dragged on for years. In 1816 the issue was still unresolved, at which point the Superintendent of the Garden, James Hare, had the last word: the absence of Buchanan’s materials from India, he argued,
“would put the end to natural history for the present in India.”\textsuperscript{157} In the interim the Doctor also alienated the Court of Directors in London, leaving him nowhere to turn: “The Court of Directors have so disgusted me with their conduct that it is probable I shall never ask them either for drawing [,] manuscript or specimen. I have however communicated through a friend my opinion of what the Court should do with the collection in order to render it of use to the public and a credit to the Company[’]s government. Whether or not I shall hear anything further on the subject is doubtful.”\textsuperscript{158}

If Buchanan failed to grasp the imperatives of colonial state building, he was equally blind to the forces of dynamism within the Company state, which if properly harnessed could make a successful career in science in colonial India. The Doctor spurned trade, and, one supposes, the company of private merchants. Yet merchants such as Ross were influential actors in the making of natural historical knowledge, and were well integrated into the patronage networks of science. Ross corresponded with Joseph Banks, William Jones, and many other members of the Royal society, and assisted them in various ways.\textsuperscript{159} And without merchant contacts it was difficult or well nigh impossible to remit sums of cash back to Europe. Buchanan’s financial travails are recorded in a series of letters to his family, and form a contrast to the relative ease with which Roxburgh had amassed and husbanded his personal resources.\textsuperscript{160} He realized his mistakes too late to remedy them. “My advice to you as an old man of a good deal of experience both in India and Europe”, he wrote to his protégé the Danish

\textsuperscript{157} Quoted in Sangwan, \textit{Strenght of a Scientific Culture}, 238.
\textsuperscript{158} Buchanan to Smith, Edinburgh, 23\textsuperscript{rd} April, 1816, SL/LS, Letter 136, 230-31.
\textsuperscript{159} Sir William Jones to Andrew Ross, Crishna-nagar, 2\textsuperscript{nd} Sept 1789, RC/NHM, f. 147 (recto).
\textsuperscript{160} Francis Buchanan to Mrs. Fairful (his sister), 11\textsuperscript{th} March 1810, GD/161/18/5/1, NAS; Buchanan to Fairful, 26th March, 1811, GD/161/18/1/2/NAS; Francis Buchanan to John Hamilton, January 1812, GD/161/18/6/1, NAS.
botanist, Nathaniel Wallich, “is along with your search after science to collect money as fast as possible and whenever you have a competence to return to your native country…”¹⁶¹

IV

This chapter has tried to explore the intellectual and institutional foundations of the Company state. It has examined how different forces converged in the making of East India Company state institutions in the Northern Circars of Madras Presidency. And argued several things: that the Company’s sovereign powers and commercial functions came together in “shared rule” that allowed private British merchants to wield power in state-building; that late-eighteenth century clientelist politics could be effectively mobilized by EIC functionaries such as Roxburgh to accumulate social capital and build a public profile in the empire-state; and that the ideology of improvement and its entanglement with logistical politics played an important role in the making of natural knowledge in British India.

It has also argued that what made the difference between stunning (Roxburgh) and middling (Buchanan) professional success for medical savants in early-modern India was their ability to recognize that the epistemology of natural knowledge making was of a piece with the political economy of commercial imperialism. This was just as true for the patronage relations that structured the Company state. Harold Cook put it well when

¹⁶¹ Francis Buchanan to Nathaniel Wallich, 16 October 1821, MSS.BUC/NHM.
he advised historians of science to take note of the ways in which values of systems of accumulation and particularly of exchange affected the kind of natural knowledge produced. Cook bids us recognize that commerce and medicine worked together to produce the Dutch Golden Age. What people valued in the new philosophy introduced in the seventeenth century was also consonant with the values embedded in commerce:

“Merchants took a deep interest in natural facts because they were essential to business. But so did many other people concerned with bodily experience, particularly medical practitioners. The new philosophy was of course not about buying and selling per se. Yet the ways of life associated with commerce that increasingly dominated Europe focused attention on the objects of nature.”

Roxburgh understood that buying and selling was at the bottom of natural knowledge-making and social relations in colonial India. Buchanan did not. Merchants such as Ross were important conduits for the power that built careers in imperial natural history. Roxburgh hastened to secure their friendship and became rich. Buchanan did not.

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Indigofera atropurpurea, *Flora Indica* Distribution: Pakistan, (Punjab; Kashmir); India; Nepal; China, E. Himalayas.


Figure IV.1
Roxburgh’s Swietenia Soymiedy
Identified by D. J. Mabberley in 1983 as Soymida febrifuga (Roxb.) Herbarium sheet, Royal Botanic Garden Edinburgh

Figure IV.2
Chapter V

Conclusion: Making Useful Knowledge

Jones, Buchanan and Roxburgh considered themselves useful men. But what did they consider useful knowledge? There were significant differences between Buchanan and Jones on the question, and at times Buchanan was at pains to present himself as the anti-Jones.¹ Their different formations were part of the reason. Roxburgh represented a third vision. For him useful knowledge had to be commercially valuable as well as aid the state to steward its possessions.

Jones was trained first at Harrow, where he received a classical education, going on to University College, Oxford in hopes of a literary career. He wrote poetry, excelled at Latin, Greek and a variety of other languages, and was brought up to think of himself as a natural aspirant to the British intellectual elite. His initial interest in Persian and Arabic, it will be recalled, was driven by a desire to revive a moribund European poetry by injecting Oriental imagery into it. He was but a generation away from his Welsh small-farmer roots, but his father William Jones senior, mathematician, intimate of Isaac Newton and Edmund Halley and a member of the Royal Society, ensured that his children would never have cause to remember it. Sir William was tutor and confidant to the second Earl Spencer, and he married up: Anna Maria Jones was the daughter of Jonathan Shipley, Bishop of St. Asaph. That such a man should feel drawn to the high culture of the Sanskrit texts and the Brahmins who were its keepers is unsurprising; or

that he should become an ideologue for an imperialism that aimed to conciliate native elites.

Jones’s botanical knowledge-making was a testament to his high-cultural interests. I have argued that his Orientalism was a “sentimental empiricism” and that it sought to capture the qualities of plants as revealed in the names and epithets given to them in India’s classical languages. Such Orientalist empiricism had important implications for colonial political practice as Warren Hastings recognized, and as a number of men setting Indian educational policy in the 1820s understood. It was useful because the Englishman who had it “necessarily possesses and cultivates the kind of knowledge that best fits him to judge correctly on plans, which have for their object the instruction of the Natives and, what is not less important, he is immediately in the way of learning what their sentiments are on the measures, that may be suggested or adopted.”

Like other Orientalists, Jones believed in a golden age of Hindu civilization, which had been lost to Mohammedan incursion. Restoring India’s past greatness was their imagined goal. For him this meant conversing with indigenes, and experiencing a temporality at odds with the European present in order to understand it, before creating laws to change it.

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Scottish stadialists such as Buchanan conceded no such great Indian past. India would have to be pulled forward into the present time through hardheaded legislation that rejected dreams of a golden antiquity. For Buchanan this was best done through a careful induction of the particulars of the Indian present as they revealed themselves to his senses rather than by trusting native informants. As a student of John Walker he knew the importance of making facts *in situ*. His empiricism was practical and interventionist and enacted through fieldwork. He captured natural facts through traversing the land and conducting a “real survey” as his biographer Prain put it, not through consultation with pandits. His tools for knowledge-making were acquired in medical courses at Edinburgh and included statistics and political arithmetic and the language of agricultural improvement. Buchanan provided information about local religious and caste organization, about the daily life of cultivators, their agricultural techniques and technology, their social institutions, all based on personal observation.

Scottish stadialists were not necessarily anti-Orientalist. Indeed there was an entire generation of them, trained much as Buchanan had been, who went out to India and worked to learn Indian languages in the interests of fixing India’s place on the ladder of civilizations. They were grouped around the *Edinburgh Review*, where Alexander Hamilton’s review of *A Journey* appeared in 1808. They represented a particular tendency in British Orientalism, which brought together the new Scottish historiography and statistical analysis with interest in Indian languages. Their goal was to produce a “total” history of India (by pinning down every aspect of Indian civilization) as a contribution to the general history of the species. The comparative method was vital to

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3 Jane Rendall, "Scottish Orientalism", and Chapter III.
their project, and as far as the study of Indian languages was concerned, involved compiling comparative vocabularies to locate the civilizational status of particular Indian peoples. (This was not the method followed by Jones in his Third Anniversary Discourse, the foundational text of the Indo-European theory, although it could have been reasonably expected of him given the ends in view. Nor did he collect vernacular vocabularies as Buchanan did, relying on his Brahmin collaborators for the substance of his theorizing.)

Buchanan roundly opposed Jones’s dialogic construction of India’s ethnological and linguistic history, just as he questioned the reasoning behind his Mosaic ethnology. The antiquity of Hinduism was a myth, he thought, fabricated and perpetuated by cunning Brahmins. In an essay published in Asiatic Researches Volume VI, “On the Religion and Literature of the Burmas”, Buchanan insisted on the “late introduction of the superstition now prevailing in Hindustan” in the third century after Christ. According to him the genuine antiquity of the Buddhist faith that had prevailed over most of India before that time had escaped the attention of Orientalists dependent on Brahmanical texts for their knowledge-making. A second essay made a case for the racial unity of East Asians based on physiology rather than language. Buchanan concluded, based on fieldwork carried out among Burma’s tribes, that affinities of language were no indication of kinship.

Scottish Orientalists embraced political economy rather than antiquarianism.

James Mackintosh’s address delivered at the opening of the Literary Society of Bombay

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5 Francis Buchanan, “A Comparative Vocabulary”, 220.
in 1804, marked his distance from the Calcutta Orientalists: “It has indeed been sometimes lamented that Sir William Jones should have exclusively directed inquiry towards antiquities.”

He went on to affirm natural knowledge making for reasons of state, pointing out that civil administrators needed to observe facts attentively in the interests of good government. “One of the first requisites to the right administration of a district is the knowledge of its population, industry, and wealth. A magistrate ought to know the condition of the country which he superintends; a collector ought to understand its revenue; a commercial resident ought to be thoroughly acquainted with its commerce.”

Buchanan was an outlier in this tradition, though it would be difficult to categorize him as an Orientalist of any stripe. If he was appropriated by James Mill it was because like Mill he found little to admire in ancient (or modern) Hindu civilization, and set no store by Jones’s claim of the superiority of Orientals in the imaginative arts. Mill’s was, however, the minority voice in the Edinburgh Review. The History of British India (which cited Buchanan copiously) played an important role in setting policy on colonial education, especially in the introduction of western science into schools in British India. But what of the day-to-day working of colonial administration? Did training in political economy help collectors understand the revenue of a district? Or help a magistrate understand the condition of the country?

Administrative practice worked otherwise, if we are to judge by the lamentations of a Malabar collector, one Mr. McWatters, in 1880. “‘We have no land register”, he

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7 Ibid., xxi.
wrote, “we have no regular register of gardens, and we have no register of dry lands. In fact we have nothing whatever reliable about the land revenues, and we know next to nothing about them. The rice fields cannot generally be identified by means of the only register we have got, and we have consequently no control over the apportionment of the revenues. It is believed that the poor man with the worst land pays the highest assessment.”

Natural knowledge-making and revenue collection, one suspects, proceeded much as it had in Alexander Walker’s day, with a native at the side of every successful collector reckoning the revenue assessment on trees and rice lands using indigenous methods.

William Roxburgh, the third savant in this study, viewed useful natural knowledge through the prism of accumulation and exchange. He was a successful merchant on the side, and his relationship with his mentor, Andrew Ross, affected how he used his natural knowledge-making skills. His knowledge making was directed at stabilizing plant-commodities for East India Company markets, and for his lucrative dealings in the country trade in Southeast Asia. He was a naturalist in John Walker’s sense, a man dedicated to discovering the properties and useful qualities of plants and other natural objects in the interests of commerce. I end with an image of his hybrid botanical practice conjured up by reading an anonymous pharmacopoeia in the *Roxburgh Collection* at the British Library.

The pharmacopoeia, a couple of hundred folio-sized pages, consists of lists of plant names in the Bengali and Nagari scripts with annotations and medical recipes in

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9 “Rough, Anonymous draft of a ‘Pharmacopoeia’”, *Roxburgh Collection, MSS/EUR E-120*, APAC/BL.
English. Page headings are erratic and include the places where plant names were current, “vegetable cultivars”, “wild forage plants”, “spices”, and “plants for making thread”. Against some of the names and recipes a sentence appears in superscript: “The collector homologates”. Homologation according to Wikipedia “is a technical term, derived from the Greek homologeo for “to agree”, which is generally used in English to signify the granting of approval by an official authority. This may be a court of law, a government department, or an academic or professional body, any of which would normally work from a strict set of rules or standards to determine whether such approval should be given.”\textsuperscript{10} Its eighteenth century usage also had a specifically legal meaning – “to ratify or render valid”.\textsuperscript{11} We could thus read Roxburgh’s inclusion of the sentence against the entries in his pharmacopoeia as an indication that without the agreement of the native collector no plant identification could be rendered valid. Colonial natural history was a science of two cultures.

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This dissertation has argued two main claims: that colonial natural history and the East India Company state were co-constitutive; and that colonial natural history was a hybrid way of knowing that brought together different types of knowledge, European and indigenous, in the service of the colonial state.

\textsuperscript{10} \url{http://en.wikipedia.org/wiki/Homologation}
Natural history was an expression of the manner in which the Company’s commercial interests shaped the organization of governance. Wellesley could not convince the Court of Directors in London to invest money in setting up an Institution for the Study of Natural History in India, but the Court was only too eager to publish the journals of Buchanan’s Mysore survey. By 1799 EIC share prices had dropped below 150 pounds. The Company needed to convince shareholders of the robustness of EIC state policy and create a vision of a futures market in south Indian spices, especially pepper. News of Buchanan’s survey and the publication of *A Journey* almost certainly played a role in keeping share prices above 200 pounds in the first decade of the nineteenth century. The right to shape the institution of Company Naturalist, meanwhile, fell to William Roxburgh, the Company surgeon most involved in promoting its commerce and his own.

William Roxburgh and William Jones were both *savants* who understood that making natural knowledge in India was impossible in the absence of collaboration with natives. Jones’s plant descriptions testify to his hybrid knowledge-making practices, as does Roxburgh’s botanical taxonomy. Collaborative knowledge-making did not, however, compromise the *epistemic* confidence that all three *savants* felt in European forms of knowledge. Moments of interrogation of European knowledge-making practices resulted finally in the strengthening of European epistemologies. Colonial knowledge and colonial power both worked to establish their dominance.
Page from Roxburgh’s pharmacopoeia MSS/EUR E-120/APAC/BL

Figure V.1
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