The "Moral Anatomy" of Robert Knox: The Interplay between Biological and Social Thought in Victorian Scientific Naturalism

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> Could you possibly be afraid of applying the calculation of chances to moral phenomena, and of the afflicting consequences which may be inferred from that inquiry, when it is extended to crimes and to quarters the most disgraceful to society? ... But is the anatomy of man not a more painful science still? — that science which leads us to dip our hands into the blood of our fellow-beings, to pry with impassible curiosity into parts and organs which once palpitated with life? And yet who dreams at this day of raising his voice against the study? Who does not applaud, on the contrary, the numerous advantages which it has conferred on humanity? The time is come for studying the moral anatomy of man also, and for uncovering its most afflicting aspects, with the view of providing remedies.
>
> L. A. J. Quetelet[1]

In 1842, William and Robert Chambers of Edinburgh issued an English translation of Quetelet's *Sur l'homme*. Quetelet himself provided a new preface for the English edition, in which he evoked a "moral anatomy" that would subject social and political phenomena to the scalpel of the social dissector and thus to the rule of natural law. This paper explores the ways in which Quetelet's call for a "moral anatomy" was taken up and developed by his translator Robert Knox, Edinburgh anatomist and ethnologist — or, more properly speaking, "anthropologist."

Knox, long a favorite subject of medical historians and playwrights because of his tragic involvement in the Burke and Hare

1. Lambert A. J. Quetelet, "Preface" to *A Treatise on Man and the Development of His Faculties*, trans. Robert Knox (Edinburgh: W. and R. Chambers, 1842), p. viii.

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affair, which led to the passage of the Anatomy Act of 1832, has more recently come under the scrutiny of historians of biology for his leading role in the teaching and dissemination of transcendental anatomy in early nineteenth-century British biology.[2] As well, historians of anthropology and social theory are now agreed that his (previously underestimated) role in the development of scientific racism was crucial. Philip D. Curtin has described Knox as "the real founder of British racism and one of the key figures in the general Western movement towards a dogmatic pseudo-scientific racism."[3]

From these differing disciplinary perspectives, the historical Knox has been fragmented and the remarkable consistency and coherence of his anatomical, anthropological, and political views have been lost. My object is to reintegrate the whole man and his views within the context of Victorian scientific naturalism. In particular, I intend to explain the relation of Knox's biology to his racism and his politics, and, through such contextual analysis, to clarify his evolutionism.

Knox's views on organic development have always been contentious. Baden Powell, writing in 1855, described him as "one of the most zealous supporters of the principle of transmutation in this country."[4] But few of his contemporaries seem to have shared Powell's opinion. Although Baden Powell was himself given due recognition in the "Historical Sketch" that Charles Darwin

2. See Evelleen Richards, "The German Romantic Concept of Embryonic Repetition and Its Role in Evolutionary Theory in England up to 1859," Ph.D. diss. University of New South Wales, 1976, chap. 6; Adrian Desmond, "Robert E. Grant: The Social Predicament of a Pre-Darwinian Transmutationist," *J. Hist. Biol., 17* (1984), 189–223; L. S. Jacyna, "John Goodsir and the Making of Cellular Reality," *J. Hist. Biol., 16* (1983), 75–99; Philip F. Rehbock, *The Philosophical Naturalists: Themes in Early Nineteenth-Century British Biology* (Madison and London: The University of Wisconsin Press, 1983), pp. 31–55.

3. Philip D. Curtin, *The Image of Africa: British Ideas and Action, 1780–1850* (London: Macmillan, 1965), p. 377. See also Marvin Harris, *The Rise of Anthropological Theory* (New York: Thomas Y. Crowell, 1968), pp. 99–101; J. W. Burrow, *Evolution and Society: A Study in Victorian Social Theory* (London and New York: Cambridge University Press, 1966), pp. 124, 130; George W. Stocking, "What's in a Name? The Origins of the Royal Anthropological Institute (1837–71)," *Man, 6* (1971), 374; Michael D. Biddiss, "Myths of the Blood: European Racist Ideology 1850–1945," *Patterns of Prejudice, 9*, no. 4 (1975), 11–19; Ronald Rainger, "Race, Politics, and Science: The Anthropological Society of London in the 1860s," *Vict. Stud., 22* (1978), 51–70; Nancy Stepan, *The Idea of Race in Science: Great Britain 1800–1960* (London and Basingstoke: Macmillan, 1982), pp. 41–46.

4. Baden Powell, *Essays on the Spirit of the Inductive Philosophy, the Unity of Worlds, and the Philosophy of Creation* (London: Longmans, 1855), p. 395.

appended to the *Origin of Species*, Knox did not rate a mention.[5] The recent revival of interest in Knox's transcendental anatomy has been attended by a similar conflict of opinion. Adrian Desmond has described Knox as a materialist and transmutationist,[6] whereas Philip F. Rehbock has depicted him as an idealist and antitransmutationist who was "not thinking [in terms] of an evolutionary process" and did not hypothesize a "theory of universal descent."[7]

Historians of anthropology, on the other hand, readily identify Knox as an "evolutionist," and a number have pointed to the congruence of his and Darwin's views on human evolution.[8] Here, however, another difference of interpretation centers on Knox's racism and his political views. Like Curtin, those historians who have discussed Knox's anthropological views have tended to see his politics of race as reactionary, or at least conservative — to collapse them into the discriminatory ambience of late Victorian scientific racism. However, a recent analysis of Knox's race science by Michael Biddiss offered a different interpretation: Biddiss stated that Knox subscribed to a "very peculiar political radicalism" and that consequently he propounded a "rare and rather paradoxical . . . racism with substantial traces of benevolence." Biddiss also emphasized the high degree of systematization of Knox's racism and its close ties with his transcendental anatomy.[9]

By developing Biddiss's suggestive analysis, and focusing on the

5. Darwin's omission of Knox is all the more curious in that Powell's work (cited by Darwin) contained an extract from one of Knox's works in demonstration of his "transmutationism" (ibid., pp. 399—400). Moreover, Darwin had read this very work of Knox's, for he cited it in *The Descent of Man*, 2nd. ed. (London: John Murray, 1889), pp. 17, 21, nn. Both these citations refer to Knox's *Great Artists and Great Anatomists* (London: John van Voorst, 1852), and there is a further reference to Knox's *The Races of Men: A Fragment* (London: Henry Renshaw, 1850) in a footnote: Darwin, *Descent*, p. 168. From the details given in these references, Darwin evidently read both works with some care. Both works, as I shall demonstrate, contain numerous statements consistent with Darwin's requirement of his "anticipators" that they believe[d] "existing forms of life have descended by true generation from pre-existing forms" (Charles Darwin, "A Historical Sketch of the Recent Progress of Opinion on the Origin of Species," in *The Origin of Species: A Variorum Text*, ed. Morse Peckham [Philadelphia: University of Pennsylvania Press, 1959], p. 59.)

6. Desmond, "Grant: Pre-Darwinian Transmutationist," p. 159; also idem, "Robert E. Grant's Later Views on Organic Development: The Swiney Lectures on 'Palaeozoology,' 1853—1857," *Arch. Nat. Hist.*, *11* (1984), 397.

7. Rehbock, *Philosophical Naturalists*, pp. 50—51.

8. Notably Curtin, *Image of Africa*, pp. 377—381; Harris, *Rise of Anthropological Theory*, pp. 99—100; Stepan, *Idea of Race*, chaps. 2 and 3.

9. Michael D. Biddiss, "The Politics of Anatomy: Dr. Robert Knox and Victorian Racism," *Proc. Roy. Soc. Med.*, *69* (1976), 245—250.

interplay of biological and social thought in the production, acceptance, and applications of Knox's race science or "moral anatomy," I am able to offer a reconstruction that goes some way toward resolving the above contradictions. My interpretation is in line with recent work in the social history of evolutionary biology that has led to a major revision of the positivist historiography forged by the dominant Darwinians of the late nineteenth century, who undervalued and distorted the role of transcendental anatomy. The role of institutional and social factors is crucial to this revised historiography. Thus, in a series of compelling studies, Adrian Desmond has demonstrated how transcendental conceptions of nature were deployed by two leading British comparative anatomists for different institutional and social purposes: Richard Owen, doyen of the Royal College of Surgeons, harnessed transcendental anatomy to an anti-Lamarckian paleontology and biology to meet conservative institutional and social needs, while his professional rival Robert Grant of University College made it do service to reformist institutional and radical-democratic political interests by casting it in a progressivist transformist mold.[10] My analysis of Knox demonstrates yet another deployment of transcendental anatomy in a nonprogressivist theory of development. In brief, Knox's biology, which was developed largely outside any institutional context, was consistent with his racist radicalism, but, after his death, it was pressed into institutional service by James Hunt, the racist founder of the Anthropological Society of London. Their adoption of Knoxian biology and anthropology not only underpinned their racism and reactionary politics, but gave Hunt and his followers the intellectual and institutional strength to resist incorporation into the Darwinian anthropological model proffered by Huxley, and to offer considerable professional opposition to the takeover of London science by the Darwinian "new guard." The struggle between these rival bodies for scientific and ideological hegemony shaped the "new" anthropology of the 1870s, and certain of Knox's views were thereby perpetuated in late Victorian scientific racism.

My paper is organized in two parts. Part I analyzes the relationship between Knox's anatomical, anthropological, and political views; part II deals with the appropriation, retooling, and institutionalization of Knox's "moral anatomy."

10. Desmond, "Grant: Pre-Darwinian Transmutationist"; idem, "Grant's Later Views"; Adrian Desmond, "Richard Owen's Reaction to Transmutation in the 1830's," *Brit. J. Hist. Sci., 18* (1985), 25—50; idem, Interpreting the Origin of Mammals: New Approaches to the History of Palaeontology," *J. Linn. Soc. (Zool.), 82* (1984), 7—16; idem, *Archetypes and Ancestors: Palaeontology in Victorian London 1850—1875* (London: Blond and Briggs, 1982).

I. KNOX THE "MORAL ANATOMIST"

Any attempt to come to grips with the historical Knox has to confront the mythology that has accreted around his disastrous association with the Burke and Hare murders. This is the stuff of drama, and not only has it dominated most historical accounts of Knox and his work, it has also offered a ready-made explanation for his professional failure and lack of scientific recognition. The attempt to pry Knox apart from his established image as medical martyr is complicated by the paucity of source material on him. Knox himself destroyed most of his correspondence and his manuscripts shortly before his death. Those letters and materials which his former pupil and partner Henry Lonsdale managed to acquire from family sources and from James Hunt when he was preparing his biography of Knox cannot be traced. Even Knox's official correspondence with bodies such as the Edinburgh Royal College of Surgeons has largely disappeared.[11]

The historian is forced back onto problematic contemporary accounts and Knox's published writings. These latter, although voluminous, present further difficulties of interpretation and historical evaluation. Knox only began to elaborate his theoretical views after 1842 — the year in which he finally relinquished all hope of professional employment in Edinburgh and left his native city, supporting himself thereafter mostly by hack journalism and public lecturing, and settling finally in London where he died in 1862. These writings were perforce commodities. Through their sale Knox managed to keep one step ahead of pauperism, and their production was tailored to his pressing financial needs. They were written in haste, badly organized, and rarely revised. They ranged over the topics that a fickle public might find of interest, and where Knox wrote within his own major areas of interest he subordinated the elaboration of his theoretical views to his efforts to reach and retain a wider popular audience. In short, he did not present his "moral anatomy" systematically or comprehensively but scattered it through his journal articles and popular books, and it has to be reconstituted from these many and varied sources. To add to the problem of reconstruction, Knox wrote as a propagan-

11. Henry Lonsdale, *A Sketch of the Life and Writings of Robert Knox the Anatomist* (London: Macmillan, 1870), pp. viii—ix; Isobel Rae, *Knox the Anatomist* (Edinburgh and London: Oliver and Boyd, 1964), pp. 106, 142—146. Biographical detail on Knox is taken from these sources and from G. T. Bettany, "Robert Knox," in *Dict. Nat. Biog.* (London: Smith Elder, 1892), *31*: 331—333. Lonsdale's biography remains the best source on Knox's life and work. Rae's account suffers from its almost exclusive focus on the Burke and Hare affair and from poor comprehension of Knox's biology and anthropology.

dist and polemicist on his obsessive topics of race and transcendental anatomy, consistently sacrificing clarity and precision to vehemence and rhetoric. Those qualities which made him so brilliant and stimulating a lecturer do not translate so well to paper. Nevertheless, it is possible to piece together a conception of life and the universe that is surprisingly self-consistent and truly synthetic in scope. In fact, it is not inappropriate to suggest that Herbert Spencer's "Synthetic Philosophy" had an earlier analogue in Knox's "moral anatomy," and some obvious parallels between their work will emerge in the course of this study.[12]

The standard version of Knox's involvement in the Burke and Hare affair is a familiar and quickly told story. Once the most popular extramural teacher of anatomy in Edinburgh, whose classes had reached the unprecedented number of over five hundred students, and who had seemed destined for a brilliant career as an anatomist, Knox was professionally ruined and reduced to penury by this most celebrated medical scandal of the nineteenth century. During the years 1827 and 1828, William Burke and William Hare collaborated to murder around sixteen people for gain, selling their bodies to Knox's medical school (at ten pounds apiece) for dissection by his students. When the murders where finally uncovered, the public, long incensed by the activities of the busy Edinburgh "resurrection men," was particularly outraged by these circumstances, and Knox shared in the opprobrium cast upon the murderers. He was hanged and burnt in effigy, vilified in the popular press of the day, and for some time went in fear for his life at the hands of the Edinburgh mob. Although he was officially exonerated of all complicity in the murders, the episode haunted Knox for the rest of his life. According to one account, he never again dissected a human body and he gave up his researches on human anatomy.[13] Others represent him as a scapegoat for the contemporary body-snatching proclivities of the medical fraternity at large, who was hounded and ostracized by

12. Spencer's early developmentalism was shaped by transcendental thought. His "Synthetic Philosophy" (from about 1851 on) was an attempt to apply a formula of evolution, centered on von Baer's embryological law of increasing divergence, to every kind of phenomenon throughout the universe, including biology, ethics, sociology, politics, and art. He subsequently gave this a Darwinian gloss, and extrapolated his Social Darwinism from it. See Burrow, *Evolution and Society*, pp. 179—227; Robert M. Young, "The Development of Herbert Spencer's Concept of Evolution," *Actes du XIe Cong. Internat. Hist. Sci., 2* (1967), 273—278; Georges Canguilhem et al., "Du développement à l'évolution au XIXe siècle," *Thalès, 11* (1960), 25—29.

13. James A. Ross and Hugh W. Y. Taylor, "Robert Knox's Catalogue," *J. Hist. Med. Allied Sci., 10* (1955), 269—276.

society for the rest of his life, and was denied the scientific recognition that was his due.[14]

While Knox certainly became a social outcast and there is some substance to these interpretations, they overlook the role played by Knox's conception of anatomy and his radical political views in the conservative and highly competitive Edinburgh medical context. And Knox's lack of scientific recognition by his contemporaries possibly had more to do with the subsequent appropriation of his views by that latter-day "resurrection man," James Hunt (see part II, below), than with his association with the murderous activities of Burke and Hare.

Unlike most of his colleagues, and as Rehbock has recently emphasized, Knox was no mere anatomist, but a "philosophical anatomist." In his own words: "Anatomy is not a science, but merely a mechanical art, a means to an end. It is pursued by the physician and surgeon for the detection of disease, and the performance of operations; by both to discover the functions of the organs; and by the philosopher with the hope of detecting the laws of organic life, the origin of living beings, and the transcendental laws regulating the living world in time and space."[15] Clearly, Knox was not interested in the accumulation of dry anatomical facts, nor simply in the pure morphological search for organic homologies and the establishment of the underlying unity of the diversity of nature, but in the problem of diversity itself — with the origin and laws of life. Moreover, for Knox, as we shall see, the "philosopher's" concern for the elucidation of nature's laws was necessarily bound up with a concern for their social and political implications. He was, in this sense, closer to Quetelet's invocation of "moral" anatomist, than to Rehbock's narrower ascription of "philosophical" anatomist.

Knox had graduated in medicine at Edinburgh University in 1814. After a period of duty as an army surgeon at Waterloo and then at the Cape, he studied in Paris. Here, according to his own account and that of Henry Lonsdale,[16] his anatomical knowledge and his fluency in the language put him on familiar terms with the foremost comparative anatomists of the day — the functionalist teleologist Georges Cuvier and the transcendental morphologist Étienne Geoffroy St.-Hilaire. For Knox, conservative Cuvierian

14. A. S. Currie, "Robert Knox, Anatomist, Scientist and Martyr," *Proc. Roy. Soc. Med., 26* (1933), 39—46; John. D. Comrie, *History of Scottish Medicine* (London: Balliere, Tyndall and Cox, 1932), II, 502 ff.; this is also the burden of the account in Rae, *Knox*.

15. Knox, *Great Artists*, pp. 141—142.

16. Ibid., pp. 19, 73, 104, 111—112; Lonsdale, *Life*, pp. 17, 18, 21.

function soon lost out to Geoffroyan form and its contingent radical political ties,[17] and he returned to Edinburgh a convert to a radical and heterodox transcendental anatomy. From about 1826, when he took control of John Barclay's private anatomy school, he began to preach the new doctrine to his students and in his famous Saturday morning public lectures, to which his eloquence and brilliance, and perhaps the novelty and social implications of his views, attracted the Edinburgh intelligentsia. Even after the Burke and Hare affair, Knox could still attract large and enthusiastic crowds to these lectures on "Comparative and General Anatomy and Ethnology." Reference has been made to his role in the dissemination of transcendental anatomy in British biology, and there seems little reason to doubt his own estimation of his significance in this. As Rehbock has documented, his students included a number of subsequently prominent anatomists and naturalists who became, in turn, exponents of transcendental natural history.[18]

Initially Knox enjoyed considerable professional success. He quickly built Barclay's old school into the largest and most popular anatomy school in Edinburgh. As well, he was instrumental in setting up the Comparative Anatomy section of the Museum of the Edinburgh Royal College of Surgeons and, in recognition of his efforts, was elected founding conservator of the Museum in 1826. He was elected to the Royal Society of Edinburgh, was on the councils of the Plinian Society and the Wernerian Natural History Society, and was a noted contributor to the Medico-Chirurgical Society. He was the valued associate of Robert Jameson, professor of natural history and founder of the *Edinburgh Philosophical*

17. Geoffroy's morphology (which emphasized serial development, recapitulation, transformism, and unity of composition, and was founded on the sovereignty of material laws), was directed against Cuvier and aimed at the young medical reformers and republicans of Paris, and it appealed equally to visiting British radicals like Knox and Grant. See Adrian Desmond, *The Politics of Evolution: Morphology, Medicine, and Reform in Radical London* (Chicago: University of Chicago Press, 1989); Toby Appel, *The Cuvier-Geoffroy Debate: French Biology in the Decades Before Darwin* (Oxford: Oxford University Press, 1987).

18. Knox, *Great Artists*, pp. 73, 211—212; Robert Knox, "Contributions to the Philosophy of Zoology, with Special Reference to the Natural History of Man," *Lancet* (July 14, 1855), 24—26. Knox's pupils included John Goodsir, Edward Forbes, and possibly Richard Owen (Rehbock, *Philosophical Anatomists*, pp. 56—114). Both Knox and Rehbock overlook the contributions of Robert Grant as teacher and disseminator of transcendental anatomy — but, as Desmond had demonstrated in his studies of Grant, he was probably as influential as Knox in this respect; see above, n. 10.

Journal. During the late 1820s, undoubtedly through Knox's influence and that of his fellow transcendentalist, Robert Grant, Jameson's *Journal* made Geoffroy's transcendental views available to a wider reading audience.[19] As Desmond has noted, during the 1820s it was possible for Knox, Grant, and others to express their heterodox views in the various forums available to them — notably the Plinian Society, which had a pronounced materialist bent.[20]

At the same time, however, Knox's very success as a lecturer, his uncompromising and unorthodox antiteleological stance, his all-too-evident disdain for organized religion, and his radical politics bred professional enmity. The Burke and Hare affair was opportunistically manipulated by his direct competitors in the anatomy marketplace to discredit and undermine him. The cut-throat entrepreneurial competition for students that had always characterized higher learning in Edinburgh grew more intense as the medical school began to lose its hegemony and the numbers of students attracted to Edinburgh declined.[21] Knox, an outspoken advocate of university reform, became caught up in the incessant internecine warfare between the university, the Royal College of Surgeons, and the extramural anatomy schools, and by 1842 he had been effectively excluded from all of them. In 1831 he was harried into resigning his position as conservator of the Museum of the Edinburgh Royal College of Surgeons — the museum that his own enthusiasm, initiative, and industry had helped to establish. Knox's students, who had initially stood by him, were eventually alienated by his increasingly bitter and aggressive attacks on professional rivals and colleagues and his growing

19. Notably, Étienne Geoffroy St.-Hilaire, "Of the Continuity of the Animal Kingdom by Means of Generation, from the First Ages of the World to the Present Times," *Edinburgh New Phil. J.*, *7* (1829), 152—155; idem, "On the Philosophy of Nature," ibid., *8* (1830), 152—154.

20. Desmond, "Grant: Pre-Darwinian Transmutationist," pp. 199—200.

21. By the time of the Burke and Hare affair, Knox had two-thirds of the whole Edinburgh medical school in his classrooms, and Lonsdale gives a vivid and partisan account of the machinations of Knox's "jealous rivals": Lonsdale, *Life*, pp. 81—91, 113—114, 130, 190—193. According to Knox, by 1841 the chairs of the university had "fallen much below the income of a steady-going retail grocery or bakery," and between 1838 and 1841 the number of medical students had declined from 556 to 356. Knox attributed this decline to three causes: "the overloading of the curriculum, the absence from the University of all men of originality and of European reputation, and the baneful effects of a monopoly exercised by the University, whose sure result, like all other monopolies, is first to ruin itself and afterwards its neighbours" (ibid., pp. 261—264, 196). For an analysis of the traditional laissez-faire and entrepreneurial nature of the university teaching, see J. B. Morrell, "Science and Scottish University Reform: Edinburgh in 1826," *Brit. J. Hist. Sci.*, *6* (1972), 39—56.

sarcasm and cynicism. His classes dwindled.[22] In the mid-thirties, his financial problems were exacerbated by the decision of the university to introduce its own compulsory intramural courses on anatomy, and Knox pulled no punches in belaboring this "scandalous monopoly" and the poor quality and expense of the teaching within the university medical school.[23] Knox was an unsuccessful (and hardly a serious) candidate for the University Chair of Pathology in 1837. This was the very chair whose foundation in 1832 he had denounced as a Whig conspiracy, a charge he reiterated in his application, describing it as a "political job of the very worst description."[24] He was passed over as an applicant for the Chair of Physiology in 1841; in the same year, he did not manage to secure even one vote in the election for the post of lecturer in anatomy to the art students of the Scottish Academy — a position for which, with his romantic enthusiasm for art, he would have been admirably suited.[25]

Apart from Knox's aggressive involvement in institutional politics, his political convictions and his lack of "Calvinistic credentials"[26] marked him out as a dangerous and subversive radical. In the politically and socially unsettled post-Reform Bill

22. Even Lonsdale found inexcusable Knox's plagiarism of some anatomical discoveries by his former pupil and partner John Reid in 1840, and their public controversy further diminished Knox's Edinburgh reputation. By 1842, as the final humiliation, Knox was unable to get up a class in his own anatomy school. See Lonsdale, *Life*, pp. 219—220, 257; letters from John Reid to William Sharpey, October 18, 1840; December 15, 1842, Wellcome Institute for the History of Medicine, Library, MS 69099; C. H. Creswell, *The Royal College of Surgeons of Edinburgh: Historical Notes from 1505—1905* (Edinburgh and London: Oliver and Boyd, 1926), pp. 77—84, 240—250; Rae, *Knox*, pp. 105—126.

23. Robert Knox, "Letter to the Right Honourable the Lord Provost and Town Council of Edinburgh," July 6, 1837, p. 6; "Second Letter to the Right Honourable the Lord Provost and Town-Council of Edinburgh," July 15, 1837 (Archives, Royal College of Surgeons, London, Tr. 1160 [17 and 18]). Knox was widely suspected of being the author of the highly critical pamphlet *An Examination into the Causes of the Declining Reputation of the Medical Faculty of the University of Edinburgh* (Edinburgh: Burgess, 1834), and from its tone and contents this seems quite likely; see Rae, *Knox*, p. 117. Note also Knox's comments in his preface to the second edition of his translation of Cloquet: Robert Knox, *A System of Human Anatomy: On the Basis of the "Traité d'Anatomie Descriptive" of M. H. Cloquet*, 2nd ed. (Edinburgh: Maclachlan and Stewart, 1831), p. vii; and see "An Hitherto Unpublished Letter by Dr. Robert Knox," *Glasgow Med. J.*, *100* (1923), 5. Knox's role in Edinburgh institutional politics and medical reform warrants closer examination than this study can provide.

24. Knox, "Letter to the Lord Provost," p. 6.

25. Lonsdale, *Life*, pp. 261—264; *Knox*, p. 121.

26. Lonsdale, *Life*, p. 264.

period of the thirties and forties, attitudes toward heterodoxy hardened. There was little chance of professional advancement in Edinburgh for a lecturer capable of holding up a cranium before his students and provocatively declaiming: "Are we to be told that the Caffre of this cerebral stamp is a savage because he lives in the 'wilde,' and that John Bull is the happy creature of civilization because he wears breeches, learns catechisms, and does his best to cheat his neighbours — always, of course, on Christian principles!"[27]

The opportunity to superintend and edit the English translation of Quetelet's work during 1841, when he was so financially hard-pressed, must have been greatly welcomed by Knox. Possibly it was Knox himself who suggested the project of a "People's Edition" to the Chambers brothers.[28] He was already familiar with this "admirable work" of the "illustrious Quetelet," which had been published in French in 1835, and he extolled its "leading idea" as "that bright and original conception of a great mind."[29] Quetelet's work was also of considerable interest to Robert Chambers, at that stage secretly working on the evolutionary work *Vestiges of the Natural History of Creation*, which he would publish anonymously in 1844. Chambers invoked Quetelet's statistical regularities to support his thesis that the natural world, including humanity and mind, had evolved by law.[30] Knox was also strongly influenced by this naturalistic assumption and he too put forward a theory of organic development, but it differed in important

27. Ibid., p. 149.

28. Ibid., p. 257. Note also the "Publishers' Notice," Quetelet, *Treatise on Man*.

29. Knox, "Translator's Appendix," in Quetelet, *Treatise on Man*, p. 119. In 1837 Knox had included Quetelet's statistics in a paper on the diurnal changes in the pulse, and he devoted a portion of his "Appendix" to this same topic: ibid., pp. 119—122; and Robert Knox, "Physiological Observations on the Relations of the Heart, and on its Diurnal Revolution and Excitability," in R. Knox, *Memoirs, Chiefly Anatomical and Physiological, Read at Various Times to the Royal Society in Edinburgh, the Medico-Chirurgical, and other Societies* (Edinburgh: P. Rickard, 1837), pp. 1—19.

30. [Robert Chambers], *Vestiges of the Natural History of Creation* (London: John Churchill, 1844), pp. 328—332. See also Milton Millhauser, *Just before Darwin: Robert Chambers and Vestiges* (Connecticut: Wesleyan University Press, 1959). On Quetelet and his influence on British science and social thought, see John T. Merz, *A History of European Thought in the Nineteenth Century* (New York: Dover Publications, 1965), II, 577—587; Burrow, *Evolution and Society*, pp. 108, 253; Sylvan S. Schweber, "The Origin of the *Origin* Revisited," *J. Hist. Biol.*, *10* (1977), 284—293; Solomon Diamond, "Introduction," in Quetelet, *Treatise on Man*, Facsimile Reproduction of the English Translation of 1842 (Gainesville: Scholars' Facsimile and Reprints, 1969), pp. v—xii.

respects from Chambers's, as did his conception of natural law. Their differences may be best summed up in political terms: where Chambers was a liberal reformer and a "progressive" in both the social and biological senses, Knox was, as his obituarist in the *Medical Times* put it, a well-known "savage radical."[31] Knox's major criticisms of *Vestiges* were that its "development hypothesis" was located within a teleological framework, and that it subscribed to the ideology of progress.[32] His own transcendental anatomy was grounded in materialism and was thoroughly nonprogressive, and Knox's highly idiosyncratic developmental views can only be interpreted by reference to his materialist ideology and his peculiar brand of political radicalism.

Knox's Anomalous Radical Materialism

Just how "savage" Knox's radicalism was in his early Edinburgh days is not clear, but it seems that he tempered it during his brief period of success and only became more outspoken and satirical with his professional decline.[33] He inherited his radicalism from his schoolmaster father, who had been an admirer of the French Revolution and (until its suppression) a member of the Jacobin-inspired "Friends of the People."[34] Knox's liberal education and his own Edinburgh experiences probably further radicalized him. Throughout his life, he believed the greatest curses of humanity to be "Kingcraft" and "Priestcraft," and in his writings he often evoked the rights of man: "that inestimable treasure beyond all price or value, freedom of speech, thought and action."[35] This was not mere sloganeering. Knox was a vehement, indeed a "savage"

31. "The Late Dr. Knox," *Med. Times Gaz.* (December 27, 1862), p. 684; Desmond, "Grant: Pre-Darwinian Transmutationist," p. 198.

32. Knox, *Races of Men*, p. 27. The influence of transcendental conceptions on Chambers's "development hypothesis" is well established, and the links between Chambers and Knox warrant closer investigation. See M. J. S. Hodge, "The Universal Gestation of Nature: Chambers' *Vestiges* and *Explanations*," *J. Hist. Biol.*, 5 (1972), 127—151.

33. It is unlikely, for all his anatomical ability, that Knox would have been taken into partnership by Barclay in the first instance, had he made his radical materialism public. Barclay was intolerant of "sceptics" and a devout teleologist; see John Barclay, *Introductory Lectures to a Course of Anatomy* (Edinburgh: Maclachlan and Stewart, 1827), pp. 126—132. Lonsdale makes the point that up until the time of the Burke and Hare repercussions, Knox devoted himself to science and kept aloof even from institutional politics: Lonsdale, *Life*, p. 91.

34. Lonsdale, *Life*, p. 3.

35. Robert Knox, *The Races of Men: A Philosophical Enquiry into the Influence of Race over the Destinies of Nations*, 2nd ed. (London: Henry Renshaw, 1862), p. 546; Knox, *Great Artists*, pp. 75—76.

critic of British colonial policy and its debasement and oppression of the "coloured races" of India, Africa, Australia, and New Zealand.[36] He abhorred slavery. He denounced the Americans for their hypocrisy in refusing to extend the rights of man to the Negro: "The rights of men is a phrase forever in their mouths; by men we now know they mean white men."[37] His radicalism even led him to argue against the legislation of prostitution on the grounds that such legislation would infringe upon the rights of men "amongst whom we are bound to include women. . . . Able writers . . . have forgotten to take into consideration the inherent and innate right which every woman has in her own person. Society has legislated only against woman, ignoring her rights innate and external to use her person as she may think fit, in so long as she commits no outrage on society."[38]

Knox urged the ineffectiveness of piecemeal philanthropy and legislation directed to the relief of poverty and unemployment and the reform of working conditions, stating bluntly: "Against competition [for work] there can be but one remedy — combination [i.e., unionism]."[39] He had a fundamental radical objection to the augmentation of state powers and intrusiveness on individual rights and liberties, and his targets ranged from the state regulation of salmon fishing[40] to the "Sanatory [*sic*] Movement." According to his analysis of the latter, published in a London radical weekly, Edwin Chadwick and his "rich and crafty" aristocratic supporters were perpetrating the "gigantic fraud" of sanitary reform in order to accrue new sources of "patronage, place, power and wealth to the few" and to find work for the "most dangerous 'of all the classes,' the brutal, savage, but shrewd and powerful navvy," whose current unemployed state, caused by the "calming of the

36. Knox, *Races of Men* (1862), passim.

37. Ibid., p. 552.

38. [Robert Knox], *The Greatest of our Social Evils: Prostitution, as it now exists in London, Liverpool, Manchester, Glasgow, Edinburgh and Dublin: An Enquiry into its Cause and Means of Reformation, based on Statistical Documents, by A Physician* (London: H. Bailliere, 1857), pp. 142, 197. Lonsdale attributed this work to Knox (*Life*, pp. 370—371), and the bracketed portions are undoubtedly his. Note the Quetelet influence on the title and the contents. Typically, Knox thought that the majority of women were forced to prostitution by unemployment and want, but that the tendency to licentiousness was innate in the female character, notably the French! (*Prostitution*, pp. 49—50).

39. [Knox], *Prostitution*, p. 56.

40. Robert Knox, *Observations upon a "Report by the Select Committee on Salmon Fisheries, Scotland: together with the Minutes of Evidence, Appendix, and Index"* (Edinburgh: Adam and Charles Black, 1837), pp. 7—8; idem, *Fish and Fishing in the Lone Glens of Scotland* (London: G. Routledge, 1854), p. 68.

railway mania," was a threat to the "oligarchy."[41] This piece of class analysis aside, Knox's criticisms of some of the effects of sanitary reform, such as the pollution of the Thames through the discharge of sewage, and the hardships it imposed on the poor, have been reiterated by modern analysts.[42]

In spite of the Jacobin origins of his radicalism, Knox did not subscribe to an Enlightenment egalitarianism and environmentalism. He was uncompromisingly a man of the nineteenth century in his insistence on the universality and inevitability of natural law, and a rigid determinist in his views on social organization and the essential inequality of humanity, which from an early period he linked to race and grounded in materialism. For Knox, the human mind and conscience were as much subject to natural law as the human body and the rest of nature:

> . . . as man merely forms a portion of the material world, he must of necessity be subject to all the physiological and physical laws affecting life on the globe. His pretensions to place himself above nature's laws, assume a variety of shapes: sometimes he affects mystery; at other times he is grandly mechanical. Now, all is to be done through the workshop; in a little while, the ultimatum . . . is to be gained through religion: and thus man frets his hour upon the stage of life, fancying himself something whilst he is absolutely nothing.[43]

Although he explicitly rejected the doctrine of human perfectibility, Knox, in common with other nineteenth-century "progressives," was clearly influenced by secular naturalism. Like them, he was concerned with subjecting the whole of nature and society to the sway of natural law and opposing such naturalistic or "scientific" explanations to traditional theological modes of explanation.[44]

41. [Robert Knox], "The Sanatory Movement," *Empire*, September 1, 1855, p. 633; see also [Robert Knox], "A Plea for the Thames," ibid., August 25, 1855, p. 617; [Robert Knox], "The Jobs of the Sanatory Reformers," ibid., September 8, 1855, pp. 648—649. Lonsdale attributed these leaders to Knox (*Life*, p. 382). Indubitably, the radical aims of the *Empire* would have struck a responsive chord in Knox: "Freedom in Commerce, Equality in Religion, Impartiality in Representation, and Justice to Man, as Man, all over the World." These articles suggest that Knox had some radical contacts in London.

42. F. B. Smith, *The People's Health 1830—1910* (Canberra: Australian National University Press, 1979).

43. Knox, *Races of Men* (1850), p. 479.

44. On Victorian scientific naturalism see Frank M. Turner, *Between Science and Religion: The Reaction to Scientific Naturalism in Late Victorian England*

The appeal of Quetelet's "moral anatomy" for Knox and other scientific naturalists of the day lay in its application of statistical method to the measurement of man's "moral faculties." Quetelet's "moral statistics" on the incidence of marriages, suicides, illegitimate births, murders, and so forth, demonstrated the regularity of such statistics. These "moral" events, which were conventionally considered to be willful actions, were actually recurrent and predictable. Human behavior, intelligence, and morality were not arbitrary and capricious, not subject to supernatural interference, but regulated by fixed and immutable laws.

There were, however, significant differences between Knox's and Quetelet's interpretations of human nature. For Quetelet, the regularity and predictability of human actions pointed to the dominant influence of underlying social forces, and he looked to social reform as the "remedy" for crime and immorality. The democratic concept of the "average man" was central to his analysis and he stressed the common factors between men. For Knox, however, the "average man" was an illusion — merely the statistical analogue of the natural type, and, like it, having no real existence. Real men, "natural" men, varied around this statistical abstraction, and their individual characters and moralities were as distinct as their physical differences, and referable to them.[45] Where Quetelet looked to natural law and social reform, Knox looked entirely to natural law and rejected the meliorative power of reform. He had a darker view of human history, and although he championed revolution, he was thoroughly pessimistic of its

(New Haven: Yale University Press, 1974), pp. 1—37; Barry Barnes and Steven Shapin, *Natural Order: Historical Studies of Scientific Culture* (Beverly Hills/London: Sage, 1979), pp. 93—186; Robert M. Young, "The Historiographic and Ideological Contexts of the Nineteenth-Century Debate on Man's Place in Nature," in *Changing Perspectives in the History of Science*, ed. Mikulas Teich and Robert M. Young (London: Heinemann, 1973), pp. 344—438. Roger Cooter argues for a generally earlier date than is usually accepted for the establishment of scientific naturalism among British phrenologists and other marginal men, and Desmond stresses the connection of the new naturalistic sciences of the Reform Bill period of the 1830s with the radical Dissenting campaigns against Tory-Anglican privilege: Roger Cooter, *The Cultural Meaning of Popular Science: Phrenology and the Organization of Consent in Nineteenth-Century Britain* (Cambridge: Cambridge University Press, 1984); Desmond, *The Politics of Evolution*.

45. See Quetelet, *Treatise on Man*, passim; L. A. J. Quetelet, *Du système social et des lois qui le régissent* (Paris, 1848); Theodore M. Porter, "The Mathematics of Society: Variation and Error in Quetelet's Statistics," *Brit. J. Hist. Sci.*, *18* (1985), 51—69; Robert Knox, "Lectures on the Races of Men," *Med. Times*, *18* (1848), 98; "Dr. Knox on the Intermarriages of Jewish Females," ibid., p. 242.

outcome. The revolutionary ideals of liberty, equality, and fraternity were circumscribed by human nature; these abstractions, while glorious and admirable and the inspiration of all thinking men, were as incapable of realization as the models or archetypes that informed transcendental anatomy. "Civilization" had failed, as inevitably it must, to "better man's condition on the globe."[46] Human ideals and aspirations — in effect, all hope of human progress — were brought up short against the ironclad laws of human nature. For all his radicalism, Knox's was essentially a doctrine of despair — of political nihilism — and this anomalous radicalism (which demarcates him from other, more reform-oriented, radicals of the period) structured his interrelated political and biological views.

Yet, this important distinction aside, Knox's subsequent "moral anatomy" shows the powerful impress of Quetelet's views. In spite of his emphasis on the dominance of social forces, Quetelet was also very aware of the biological aspects of human "nature," as his anatomical terminology indicates. He was not only concerned with calibrating moral statistics, but with anthropometric measures such as height and weight, and with anthropological questions. He made a number of statistical analyses of human physiognomy, and these studies instigated the subsequent large-scale anthropometric investigations of the varieties of man that were the stock-in-trade of the late Victorian physical anthropologists and race scientists (see part II). In his preface to the *Treatise*, Quetelet expressed interest in phrenologist George Combe's suggestion of correlating man's moral and physical statistics, especially cranial measurements.[47] An insistence on such a correlation was central to Knox's later writings on race. However, Knox's debt to Quetelet was more specific than this. In his *Treatise*, Quetelet had argued that the type of each race could be statistically correlated with its climate and

46. Knox, *Races of Men* (1850), p. 478. Although he paraded his lack of "Calvinistic credentials" (see above, n. 26), the fatalism and rigid determinism that pervaded Knox's materialistic and anti-Providential ideology is suggestive of a kind of deconsecrated Calvinism that may be attributed to his Edinburgh background. Desmond had pointed to a similar Calvinistic fatalism in Robert E. Grant's later views on organic development: Desmond, "Grant's Later Views" (above, n. 5). I have discussed Knox's religious beliefs in n. 110 below.

47. Quetelet, "Preface," in *Treatise on Man*, pp. vi—vii; L. A. J. Quetelet, *Letters Addressed to H. R. H. the Grand Duke of Saxe Coburg and Gotha on the Theory of Probabilities, as Applied to the Moral and Political Sciences* (London: Charles and Edwin Layton, 1849), pp. 94—100. On the influence of Quetelet's anthropometry on nineteenth-century race science and anthropology see John S. Haller, *Outcasts from Evolution: Scientific Attitudes or Racial Inferiority, 1859—1900* (Urbana, Chicago, London: University of Illinois Press, 1971), pp. 21—34.

environment. Knox took up and extended this view in the appendix he attached to his translation of the *Treatise*: here he presented further data stressing the specific and immutable adaptation of each race to its particular climate, and argued the inability of the Celts and Saxons to maintain themselves in tropical countries.[48] This was a theme that was to be elaborated and reiterated in all his subsequent writings on race, and, as I shall show, it was crucial to his conception of organic development.

In addition, in a larger and more diffuse sense, Knox's mature "moral anatomy" suggests the crystallizing impact of Quetelet's *Treatise*. As Quetelet had stated them, a comprehensive and scientific "moral anatomy" should encompass three major interrelated inquiries: "1. What are the laws of human reproduction, growth, and physical force — growth of his intellectual powers . . . the laws regulating his passions and tastes . . . the laws of human mortality. . . . 2. What influence has nature over man. . . . 3. Finally, can human forces compromise the stability of the social system?"[49] Over the next few years, Knox provided his own answers to each of these fundamental questions. Around them he constructed a unique "moral anatomy," compounded of his transcendentalism and his biological determinism, and pervaded by his radical, but nihilistic, materialism. With his own bitter experiences behind him, Knox could hardly have failed to respond to Quetelet's powerful evocation of the "painful science" of anatomy. Perhaps he derived some personal absolution from Quetelet's demonstration of the regularity and predictability of murder. But in any case, as the appendix he attached to the *Treatise on Man* suggests, Knox was already moving in the direction pointed by Quetelet. And if, unlike Quetelet, he had little in the way of "remedies" to provide, neither did he have any fear of the "afflicting consequences" of his researches.

Rehbock has posed the problem of why Knox waited until the last phase of his career before publishing his transcendental philosophy of natural history.[50] The answer would seem to be obvious: his transcendental philosophy was bound up with his radical materialism and only became publishable when it could no longer affect his professional and social aspirations — when he

48. Knox, "Translator's Appendix," in Quetelet, *Treatise on Man*, pp. 122—123.

49. Ibid., pp. 8—9. Lonsdale states that Knox "indoctrinated the majority of his friends with his more advanced views" on race "after 1834" (*Life*, p. 295), and if this is so, it adds weight to my suggestion of the crytallizing impact of Quetelet's *Sur l'homme*, which was first published in 1835.

50. Rehbock, *Philosophical Naturalists*, p. 55.

was, in effect, an institutional and social outcast. Save for one brief and unsuccessful attempt in 1844, Knox never again practised his profession of anatomy lecturer. In 1847, following yet another scandal (involving the wrongful certification of the class attendance of one of his supposed earlier Edinburgh pupils, a John Osborne), the Royal College of Surgeons withdrew his teaching qualification.[51] When he left Edinburgh at the end of 1842, Knox was forty-nine years old, an angry, disillusioned man, motivated by poverty and his radical convictions, and with little to lose by speaking his mind.[52] And speak it he did over the next twenty years, from the lecturing platforms of English provincial towns, and in the numerous journal articles and several books he industriously churned out. These were on such diverse topics as ethnology, zoology, fishing, and prostitution. But whatever his topic, the message was always the same: nature, including human nature, was only to be understood through the laws of transcendental anatomy. They were the key that would provide the solutions to all the diverse problems of life and of human behavior, however recondite. Properly understood, they made man's morality as accessible to the scientist as his anatomy. The diversity and complexity of social phenomena could be scientifically explained and rendered utterly predictable through the rigorous application of these fundamental laws.

As is clear, Knox applied an extremely blunt scalpel to the task of social dissection. But he was not alone in his overweening nineteenth-century confidence in the "certainties" of science, nor in his extrapolation of biological method to society. Robert M. Young has argued persuasively for a "common context" of biological and social thought in the first half of the century, and Gay Weber, in her analysis of nineteenth-century anthropology, has

51. Rae, *Knox*, pp. 131—146.

52. Knox's wife of seventeen years had died of puerperal fever in 1841, and this was followed shortly by the death of his four-year-old son; Lonsdale has documented his distress and despair at this personal loss (*Life*, pp. 241—242). He was forced to leave his surviving children in Edinburgh in the care of his nephew and oldest daughter in impoverished circumstances, while he tried to turn his public lecturing and journalism to his and their financial support. Knox had married "a person of inferior rank," and Lonsdale suggested that this also created social and professional difficulties for Knox. According to Lonsdale, Knox attempted to overcome these by keeping the marriage secret, and by maintaining two households, one for domestic life with his wife and five children, and one "acknowledged" residence (where his sister was hostess) for social purposes (ibid., pp. 36, 222—224). However, Rae discounts this (*Knox*, pp. 48—49), and indeed it does not square with Knox's image as a devoted husband and father, nor with his radical convictions.

highlighted the interplay of biological and social thought. Knox was merely one of many nineteenth-century biologists and social theorists who insisted on the "homology between nature and culture"; as Weber has pointed out, he simply pushed the principle to its logical extreme, and his racism must be interpreted in this context.[53]

Knox's Racial Determinism

Some four years after his translation of Quetelet's *Treatise* (i.e., around 1846), Knox began to elaborate publicly his view of the social and political implications of his biology. In brief, his particular "moral anatomy" reduced all social and political phenomena to the basic biological category of "race." Knox summed up this principle in the preface to his major ethnological work, *The Races of Men*, which ran through two editions in his lifetime and was based on his earlier public lectures: "That race is in human affairs everything, is simply a fact, the most remarkable, the most comprehensive, which philosophy has ever announced. Race is everything: literature, science, art — in a word, civilization, depends on it."[54] What he meant by this was that human history could only be studied through the application of biological method. He explicitly rejected the dominant "Prichardian" environmental approach to the study of man (see part II) and argued that the only certain knowledge of human history was that which could be ascertained through the biological study of the existing human races: "The basis of the view I take of man is his Physical structure; if I may say so, his Zoological history. To know this must be the first step in all inquiries into man's history. . . ."[55]

Knox's interest in racial questions dates back to his South African period, when he had experienced at first hand the bloody struggle between British and Boer colonists and the dispossessed

53. Robert M. Young, "Malthus and the Evolutionists: The Common Context of Biological and Social Thought," *Past and Present, 43* (1969), 109—145; Gay Weber, "Science and Society in Nineteenth-Century Anthropology," *Hist. Sci., 12* (1974), 260—283, esp. p. 268.

54. Knox, *Races of Men* (1850), p. v. His earlier public lectures were also published in the *Medical Times*: Robert Knox, "Lectures on the Races of Men," *Med. Times, 18* (June and July, 1848), 97—99, 114—115, 117—120, 133—134, 147—148, 163—165, 199—201, 231—233, 263—264, 283—285, 299—301, 315—316, 331—332, 365—366. Lonsdale states that Knox's public lectures in Manchester and other provincial towns "caused a sensation by their novelty, and led to much talk out of doors; and no small amount of controversy in the press" (Lonsdale, *Life*, p. 295).

55. Knox, *Races of Men* (1850), p. 1.

indigenous races. He started his collection of crania at this stage, and he seems never to have doubted that racial traits were biologically based.[56] As early as 1823, he had presented a paper to the Wernerian Society that stressed the "characteristic differences" of the native races of South Africa.[57] From Lonsdale's account, Knox gave as much emphasis to the inculcation in his students of the concept of biological race as to the precepts of transcendental anatomy — and, indeed, as he later elaborated them, they were interrelated concepts. If Knox's significance in the teaching and dissemination of transcendental anatomy is acknowledged, his equally important role in the dissemination of the concept of biological race must also be conceded. According to Lonsdale:

> Knox could not glance at a cranium for the common descriptive anatomy without speaking of its ethnological bearings; it was the same with the external features and form of man. . . . Knox seemed to the manner born to investigate distinctive anatomical characters: even when walking along the streets, thronged with men and women, he was always on the *qui vive*

56. Knox's early Edinburgh enviornment would have been conducive to such a belief. He must have had some contact with the Edinburgh phrenologists with their naturalistic ideology and reformist platform; see Steven Shapin, "The Politics of Observation: Cerebral Anatomy and Social Interests in the Edinburgh Phrenology Disputes," in *On the Margins of Science: The Social Construction of Rejected Knowledge*, ed. Roy Willis, *Soc. Rev. Monograph, 27* (1979), 139—178; and Steven Shapin, "Phrenological Knowledge and the Social Structure of Early Nineteenth-Century Edinburgh," *Ann. Sci., 32* (1975), 219—243. But it seems almost certain, as Lonsdale suggests, that Knox was more directly influenced by the writings of the Edinburgh anatomist and physiognomist Alexander Walker (Lonsdale, *Life*, pp. 294—295). Walker, better known for his acrimonious dispute with Charles Bell over the functions of the roots of the spinal nerves, wrote a series of popular works in which he located the supposed mental and moral differences between the sexes and races in their anatomical and physiognomical differences. Just before he died, Knox was considering reediting Walker's *Intermarriage*, and had made some notes on this project (ibid., p. 383). Walker and Knox were acquainted, for when Walker appealed to Sir Robert Peel in 1849 for a government pension in recognition of his contribution to physiology, he enclosed a supporting letter from Knox in which Knox professed the highest esteem for Walker's work: "No one has thought more clearly on the great physiological questions than you have" (copy of letter from Dr. Knox to Alexander Walker, August, 1848; letter from Walker to Sir Robert Peel, February 22, 1849, Peel Papers 40601, fols. 50, 51, British Library, Manuscript Room). See also Alexander Walker, *Intermarriage; or the Natural Laws by Which Beauty, Health and Intellect, Result from Certain Unions, and Deformity, Disease and Insanity, from Others* (London: John Churchill, 1841); and *Physiognomy Founded on Physiology and Applied to Various Countries, Professions, and Individuals* (London: Smith, Elder, 1834).

57. Lonsdale, *Life*, pp. 24—25.

> for Race features. He could see at a glance what ordinary men could hardly distinguish at their leisure. . . . Previous to his time, little or nothing was heard about Race in the medical schools: he changed all this by his Saturday's lectures, and Race became as familiar as household words to his students, through whom some of his novel ideas became disseminated far and wide, both at home and abroad.[58]

Knox's later writings were simply a more systematic statement and elaboration of his earlier assumption that the mental differences between the human races were as pronounced and self-evident as their physical differences, and that both sets of phenomena were reducible to the same causes or "laws." In this sense, he was profoundly racist.[59] To Knox the human races were so different and distinct that they were "entitled to the name of species."[60] Any anthropological or political theory that did not take this fundamental principle of innate and ineradicable racial differences into account was "unscientific," and doomed to failure: "Wild, visionary and pitiable theories have been offered respecting the colour of the black man, as if he differed only in colour from the white races; but he differs in everything as much as in colour. He is no more a white man than an ass is a horse or a zebra. . . ."[61]

As this quotation suggests, Knox differed from the majority of his ethnological contemporaries in placing far more emphasis on the "moral" than on the physical differences between the races.[62]

58. Ibid., pp. 292–293, 330; also Henry Lonsdale, "Biographical Memoir," in John Goodsir, *The Anatomical Memoirs*, ed. William Turner (Edinburgh: Adam and Charles Black, 1868), I, 27.

59. Following Biddiss, I am here employing the term *racism* to signify something narrower than prejudiced attitudes and discriminatory actions, i.e., "certain relatively systematic attempts at using race as the primary or even sole means of explaining the workings of society or politics, the course of history, the development of culture and civilization, even the nature of morality itself" (Biddiss, "Politics of Anatomy" [above, n. 9], p. 245). Biddiss represents Knox as one of a group of mutually independent pioneers of such racist theory, which included Gustav Klemm and Karl Gustav Carus in Germany and Arthur de Gobineau in France. There are some superficial similarities between Knox's and Gobineau's pessimistic schemas of racial history, but Knox's published work predates Gobineau's; see Michael D. Biddiss, *Father of Racist Ideology: The Social and Political Thought of Count Gobineau* (London: Weidenfeld, 1970).

60. Knox, *Races of Men* (1862), p. 591.

61. Knox, *Races of Men* (1850), p. 245.

62. "Men differ more in their intelligence than in their *physique*. . . . These intellectual qualities are equally fixed, permanent, and unalterable, and are much more important than the physical characters of the race" (Robert Knox, "Ethnological Inquiries and Observations," *Anthrop. Rev., I* [1863], 257–258).

This emphasis was a corollary of his materialism: "The mind of the race, instinctive and reasoning, naturally differs in correspondence with the organization."[63] Human character, intellect, and morality were neither divinely induced nor environmentally produced, but were rooted in the "all-pervading, unalterable, physical character of race."[64] By maximizing these supposed mental differences between the races, Knox was able to construct an elaborate racial history of Europe and her colonies. According to Knox, what had previously been interpreted as nationalism and national conflict was better understood as racial conflict, as each race sought to dominate its own geographic locale and erect its own government and civilization in keeping with its own distinctive nature. Innate racial differences and antipathies inevitably overrode Christian morality, demonstrating its irrelevance to natural law:

> The doctrine which teaches us to love our neighbours as ourselves is admirable, no doubt; but a difficulty lies somehow or other in the way. What is that difficulty, which all seem to know and feel, yet do not like to avow? It is the difficulty of race. Ask the Dutch Boer whence comes his contempt and inward dislike to the Hottentot, the Negro, the Caffre; ask him for his warrant to reduce these unhappy races to bondage and to slavery; to rob them of their lands, and to enslave their children; to deny them the inalienable right of man to a portion of the earth on which he was born? If he be an honest and straightforward man, he will point to the fire-arms suspended over the mantlepiece — "There is my right!" The statesmen of modern Europe manage such matters differently; they arrive, it is true, at the same result — robbery, plunder, seizure of the lands of others — but they do it by treaties, protocols, alliances, and first principles.[65]

Nevertheless, such measures could only temporarily repress the inevitable struggle of race against race: "The eternal laws of nature must prevail over protocols and dynasties: fraud, — that is, the law; and brute force — that is, the bayonet, may effect much; have effected much; but they cannot alter nature."[66]

Until statesmen, scholars, and revolutionaries came to terms with these inexorable laws of racial antagonism and subordination,

63. Knox, *Races of Men* (1850), pp. 2—3.
64. Ibid., p. 21.
65. Ibid., pp. 43—44.
66. Ibid., p. 8.

they could not hope to explain or control events. Knox himself offered his audience a detailed racial analysis of the contemporary world situation. Among other events, he could "scientifically" explain the inability of the Celtic Irish to endure Saxon government and Saxon laws.[67] He claimed to have predicted the 1848 revolution as an irresistible European racial convulsion in which the various tyrannized races struggled to throw off their alien rulers and reconstruct their own government and laws in accordance with their innate racial predilections.[68] Lonsdale, who subscribed to much of the Knoxian analysis, vividly depicted Knox's deterministic schema of political events: "The actions of men . . . were to Knox like a game of chess: here were kings and pawns on the board, and castles behind which were sheltered statecraft and priestcraft; the knights might be military, diplomatic, or revolutionary, but ever sought to top over the pawns or to crush the people; and all the movements obtained direction from Race."[69]

As Biddiss has noted, such a conception of human history clearly necessitated the stability and immutability of races and racial traits, at least for the duration of recorded history,[70] and Knox's biology was consistent with this. He totally excluded the possibility of environmentally induced change[71] and rejected the concept of transmutation. No race was convertible into another "by any contrivance whatever."[72] Nor could races, being the equivalent of species, alter their structure through hybridization: "Nature produces no mules: no hybrids, neither in man nor animals. When they accidentally appear they soon cease to be, for they are either non-productive, or one or other of the pure breeds speedily predominates, and the weaker disappears."[73] Associated with this natural barrier to racial hybridity was the further principle that each race was adapted to its own specific geographical region and climate, and could not long survive its transposition to another. The future of Europeans in the tropical world was in doubt, and Knox confidently predicted their ultimate defeat by the tropically adapted and fierce Negro: "From St. Domingo he drove

67. "Dr. Knox on Intermarriages" (above, n. 45); and Knox, *Races of Men* (1850), p. 15.

68. Knox, *Races of Men* (1850), p. 22; and Knox, "Lectures on Races of Men" (above, n. 45), p. 97.

69. Lonsdale, *Life*, p. 291; cf. Biddiss, "Politics of Anatomy," p. 249.

70. Biddiss, "Politics of Anatomy," p. 248.

71. Knox, *Races of Men* (1850), pp. 100—101.

72. Ibid., p. 8.

73. Ibid., pp. 65—66.

out the Celt; from Jamaica he will expel the Saxon; and the expulsion of the Lusitanian from Brazil, by the Negro, is merely a matter of time."[74]

Yet, paradoxical as it may seem, the Knox who insisted on the human races — or, rather, "species" — as immutable biological entities, also subscribed to a theory of organic development — specifically, of saltatory descent. And it is here that we may see most clearly the ways in which his unique blend of political radicalism and racism shaped his biology.

Knox's Theory of Organic Development

Knox's early speculations on organic development were probably inspired by those of his mentor Geoffroy St.-Hilaire, who in the late 1820s put forward a theory of transmutation — that is, of progressive unilineal species change.[75] But Knox, for what I would argue were primarily ideological reasons, rejected Geoffroy's concept of transmutation, and by the 1850s he had elaborated his own distinctive version of development. Like Geoffroy's, it was based on a fundamental concept of transcendental anatomy, the idea that the embryo in its development repeats or mirrors the universal development or *Entwicklung*.[76] In Knox's version, the embryo represented not only all past and existing species, but all possible future species as well, and it was in this way that he allowed for the introduction of new species.

The evidence for Knox's premise rested on his extensive studies of the family Salmonidae, dating back to the early thirties. It is notable that he applied Quetelet's statistical analysis to the salmon in determining color, weight, proportions, etc., to arrive at the

74. Ibid., p. 456, and see pp. 243—244; Curtin, *Image of Africa* (above, n. 3), pp. 379—380.

75. Étienne Geoffroy St.-Hilaire, "Mémoire où l'on se propose de rechercher dans quels rapports de structure organique et de parenté sont entre eux les animaux des âges historiques, et vivant actuellement, et les espèces antédiluviennes et perdues," *Mém. Mus. Hist. Nat., 17* (1828), 209—229. A shortened and loose translation of this paper was published in Jameson's *Journal* for 1829, presumably through Knox's influence (see n. 19 above). On Geoffroy's theory of transmutation see E. S. Russell, *Form and Function: A Contribution to the History of Animal Morphology* (London: Murray, 1916), chap. 5; Appel, *Cuvier-Geoffroy Debate*, chap. 5; Steven J. Gould, *Ontogeny and Phylogeny* (Cambridge, Mass.: Harvard University Press, 1977), pp. 49—52.

76. Knox, *Races of Men* (1850), pp. 29—30; Owsei Temkin, "German Concepts of Ontogeny and History around 1800," *Bull. Hist. Med., 24* (1950), 227—246; Alexander Gode von Aesch, *Natural Science in German Romanticism* (New York: AMS Press, 1966), p. 120, and passim.

notion of the "average" salmon or "type" of each species.[77] Such external characters, he emphasized, are more significant in the distinction of species than are the internal structures, which, being organized on the one basic "generic" plan, are too homologous or similar to serve as specific characters. This was the same taxonomic method he applied to the distinction of the various races or "species" of the human family. In the case of the salmon, Knox asserted that the young or embryonic members of the family, no matter to what species they belonged, were all essentially similar. This was, of course, by no means an original observation: Karl Ernst von Baer had stated this generalization in his great embryological treatise of 1828, and if Knox was unfamiliar with this source, he must have been aware of Martin Barry's exposition of von Baer's embryology in the *Edinburgh New Philosophical Journal* for 1836—1837.[78] In any case, Knox departed signif-

77. Robert Knox, "Observations on the Natural History of the Salmon," *Rep. Brit. Ass. Adv. Sci.* (1831—32), 587—589; idem, "On the Natural History of the Salmon," *Edinburgh New Phil. J., 14* (1832—33), 397—400; idem, "Observations on the Natural History of the Salmon, Herring, and Vendace," *Trans. Roy. Soc. Edinburgh, 12* (1833), 462—518; idem, "Inquiries into the Philosophy of Zoology," *Zoologist, 13* (1855), 4777—92, esp. p. 4789. See also n. 40 above.

78. Karl Ernst von Baer, *Über Entwickelungsgeschichte der Thiere: Beobachtung und Reflexion* (Königsberg: Bornträger, 1828), I, 221—223; Martin Barry, "On the Unity of Structure in the Animal Kingdom," *Edinburgh New. Phil. J., 22* (1836—37), 116—141; and Martin Barry, "Further Observations on the Unity of Structure in the Animal Kingdom," ibid., pp. 345—364. On the influence of von Baer's embryology on British paleobiology, see Dov Ospovat, "The Influence of Karl Ernst von Baer's Embryology, 1828—1859: A Reappraisal in Light of Richard Owen's and William B. Carpenter's 'Palaeontological Applications of "von Baer's Law",'" *J. Hist. Biol., 9* (1976), 1—28; and Evelleen Richards, "A Question of Property Rights: Richard Owen's Evolutionism Reassessed," *Brit. J. Hist. Sci., 20* (1987), 129—171. Knox's views on embryogenesis bear some relation to the Kantian concept of "generic preformationism" adopted by von Baer and others of the German teleomechanist school; see Timothy Lenoir, *The Strategy of Life: Teleology and Mechanics in Nineteenth-Century German Biology* (Dordrecht: Reidel, 1982), pp. 81—95. But Knox's version of this concept seems to me to be closer to that of Carl Vogt, the political radical and "scientific materialist," as described by Lenoir (ibid., pp. 134—140). Like Vogt, Knox rejected spontaneous generation and insisted on the "simultaneous linkage of the phenomena of life to the pre-existence of structure rather than to hypothetical potencies" (ibid., p. 136). Hence, both identified the embryonic potencies of Kant, von Baer, etc. with material structures capable of direct observation. So Knox claimed to be able to observe all the specific characters of the different species of the salmon genus in the young salmon. Vogt also based his theoretical arguments largely on his study of salmon embryology, and his *Histoire naturelle des poissons de l'eau douce* (1838—42) must surely have been read by Knox. Vogt went on to support Darwinism, but like Knox he rejected the view that chance variation and natural selection could explain the generation of form, and again like Knox he insisted on the fixity and persistence of human racial differences. See part II, below.

icantly from von Baer's interpretation. He assumed the embryo to have a more complex structure than the adult, and that it is

> chiefly by laying aside some of the characters present in all the young that the adult comes afterwards to be recognized. . . . In the young of the true salmon, I found the specific characters of all the sub-families of the genus present; that is, red spots, dark spots of several kinds, silvery scales, proportions and a dentition identical. The young fish before me was, in fact, a generic animal, including within it the specific characters of all the species composing the natural family. To connect this generic animal with any species, you have but to imagine the disappearance of certain characters then and there present. Nothing requires to be added.[79]

Thus, for Knox, all species were originally "generic," and he saw in the generic character of the young the real affiliation that species have to each other: "If this view be correct, it places zoology upon a scientific basis, and explains why one form of life prevailed at one time, and afterwards another; it provides for the extinction of one species and the appearance of another, differing, it is true, from the extinct, but generically the same . . . thus is secured the perpetuity of animal life under different forms, each in unison with the existing order of things."[80]

Knox concluded from this that the successive appearance of new forms or species is "no new creation, but merely the development of forms already existing in every natural family. . . . To institute a species all that is required is to omit or cause to disappear, or cease to grow some parts of the organ or apparatus already existing in the generic being."[81] Humanity was, of course, subject to the same laws, the human embryo containing within itself all the species or races (extinct, extant, and future) of mankind.[82] While Knox usually limited his speculations to con-

79. Robert Knox, "Some Remarks on the Aztecque and Bosjieman Children, Now Being Exhibited in London, and on the Races to Which They Are Presumed to Belong," *Lancet* (January—June 1855), 358; idem, "Introduction to Inquiries into the Philosophy of Zoology," ibid., p. 627; idem, "Contributions to the Philosophy of Zoology, with Special Reference to the Natural History of Man," *Lancet* (July—September 1855), 24—26, 45—46, 68—71, 162—164, 186—188, 216—218. These papers of 1855 comprise Knox's most comprehensive presentation of his developmental views.

80. Knox, "On the Aztecque Children," p. 358.

81. Knox, "Introduction to Inquiries," p. 627.

82. Knox: *Races of Men* (1850), p. 444; and *Races of Men* (1862), p. 503.

sideration of the development of new species within a given family or genus, and his "generic embryo" obviously only allows of a limited development within a particular genus, his belief in the unity and "consanguinité" of all life was fundamental to his materialism: "for life, being a property inherent in matter, must at its origin have been one."[83] Man's embryonic changes shadow forth all other forms, "worm, mollusc and fish," and he is linked by consanguinity to all other animals that have lived or may live: "A last question remains — the origin of natural families: Have they been distinct from all times? I think not. . . . [T]he law of unity . . . extends to all."[84]

That Knox held to a theory of organic descent is beyond question, as the following statement makes explicit: "I believe all animals to be descended from primitive forms of life, forming an integral part of the globe itself. . . ."[85] Yet he as explicitly denied "any transmutation of species, the one into another,"[86] or that species were the "direct descendants of each other."[87] It is only when this last statement is coupled with his further one that the

83. Knox: *Races of Men* (1862), pp. 507, 509; and *Races of Men* (1850), p. 444.

84. Knox, "Contributions," *Lancet*, p. 218. My interpretation differs from that of Rehbock, who argues that Knox believed in a community of hereditary descent only among the species of a particular genus and that this genetic connection did not extend to different genera, which, according to Knox, were permanent and distinct and had been separately created (Rehbock, *Philosophical Naturalists*, p. 50). However, in my opinion this is a misinterpretation of Knox's meaning and bears out my emphasis on the need to relate Knox's biology to his radical materialism. Rehbock tends to collapse Knox's views into those of his one-time pupil, the idealist Edward Forbes, who believed that the genus was the "permanent and original" idea (ibid., p. 73). But Knox did not accept Forbes's conception of the creation of genera and the radiation of species from such "centres of creation" (Knox, "Contributions," *Lancet*, p. 45), nor his belief in the supremacy of ideas: "The idea of new creations, or of any creation saving that of living matter, is wholly inadmissible. The world is composed of matter, not of mind" (Knox, *Races of Men* [1850], p. 444). Their differences may be best understood by reference to Jacyna's excellent analysis of the early nineteenth-century conflict between immanentist (Knox) and transcendentalist (Forbes) cosmologies: L. S. Jacyna, "Immanence or Transcendence: Theories of Life and Organization in Britain, 1790—1835," *Isis, 74* (1983), 311—329. Apart from explicit statements such as the one I have quoted in the text, Knox made it clear that his focus on the relation of species to genera was but the obvious and first step to the "more difficult" question of the development of genera (Knox, "Contributions," *Lancet*, pp. 71, 162; idem, "Introduction to Inquiries," p. 627).

85. Knox, *Great Artists*, p. 109. This was the passage cited by Baden Powell as evidence of Knox's "transmutationism"; see n. 5 above.

86. Knox, "Contributions," *Lancet*, p. 45.

87. Ibid., p. 46.

"law of generation" or "descent" is "*generic*," not "*specific*,"[88] that his meaning become clear. For Knox, new species were not produced by change in the mature animal or "species" — that is, by "transmutation" — but by embryonic or "generic" change. It was in keeping with this that he rejected the Lamarckian inheritance of acquired characters, which implied form change in the mature organism:[89] according to Knox, this was not possible, for the species were fixed for all time in the "generic embryo." Species are immutable; it is the embryo that is "generically perfect, pliable, adaptive — above all, including within it all the forms which the natural family is destined to assume when developed and specialized in time and space."[90] The embryo contains all possible specific forms for that genus. As conditions in the external world change, species become extinct and are replaced by others from embryonic forms existing in all the species of that genus. So long as one species survives, so does the genus and all other possible species, ready to come into existence when the "order of things" is appropriate: "and thus the law of generation being *generic*, and not *specific*, marks the extent of the natural family, its unity in time and space, the fixity of its species, the destruction of some and the appearance of others being but the history, not of successive creations, but of one development, extending through millions of years, countless as the stars of the firmament."[91]

In other words, Knox held to a theory of saltatory descent — of gross embryonic change — with persistence of species over countless generations[92] — not one of gradual, progressive, or unilineal species change or "transmutation." It is this distinction that has created so much confusion over his developmentalism, his anti-transmutationist statements being interpreted as antievolutionary. To a certain extent, the distinction that Knox drew between "generic" and "species" change was more a matter of semantics than biology: the "generic animal" or embryo must itself be the generative product of a species, and in this sense, "generic" change may be assimilated to species change or transmutation. Knox himself conceded this, but insisted on maintaining the distinction:

> My immediate object is to prove the existence of a *generic animal*, the product, no doubt, of hereditary descent from a

88. Knox, "Introduction to Inquiries," p. 627; idem, "Contributions," *Lancet*, p. 217.

89. Knox, *Races of Men* (1850), pp. 100—101.

90. Knox, "On the Aztecque Children," p. 359.

91. Knox, "Introduction to Inquiries," p. 627.

92. Not unlike the theory of "punctuated equilibria" of some modern evolutionists.

> species, but in itself including the characteristics of all the species belonging to that natural family: or, in other terms, proving hereditary descent to have a relation primarily to genus or natural family. . . . My ultimate aim is to offer a scientific explanation of the appearance, from time to time, of seemingly new species on the earth, and of the extinction of others, thus restoring to legitimate science that branch of philosophy which the theory of successive creations, invented by Cuvier and still maintained by his followers, had clearly removed from it.[93]

Knox's developmentalism clearly served anticreationist and naturalistic purposes, but more than this, his insistence on "generic" change and his associated rejection of transmutation brought his biology into line with his racism and his radical ideology. By rejecting the possibility of transmutation, he was able to affirm the permanency of race and its fixed and unalterable role in determining the character and behavior of the different races. The human races were unchanged and unchangeable. He could even, on occasion, deny the consanguinity of races, in the sense that they were only related at the generic, rather than the species level.[94] The concept of racial permanency, or "specificity" of races, enabled him to argue against miscegenation, on the grounds of the necessary sterility of hybrids, and to explain the profound and "natural" antipathy of one race for the other and their inevitable antagonism and conflict. Nevertheless, while they were of distinct species, the races of men belonged to the same natural family or "genus," and shared a common heredity and humanity. All races were thus "naturally" entitled to the rights of man, and the inevitable efforts of black slaves to free themselves must be applauded. At the same time, Knox's rejection of unilineal transmutation allowed him to override the conventional ranking of races, with whites at the top of the scale and blacks at the bottom, and to rebut the charge that he meant to "disparage" any race: "The white races are not the more fully developed, and the negro the more imperfectly developed, species of one common natural family. The development of each is perfect in its way — equally so."[95]

93. Robert Knox, "Contributions to the Philiosophy of Zoology," *Zoologist, 13* (1855), 4841—42.

94. Knox, *Races of Men* (1862), p. 507.

95. Knox, "Contributions," *Lancet*, p. 26; "Dr. Knox on Intermarriages" (above, n. 45), p. 242. At the same time, although he refused to rank races, Knox, in common with most of his contemporaries, assumed the biocultural inferiority of the "dark races" who were everywhere losing ground to colonial expansionism: Knox, *Races of Men* (1850), pp. 215—317.

This antitransmutationism also permitted Knox to set "natural" limits to colonialism. Each race had been unalterably shaped to its particular locale and climate, to the "existing order of things." European colonists could thus survive for only a limited time in tropical countries, and only by dint of enslaving or oppressing the indigenous races (with whom they could not interbreed), and by constantly replenishing the European stock by immigration. But sooner or later, natural law must inevitably assert its effects, and the oppressors would be eliminated through their inability to adapt to their "unnatural" environment or through "natural" and inevitable racial conflict. Imperialist expansionism was thus curtailed by natural law, and Knox derived some gloomy satisfaction from assigning its natural limits:

> A new crusade has been formed, the banners of which are a cross surmounting a bale of cotton; Oxford and Manchester combine to push forward the good work, which, aided by the Armstrong gun, cannot fail to reduce Africa to the condition we now so much admire in the United States of America, Australia, India, etc. — the native races exterminated, or ground to the earth in the most abject condition humanity can assume. All this endures for a time. At last nature resumes her course, and the intrusive race disappears.[96]

As the above quotation indicates, Knox's antitransmutationism was also consistent with his radical rejection of the ideology of progress: "One thing is certain, the development of new species has no relation to any kind of successive perfectibility."[97] In keeping with its transcendental origins, his own conception of organic development was a dialectical process, not a mere progress from the simple to the complex. According to Knox, every organism is influenced in its development by two antithetical principles: one is the law of unity of organization or of deformation, which is "ever ready to retain the embryonic form"; it is opposed by the law of specialization or of formation, which leads to the formation of the individual. Where the law of unity of organization is dominant, a deformation results — that is, the embryonic form is retained. Thus, development of the individual may be either progressive or retrogressive. Knox made it clear that it was by retrogressive development — that is, by a return to the embryonic form — that new species were generated: "By

96. Knox, *Races of Men* (1862), p. 576 and passim. See also n. 48 above.
97. Knox, "Introduction to Inquiries," p. 627.

progressive development, I mean that which tends towards the highest specialization of the individual; by retrogressive development is meant, the development of forms other than those of the species to which the individual belongs."[98] New species originate as the "combined result of these [inherent] laws and the external circumstances in which they are placed."[99] What Knox seems to have meant by this was that "deformations" are constantly generated; those which are not "viable" are unable to survive and reproduce themselves, while those which are compatible with existing geographical and geological conditions reproduce and increase in number, and so a new species is established.[100] In this sense, he could state: "Species is the product of external circumstances, acting through millions of years. When produced they continue until extinguished by external circumstances. . . ."[101] As the "material conditions of the external world" change, so the species "disappears," but it may be reestablished by "generic descent" if the appropriate conditions return.[102]

98. Knox, "Contributions," *Lancet*, p. 45; idem, *Races of Men* (1850), p. 35; idem, *Great Artists*, pp. 60—63.

99. Knox, "Contributions," *Lancet*, p. 218.

100. Ibid., p. 45; idem, *Races of Men* (1850), pp. 445—446; and *Races of Men* (1862), p. 503. Knox was clearly not content to leave the expression of his "law of generation" in the metaphysics of polarity: " . . . these varieties [of man] must have a producing cause, and that cause must be physical. Nothing metaphysical can exist, and it is an outrage on common sense to give the nonentity a corporeal existence" (Knox, "Ethnological Inquiries" [above, n. 62], p. 256). At the same time, he was insistent that these physical causes "must have a direct relation to the existing order of things" (Rehbock, *Philosophical Naturalists*, p. 50). However, his ideological exclusion of environmentalism (because of his racial determinism) meant that he was clearly at a loss for any other materialistic explanation of species generation, although he readily invoked enviromental agencies for the extinction of species. This in my view accounts for the equivocation in his writings detected by Rehbock (ibid.), and for his falling back on a demystified version of the "law of deformation" in combination with the indirect action of the environment. Cf. Desmond, "Grant: Pre-Darwinian Transmutationist," p. 198.

101. Knox, "Contributions," *Lancet*, p. 70.

102. Knox, "On the Aztecque Children," p. 358. It must be acknowledged that for all his antiprogressionism Knox had an underlying romantic commitment to the great chain of being and the associated principle of continuity whereby species merge into one another and have no separate reality (Rehbock, *Philosophical Naturalists*, pp. 49—52). He could therefore invoke the "*serial unity* of all that lives, or has lived, or may hereafter," and through his concept of "generic descent" explain the apparent gaps in the fossil and taxonomic series — especially the gulf he insisted on between the apes and humans. According to Knox, a "class or natural family between man and animals is wanting, or they never have appeared"; either fossil evidence of "anthropomorphous apes or pithecian men" would be uncovered, or such affiliating representatives would be generated sometime in the remote future in accordance with "Nature's great plan

Knox brought paleontological and teratological evidence in support of this nonlinear conception of development. The fossil record, he argued, does not illustrate a progression, because some of the extinct animals were equal, if not superior, to existing species.[103] And the evidence from teratology was, for Knox, even more compelling. He took issue with the transcendentalist explanation of fetal abnormalities as arrests of development because of its progressionist implications, preferring an explanation consistent with his interpretation of abnormalities as "retrogressive development[s]" toward other forms.[104] The human races were the result of such "deformations," and Knox cited the cuticular fold in the corner of the Eskimo's eye as an example.[105] On the ideological level, he linked his antiprogressionism to his antiteleological stance and his reiterated contempt for William Paley and the "Bilgewater" Treatises.[106] He was, if anything, even more scathing of those "low transcendentalists" (such as Richard Owen) who had managed to reconcile their transcendentalism with the exigencies of natural theology.[107] But at the bottom of his rejection of progressive species change, lay his profoundly pessimistic vision of human history. The idea of human progress was "Utopian" and contradicted by the reality of worldwide racial conflict. Human nature, "race," was immutable and ineradicable, and this profound and irresistible biological truth must inevitably conflict with all attempts at social change, whether by reform of by revolution.

Knox's nonprogressivist version of saltatory descent cannot be dissociated from his radical politics, his racial determinism, and his materialist ideology, and attempts to interpret his biology without reference to these latter have led to contradiction. In order to appreciate to the full the need to view Knox's biology in political terms, it is instructive to compare his version of organic development with that of his fellow transcendentalist Robert Edmond

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or scheme" of unity of organization (Knox: "Introduction to Inquiries," p. 627; *Great Artists*, p. 63). Knox had a romantic — but not, it should be stressed, theological — aversion to bestialism (Lonsdale, *Life*, pp. 255—256).

103. Knox, *Races of Men* (1850), p. 28.

104. Knox, *Great Artists*, p. 63; idem, "Contributions," *Lancet*, p. 26; Lonsdale, *Life*, pp. 249—253.

105. Knox, *Races of Men* (1850), p. 278.

106. Ibid., pp. 34, 420; Robert Knox, "Contributions to Anatomy and Physiology," *London Med. Gaz., 32* (1843), 530; idem, "On Organic Harmonies: Anatomical Co-relations, and Methods of Zoology and Paleontology," *Lancet* (1856), 245—247, 270—271, 297—300. See also C. Carter Blake, "The Life of Dr. Knox," *J. Anthrop., 1* (1870), 332—338, esp. p. 334; Rehbock, *Philosophical Naturalists*, pp. 46—49, 78—79.

107. Knox, *Races of Men* (1850), pp. 28, 437—438; Desmond, "Grant: Pre-Darwinian Transmutationist," p. 198.

Grant, as reconstructed by Desmond. From this it is clear that both Knox and Grant adapted Geoffroy's theory of transformism in ways consistent with their different politico-institutional positions, and that both tried to produce self-consistent materialistic theories of life. Grant, the radical democrat of the University of London, committed to social and institutional reform, "blended Geoffroy's views with a powerful historical Lamarckism."[108] His theory of serial development emphasized gradual, continuous organic change, and related this progressive development to directional temperature change; his causal mechanism for the "direct generation" of new species was therefore environmental in nature. Desmond has stressed the compatibility of Grant's environmentalism and serial developmentalism with his reformist platform, and has shown how he structured his paleobiology in conformity with this socially derived perspective: "Grant needed an undeviating Lamarckian ascent to establish the operation of materialistic laws; like later reformers and 'evolutionists' . . . he would have welcomed an inexorable lawful ascent as a weapon against aristocratic resistance to social melioration and continued political progress."[109]

Although Knox was involved in attempts at institutional reform during his Edinburgh period, during his most intellectually productive period (from 1842 to around 1855) he was an "outsider" with no institutional affiliations. His peculiar brand of political radicalism was fundamentally antireformist and nihilistic, and he rejected the meliorative power of reform. He was antiprogressive, antienvironmentalist, and a racial determinist, and he adapted Geoffroy's transformism to these ideological requirements. He

108. Desmond, "Grant: Pre-Darwinian Transmutationist," p. 198; see also Desmond: "Interpreting the Origin of Mammals" (above, n. 10), "Grant's Later Views" (above, n. 5). Desmond, in his brief references to Knox's "transmutationism," does not take sufficient cognizance of the ideological differences between Knox and Grant. My interpretation explains why Knox "leaned more toward a demystified *Naturphilosophie*" than Grant. It is difficult to form any concrete opinion of the relations between Knox and Grant. Neither ever referred to the other, or to the other's views, in their published writings, so far as I have been able to ascertain. Lonsdale scarcely refers to Grant (who left Edinburgh in 1827), but it would seem that he and Knox were rivals in the Edinburgh context. In 1826 Grant was supported by Knox's enemies for the position of curator of the Museum of the Royal College of Surgeons (Rae, *Knox*, p. 36). However, Grant subsequently supported Knox during the Burke and Hare scandal; see Rickman J. Godlee, "Thomas Wharton Jones," *Brit. J. Ophthalmol., 93* (1921), 145—181 (I am grateful to Adrian Desmond for this reference). There is some evidence that Knox and Grant moved in the same London reformist circles, in that when an attempt was made to found the Royal Free Medical School in 1853, both Knox and Grant were advertised as lecturers (Rae, *Knox*, pp. 152—154).

109. Desmond, "Interpreting the Origin of Mammals," p. 10.

rejected a reforming and improving Lamarckism for a theory emphasizing radical nondirectional change — the abrupt nonlinear embryogenesis of new species — with unchanging persistence of species over long steady-state geological intervals. His ideological exclusion of environmentalism and progressionism led him to invoke a demystified version of the transcendental laws of polarity in combination with the indirect action of the environment as a causal mechanism for the introduction of new species. In contrast to Grant, his conception of geological change was nondirectional and more cyclical in nature, and he conceived life as "coeval with the globe" rather than spontaneously generated from inorganic matter. Nevertheless his conception of life was also thoroughly naturalistic and materialistic, and he excluded any possibility of a remote or intrusive supernatural power transcending or directing organisms. For Knox, the "living zoological world" was a "self-created, self-creating world,"[110] and human morality, intellect, and social organization were grounded in the material laws of life.

If, as Desmond emphasizes, Grant's transmutationism was actually a "*constitutive* part of the ideology of radical reform," we must also view Knox's theory of "generic descent" as constitutive of his anomalous ideology of radical racism.[111]

II. KNOX AND THE "RESURRECTION MEN" OF THE ANTHROPOLOGICAL SOCIETY OF LONDON: THE INSTITUTIONALIZATION OF KNOX'S MORAL ANATOMY

Racism, as Biddiss emphasized, is not easily combined with Knox's brand of radicalism: its "benevolent implications" usually

110. Knox, "Contributions," *Lancet*, p. 218. Knox has been represented as a deist, but he seems more of a pantheist to me. Although he sometimes referred to "secondary causes," there is little implication in his cosmology of a remote deity; rather, we find anthropomorphic references to "Nature's great plan" and a good deal of romantic nature-worship. Perhaps, like the *Naturphilosophen*, he conceived of a God somehow immanent in the unfolding of nature's plan, and his cosmology was thoroughly deterministic in true *Naturphilosophie* fashion. But his insistence on material causality demarcates him from the idealistic *Naturphilosophen*. What Desmond has said of Grant is equally true of Knox: "his problem was not theology . . . but the production of a self-consistent materialistic theory of life" (Desmond, "Grant: Pre-Darwinian Transmutationist," p. 208n 74).

111. Desmond, "Interpreting the Origin of Mammals," pp. 9—10. Grant's environmental determinism and Lamarckian transmutationism are assimilable to the more popular evolutionism of the artisan radicals of the thirties and forties, whereas Knox's developmental views do not fit easily into this more "orthodox" radical framework; see Adrian Desmond, "Artisan Resistance and Evolution in Britain, 1819—1848," *Osiris*, 2nd. ser., *3* (1987), 77—110.

lost out to his conviction that the innate hostility between races would always make it "politically unrealistic to preach Equality and Fraternity across their boundaries."[112] When Knox's racism began to gain popularity during the fifties, it was almost inevitably dissociated from its radical roots and harnessed to conservative political ends. Benjamin Disraeli, in 1852, argued in Knoxian terms against the emancipation of West Indian slaves: "In the structure, the decay, and the development of the various families of man, the vicissitudes of history find their main solution. All is race."[113] An American edition of Knox's *Races of Men* had been issued in 1850, and the Knoxian laws of race antagonism and subordination quickly found their way into some of the more notorious and influential American proslavery texts on race and were reimported into England in this form. In 1856, the *Westminster Review* favorably reviewed Josiah Nott and George Gliddon's racist *Types of Mankind* and noted:

> One of the earliest to apply the doctrine of the essential diversity of human races, so fertile of results, to historical, political, and other problems, was, we believe, Dr. Robert Knox, in his singular work . . . "The Races of Men. . . ." This view explains much heretofore most obscure. One term of sacred import, Civilization, receives from it a limitation of application which the benevolent spirit is disposed to brook ill. We are generously inclined to desire for all whom we include as fellows in humanity, the same privileges, rich and expansive blessings, as those we enjoy ourselves. . . . Stern experience, however, teaches that in its wide application to the family of man, it must be often modified, and sometimes restrained within very narrow limits indeed. The capacity to receive the boon of civilization is very different in the different races of men. Some, we are constrained to admit, are so low in the scale of improveability that they are totally incapacitated for its reception. . . . And, amongst those fitted to receive it, there are so many shades and degrees of capacity, limiting and defining their progressive advancement, that nothing less than an extended acquaintance with human races can preside over the proper administration to their wants.[114]

112. Biddiss, "Politics of Anatomy," p. 250.

113. Quoted in Curtin, *Image of Africa*, p. 381. Other reviewers discussing colonial policy and racial issues began to employ Knoxian arguments to promote conservative opinion (ibid.).

114. "Types of Mankind," *Westminster Rev., n.s., 9* (1856), 378–379; see also Robert Knox, *The Races of Men, A Fragment* (Philadelphia: Lea and

Knox himself stated that his views on race as the key to social, political, and historical explanation, did not generate much public interest until the 1848 revolution. But following on his successful prediction of this cataclysmic event his ideas were taken up by the press (so much so that Knox accused the editor of the *Times* of consistent plagiarism), and became widely known.[115] He attributed the growing influence of racist theory to the predictive power and "truth" of his science, but we may detect other forces at play. With his emphasis on race as the "overweening determinant of character and culture, of individual and collective behaviour,"[116] Knox defused the environmental and social explanations of the reformers and radicals and catered to the increasingly negative evaluation of the cultural worth of non-European peoples that accompanied the economic expansion of Britain. His radicalism and racial determinism were in essential tension within his system, but his audience and followers were less interested in Knox's "moral anatomy" as a self-consistent synthesis, than in his emphasis on biological race and the (usually conservative) political implications they might draw from it.

To a certain extent, Knox himself was responsible for this. He made little attempt to present his views in any systematic form. His disorganized, vehement, and scattered writings and lectures were not conducive to a general comprehension of the more recondite theoretical aspects of his work. The *Medical Times* made the point that his *Races of Men* was a work that Knox's "acrimony, scepticism, want of proper arrangement, carelessness, and repeti-

Blanchard, 1850); Josiah C. Nott and George R. Gliddon, *Types of Mankind: Or Ethnological Researches* . . . (Philadelphia: Lippincott, Grambo, 1854; London: Trubner, 1854), p. 53. John Campbell also cited Knox in his notorious *Negro-Mania*; see Curtin, *Image of Africa*, p. 372.

115. Knox, *Races of Men* (1850), p. 23; *Races of Men* (1862), p. 565. See also "Races v. Nations," *Med. Times Gaz.*, *11* (1862), 226–227: "Dr. Knox, who has laboured all his life to establish the influence of *race* in the destinies of *nations*, is well avenged by finding that those who once denied, finish by proclaiming his theories as if discoveries of their own, or else *adopting* them — of course without acknowledgement." Knox himself felt constrained to enter a caveat upon the overly enthusiastic applications of some of his "plagiarists" and followers: "Day by day the opposition weakens; the great questions of race are discussed in a calmer and more philosophic tone, and there is every danger of their running to the other extreme, and undervaluing those acquired and artificial qualities strictly the result of national influences" (Knox, *Races of Men* [1862], pp. 566, 596). Note also his statements at the conclusion of his *Man, His Structure and Physiology, Popularly Explained and Demonstrated* (London: H. Bailliere, 1857), pp. 170–171.

116. Biddiss, "Politics of Anatomy," p. 250.

tion would have damned, had it not been for its truth."[117] Given such a presentation, it is not surprising that his contemporaries found his conception of "generic descent" difficult to grasp. Luke Burke (another early British exponent of the "Science of Race"), in reviewing Knox's early "Lectures" on race, endorsed his emphasis on the "permanence of all the characteristics of race," but could not come to grips with his developmentalism. He wrote that the "two propositions involved [racial permanence and organic change] . . . are mutually destructive. One may be true, but both cannot be so."[118]

But Knox was virtually forced to popular exposition with all its attendant dangers of oversimplification and distortion. The real point at issue is that he had no scientific audience and no institutional forum for his views. From all contemporary accounts, his London life was overshadowed by his notoriety and questionable "morality" (i.e., his radicalism), and restricted by his poverty. His participation in established London medical and scientific circles and institutions was more or less limited to the articles he managed to have published in journals such as the *Medical Times*, the *Lancet*, and the *Zoologist*, and his translations of anatomical and zoological texts. His London medical reputation was further compromised when the *Lancet* publicized the "Osborne scandal" as part of its campaign for medical reform.[119] Nor did he have an established ethnological audience. His "ethnology" was more in tune with, and was certainly better appreciated by, French physical anthropologists,[120] than by the members of the conservative and

117. "The Late Dr. Knox" (above, n. 31), p. 684. The *Lancet* made the same point: "The Late Dr. Knox," *Lancet* (January 3, 1863), 19—20, esp. p. 20.

118. [Luke Burke], "Criticism: Lectures on the Races of Men, by Robert Knox, M.D., F.R.S.E.," *The Ethnological Journal: A Magazine of Ethnography, Phrenology, and Archeology, considered as elements of the Science of Races: with the application of this science to Education, Legislation, and Social Progress, 2* (1848), 94. Other reviewers of the same period failed to perceive Knox's developmentalism at all: "If we understand Dr. Knox's theory, it is that men were originally created of different races, like the wild animals . . . " ("Human Progress," *Westminster Rev., 52* [1850], 2).

119. See *Lancet, 1* (1847), 565—571, 630, 653—654, 685; Rae, *Knox*, pp. 134—161; Lonsdale, *Life*, pp. 343—394; Blake, "Life of Dr. Knox." All accounts of Knox's London period are very sketchy and incomplete. Knox does seem to have had some contact with London medical reformist circles (see n. 108 above), and he eventually found employment in 1856 as pathological anatomist to the Cancer Hospital, founded by the reformer William Marsden.

120. The French physical anthropologist Paul Broca, founder of the Société d'Anthropologie de Paris, incorporated Knox's arguments on the infertility of racial hybrids into his polygenist writings, and in 1861 Knox was elected the first

religion-oriented Ethnological Society of London, who did their best to exclude Knox from their ranks.

In any case, by the close of the fifties, Knox's developmental views were overtaken by the Darwinian theory of natural selection. Not that Knox himself was overly impressed by the *Origin of Species*: "Darwin's work," he wrote to James Hunt, "leaves the question precisely where it was left by Goethe, Oken, and Geoffroy St. Hilaire."[121] Whatever the intrinsic merits of the Darwin/Wallace theory, it is instructive to compare Knox's lack of scientific credentials and of an effective institutional power base with those Darwin had already established by the time he published his evolutionary views.[122]

The Institutionalization of Knox's Moral Anatomy

However, toward the end of his life Knox briefly found an institutional niche in the Ethnological Society, and his anthropological doctrines inspired the breakaway Anthropological Society that was founded shortly after his death. It was, in fact, only posthumously that he achieved the essential institutional backing at the hands of the above-mentioned Hunt, who in 1863 led the secession of the Anthropologicals from the Ethnological Society. Hunt, as George W. Stocking has stated, "in a paradoxical and antithetical way was one of the most influential figures in English

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foreign corresponding member of the Société. See Lonsdale, *Life*, p. 385; James Hunt, "Preface" to Carl Vogt, *Lectures on Man: His Place in Creation, and in the History of the Earth* (London: Anthropological Society, 1864); Paul Broca, *On the Phenomena of Hybridity in the Genus Homo* (London: Anthropological Society, 1864), pp. 61–71.

121. Quoted in Lonsdale, *Life*, p. 368. See also Knox, *Races of Men* (1862), pp. 570, 589, 594; Robert Knox, "On the Application of the Anatomical Method to the Discrimination of Species," *Anthrop. Rev., 1* (1863), 263–270, esp. p. 267. Knox dealt very peremptorily and dismissively with the *Origin*, but it is tempting to speculate that Darwin's utilitarian Malthusian mechanism of natural selection was unacceptable to the radical and anti-Malthusian Knox; see Knox, *Races of Men* (1862), p. 580. As well, Knox, like the other transcendentalist-influenced critics of Darwin, would have found the chance element of natural selection incompatible with his deterministic schema of development; see Russell, *Form and Function* (above, n. 75), pp. 241–245. His dismissive attitude toward the *Origin* possibly accounts for Knox's failure to make any bids for acknowledgment as a "precursor," unlike Grant who gloried in the connection: see Desmond, "Grant: Pre-Darwinian Transmutationist," pp. 191–192.

122. See Sandra Herbert, "The Place of Man in the Development of Darwin's Theory of Transmutation. Part II," *J. Hist. Biol., 10* (1977), 155–227, esp. pp. 156–157; Martin J. Rudwick, "Charles Darwin in London: The Integration of Public and Private Science," *Isis, 73* (1982), 186–206.

anthropology in the 1860's."[123] Knox had first met Hunt around 1855,[124] and it was under Hunt's aegis that he eventually gained entry into the Ethnological Society.

The Ethnologists, who had their roots in Quaker and Evangelical philanthropy, conducted their inquiries within a framework of religious assumptions that provided the ethnological problem of accounting for racial variety in terms consistent with the biblical account. Like their mentor James Cowles Prichard, they were primarily "monogenists," who accepted some modification over time as races had diverged from their original unity of type. Their methodology was historical, based largely on linguistic analysis that demonstrated the unity of humanity, and they emphasized environmental factors in the formation of race.[125] Hunt, who served as secretary to the society for a number of years, later characterized it as dominated by a Quaker clique and made moribund by religion.[126]

According to Hunt, Knox first attempted to join the Ethnological Society in 1855, but was black-balled by the Quakers.[127] In the Council Minute Book of the society there is note of a "letter read from Dr. Knox" for the meeting of February 7, 1855,[128] and undoubtedly Knox's pungent views, marginal status, and radical reputation would have been meat too strong for Quaker stomachs. But over the next few years the structure and orientation of the Ethnological Society underwent some changes, and a number of physical anthropologists, including Hunt, joined the society. In 1860 Hunt became joint secretary and the polygenist John Crawfurd was elected president. Following on this, Knox was finally elected an honorary fellow "to the horror and indignation of the Quakers,"[129] and from then until his death two years later he was a prominent member of the society.

123. Stocking, "What's in a Name?" (above, n. 3), p. 376.

124. James Hunt, "On the Origin of the Anthropological Review and Its Connection with the Anthropological Society," *Anthrop. Rev.*, *6* (1868), 432.

125. Stocking, "What's in a Name?"; and George W. Stocking, "From Chronology to Ethnology: James Cowles Prichard and British Anthropology 1800—1850," in James Cowles Prichard, *Researches into the Physical History of Man*, ed. George W. Stocking (Chicago and London: University of Chicago Press, 1973), pp. ix—cx.

126. Hunt. "Origin of the Anthropological Review," p. 432.

127. Ibid.

128. Ethnological Society of London (ESL) Minutes, February 7, 1855, "Council Minute Book, 1844—1869," Archives, Royal Anthropological Institute. The society had previously purchased a copy of Knox's *Races of Men* as part of its library collection: ESL Minutes, June 11, 1851.

129. Hunt was elected a fellow in 1856; Knox was elected honorary fellow

On the sparse evidence of the minutes, Hunt unabashedly used his powers as secretary to promote Knox, ensuring that his papers were given priority for reading at the society's meetings and were selected for publication in the *Transactions*. However, he did not have matters all his own way in this, and there is some evidence that Knox's reputation was a continuing source of conflict within the society. There is a revealing entry in the minutes for the meeting of May 20, 1862. Here resolution no. 7 reads: "That Dr. Knox M. D. be appointed 'Honorary Curator' to the Society," but a heavy line has been drawn through the whole entry. The events behind this deletion can only be conjectured, but it seems fairly clear that the secretary had exceeded his authority on this occasion and was called to account by the Quaker opposition. It took Hunt another two meetings before he was able to organize the resolution back onto the books and triumphantly record Knox's appointment, and this time the entry was allowed to stand.[130] The triumph was short-lived, however; within a few months Knox was dead, and Hunt was engaged in organizing the rival Anthropological Society of London, which met for the first time on January 6, 1863.

It is difficult to determine Knox's exact role in the formation of the new society. Hunt subsequently represented Knox, Richard Burton, and himself as the real founders of the Anthropological Society, and considering the close communication between Knox and Hunt over the period 1860—1862, and the similarity of their anthropological views (which Knox himself endorsed), Hunt's

on November 27, 1860: ESL Minutes; Hunt, "Origin of the Anthropological Review," p. 432. Hunt gives the date of Knox's election as 1858, but according to the Minutes this is incorrect.

130. ESL Minutes. Knox was formally appointed honorary curator on June 17, 1862. Over the two years of his membership he read six papers in all to the society, of which three were published in the society's *Transactions* — a record exceeded only by Crawfurd; see G. W. Bloxam, *Index to the Publications of the Anthropological Institute of Great Britain and Ireland, 1843—1891* (London: Anthropological Institute, 1893). This same period was a stormy one, with conflict over the issue of the admission of women to the Ethnological Society's meetings (forcefully opposed by Hunt, who resigned as secretary at one point, ostensibly on health grounds, but was persuaded to withdraw his resignation: ESL Minutes for November 27, 1860; February 6, February 20, 1861). Hunt later represented this issue as one of the major reasons for his secession from the Society: James Hunt, "Dedication to Broca," in Vogt, *Lectures on Man*, pp. viii—ix. See Evelleen Richards, "Huxley and Woman's Place in Science: The 'Woman Question' and the Control of Victorian Anthropology" in *History, Humanity, and Evolution*, ed. James R. Moore (Cambridge: Cambridge University Press, 1989), pp. 253—284.

claim seems plausible. Moreover, it was Knox who introduced Hunt to the French physical anthropologist Paul Broca, and Hunt modeled his society on Broca's Société d'Anthropologie de Paris.[131] However, Knox's poor health during this period (he died of a long-standing heart condition on December 20, 1862 — just two weeks before the inaugural meeting of the society) makes his active organizational involvement questionable. But irrespective of his organizational role, he was indubitably the Anthropological Society's intellectual mentor. Hunt later claimed to have "imbibed" his views from Knox,[132] and all the available evidence supports this claim. When he first met Knox, the much younger Hunt had been something of a marginal medical man also. He had inherited a practice in the treatment of stammering from his father, and had published a treatise on his father's system that was primarily concerned with defending it (and Hunt) from the charge of quackery. Although Hunt later represented this work as the basis of his interest in race, investigation reveals almost nothing on this "great question"; what little there is suggests a Prichardian environmentalism and monogenism: "Savages do not stammer; in them the human animal remains unchanged. In the civilized world, on the contrary, refinement has materially altered the physical man. Robustness yields to delicacy, and the very structure of organs undergoes metamorphosis."[133] Within a few years, under Knox's tutelage, Hunt had shed his early environmentalism and become a demagogic "anthropologist."

Several studies of the history of the Anthropological Society have now been published, and there is general agreement that Hunt conceived it as a platform for his anthropological-cum-political opinions and that it was his racism that precipitated the

131. Hunt, "Dedication," pp. vii—viii; idem, "Origin of the Anthropological Review," pp. 432—434; Lonsdale, *Life*, pp. viii, 384—387; Knox, *Races of Men* (1862), p. 600. Cf. Rainger, "Race, Politics, and Science" (above, n. 3), pp. 56—57.

132. James Hunt, "On the Application of the Principle of Natural Selection to Anthropology, in Reply to Views Advocated by Some of Mr. Darwin's Disciples," *Anthrop. Rev.*, *4* (1866), 320—340, esp. p. 336. Hunt was collecting material for a biography of Knox, and had advertised to this effect in the *Anthropological Review*, when Lonsdale made known his proposed biography; Lonsdale, *Life*, p. viii.

133. James Hunt, *A Treatise on the Cure of Stammering* (London: Longman, Brown, Green and Longmans, 1854), p. 25. This work does indicate Hunt's early preference for naturalistic explanations: ibid., p. 12. Little is known of Hunt's early career. See "James Hunt," *Dict. Nat. Biog.*, *28*: 266—267; also Stocking, "What's in a Name?" p. 376; Rainger, "Race, Politics, and Science," p. 52.

break with the Ethnologists. As Stocking and others have represented them, the Anthropologicals were primarily "polygenists" who advocated the ultimate diversity of human races, and took issue with the theological concern of the ethnologists to derive all races from the one stock. They were generally men with a background in medicine or biology, and their method was that of the continental physical anthropologists. They placed great emphasis on describing, measuring, and classifying the physical "types" of humanity, forming rigid categories that maximized racial differences and justified the polygenist emphasis on essential human diversity and inequality.[134] Like Knox, they were inflexibly determinist, seeing race as the *cause* of civilizational achievement rather than a product of cultural experience. But where Knox had tempered his racism with his humanitarianism, Hunt and his followers advocated an extreme racism, underpinning it with a bastardized Knoxian anthropology and biology, and promoting a range of reactionary policies that were at odds with Knox's radicalism. Knox became the figurehead behind which the Anthropological Society, with Hunt at the helm, steered full tilt against the tide of liberalism, personified by John Stuart Mill.

From its inception, Hunt made it clear that he and his fellow Anthropologicals were founding not merely a new society, but a "new science," and that the overwhelming significance of the new science devolved on its political implications:

> It is frequently the habit of scientific men to exaggerate the importance of their own special study to the detriment of other branches of knowledge; but do I exaggerate when I say that the fate of nations depends on a true appreciation of the science of anthropology? . . . Does not the success of our colonization depend on the deductions of our science? . . . Is not the wicked war now going on in America caused by an ignorance of our science? These and a host of other questions must ultimately be resolved by inductive science.[135]

In Hunt's hands, Knox's "moral anatomy" was to lay the foundations of a new applied moral science — "Anthropology." Race was for Hunt, as it had been for Knox, the key to "scientific" political

134. See Stocking, "What's in a Name?"; Rainger, "Race, Politics, and Science"; John W. Burrow, "Evolution and Anthropology in the 1860's: The Anthropological Society of London," *Vict. Stud.*, 7 (1963–64), 137–154. Stocking's is by far the best and most detailed analysis.

135. James Hunt, "Anniversary Address to the Anthropological Society of London, January 5, 1864," *J. Anthrop. Soc.*, 2 (1864), lxxxi, xciii.

legislation and social procedure. But he enunciated this much more explicitly than had Knox, shored it up with positivist rhetoric, and deployed it specifically to preclude the objectionable "unnatural" notion of equal human rights:

> . . . the science of political economy must be based simply and solely on the facts discovered by the anthropologists. . . . Now a social science cannot be based on mere philanthropic theories. In other words, social science must be based on the facts of human nature as it is, not as we would wish it to be. . . . We are the students and interpreters of nature's laws, and it is our duty carefully to ascertain what those laws are, and not attempt to raise up in the name of "social science" a code of morals based upon an assumption of human equality and consequently equal human rights, because we know that human equality is a mere dream and all systems based on it are mere chimeras.[136]

During the first half of the nineteenth century, Mill, with his thesis that human "nature" was primarily socially determined, was the greatest liberal defender of racial egalitarianism and, as such, Hunt's prime target. To Hunt, Mill's claim for black suffrage was a scientific absurdity, contradicted by the "facts of human nature," which, according to Hunt, were best served in those parts of the world in which "the Negro [is] in his natural subordination to the European."[137] To the left of Mill stood the socialists and the communists who adhered to a more radical environmentalism, and, not surprisingly, their claims too were completely routed by "anthropology": "the theories of socialism, communism, and republicanism find not a fact in anthropological science to support such chimeras."[138] As Marvin Harris has pointed out, it was Mill

136. James Hunt, "Anniversary Address, January 1, 1867," *J. Anthrop. Soc.*, *5* (1867), lxi—lxii; cf. Rainger, "Race, Politics, and Science," p. 61.

137. James Hunt, "On the Negro's Place in Nature," *Mem. Anthrop. Soc.*, *1* (1863), 1—64, quotation on pp. 51—52. According to Hunt, his paper was initially presented at the Newcastle meeting of the British Association, where it was hissed by the audience. He subsequently read it to the Anthropological Society, where he received "the cordial and earnest support of our scientific brethren" (ibid., p. vi). This paper contains a number of references to Knox's anthropology in support of Hunt's views: ibid., pp. 13, 17. As Stocking has noted, Hunt's defence of slavery was well timed to coincide with the American Civil War: Stocking, "What's in a Name?" p. 376.

138. Hunt, "Anniversary Address, 1867," p. lx. Here Hunt expressed his own preference for a "well-selected hereditary aristocracy" as being "more in accordance with nature's laws than those glittering trivialities respecting human rights which now form the stock-in-trade of some of our professors of political economy, and many of our politicians" (ibid., p. lxi).

and those who suffered from what Hunt termed "the rights-of-man mania" who were the objects of Hunt's most vitriolic attacks, rather than the rival Ethnologists, who were merely subject to "religious mania."[139]

In fact, the positions of the Ethnologists and Anthropologicals were not as irreconcilable as might appear, and after the death of Hunt the two societies were reunited in 1871 (largely through the efforts of Thomas Henry Huxley) to form the Anthropological Institute of Great Britain and Ireland. As a number of historians have stressed, the "new" Darwinian anthropology that emerged may be viewed as the logical and historical synthesis of the preceding two major models of anthropological enquiry — ethnology and physical anthropology.[140] The concept of race was central to both models, and both were preoccupied with the problem of racial diversity and subscribed to a naturalistic conception of this diversity. Thus the Ethnologist Prichard had argued that civilization for humans was like domestication for animals, and consequently that the physical features of the superior races had been "improved by civilization"; while the Anthropologicals, by extending their biological model to human nature, could explain cultural and social differences in terms of anatomical and physical differences. Although the Ethnologists opposed the more extreme racial views of the Anthropologicals, both were agreed on a causal relationship between race and civilization and both factions assumed the biocultural inferiority of non-Caucasoids.

The extreme antiquity of man was established by the 1850s, and this, together with mounting pressure from biblical criticism and anticlericalism and the increasingly overt racism that went hand in hand with British expansionism, undermined the ethnological position. In this context, the Anthropologicals, like the contemporaneous "young guard" Darwinians, promoted their position as the more scientific one, as unhampered by Christian apologetics, based on a tried and tested scientific method, and consistent with natural facts.[141] Given their similar naturalistic and

139. Ibid., p. lix; and [James Hunt], "Race in Legislation and Political Economy," *Anthrop. Rev., 4* (1866), 113—135; Harris, *Rise of Anthropological Theory* (above, n. 3), p. 101.

140. Stocking, "What's in a Name?" pp. 384—386; idem, "From Chronology to Ethnology" (above, n. 125), pp. ciii—cx; Weber, "Science and Society" (above, n. 53), pp. 269—272.

141. Stocking, "What's in a Name?" p. 385; Frank M. Turner, "The Victorian Conflict between Science and Religion: A Professional Dimension," *Isis, 69* (1978), 356—376.

anticlerical orientation and their ultimate synthesis, it might have been expected that the Anthropologicals and the Darwinians would have made common cause against the more conservative and religiously oriented Ethnologists — but such was not the case. For most of its brief history, the Anthropological Society was explicitly and vehemently "anti-Darwinian," and Hunt and Huxley were in overt conflict. The leading Darwinians, such as Huxley, A. R. Wallace, Lane Fox, Francis Galton, George Busk, John Lubbock, and Edward Burnett Tylor, were all members of the Ethnological Society and had little to do with, or were actively hostile toward, the Anthropological Society. It is by focusing on their conflict with the Darwinians that the significance of Knox's views for the Anthropologicals, and for Hunt in particular, may be best understood. This analysis will also clarify the relation of Knox's anthropology and biology to late Victorian scientific racism.

The Institutional and Ideological Conflict between the Darwinians and Anthropologicals

Most accounts of the conflict between the Anthropologicals and the Darwinians have stressed their basic intellectual incompatibility.[142] This interpretation hinges on the polygenism and racism of the Anthropologicals, which, it is argued, they perceived as under threat from the Darwinian thesis of the common descent of the human races; it was because of the antipathy of Hunt and his Anthropological Society to theories of development, and to Darwinism in particular, that evolutionists chose to join forces with the Ethnologicals — who, in spite of their tradition of religious orthodoxy (or perhaps because of it), were more oriented toward theories of human change over time. There are some problems, however, with this interpretation. It is true that Hunt made it clear that what he chose to construe as the reaffirmation of monogenetic doctrine by such leading Darwinians as Wallace and Huxley, constituted the major objection of the Anthropologicals to evolution by natural selection.[143] But the Anthropologicals were

142. Burrow, "Evolution and Anthropology"; Stocking, "What's in a Name?" p. 378; Rainger, "Race, Politics, and Science," pp. 58—59.

143. Notably: "I cannot think that any advance can be made in the application of the Darwinian principles to anthropology until we can free the subject from the unity hypothesis which has been identified with it, especially by the influence of Professor Huxley" (Hunt, "Application of the Principle of Natural Selection," p. 339).

well aware that Darwinism was not incongruent with their polygenism, and the Darwinians were instrumental in bringing this more forcefully to their notice.

It was to a meeting of the Anthropological Society in 1864 that Wallace addressed his first paper on man, in which he demonstrated how monogenism and polygenism might be reconciled in evolutionary biology. According to Wallace, all races were derived by natural selection from a single, originally homogeneous stock, but racial traits, once developed, were fixed and very ancient. Their common ancestry lay so far in the past that it might fairly be said that "there were many originally distinct races of men." With a conflation of Knoxian race laws and natural selection, Wallace confidently predicted the extinction of the "inferior" races from the "inevitable effects of an unequal mental and physical struggle."[144] His audience might have been more receptive to this polygenist compromise had Wallace not gone on to draw a splendid utopian vision of an earth ultimately peopled by a superior race of perfectly equal beings — an "eloquent dream" from the incipient socialist that outraged Hunt's belief in essential human inequality.[145] His audience was also unreceptive to Wallace's thesis that man's moral faculties could evolve without concomitant physical changes. As Luke Burke pointed out, this thesis contradicted the fundamental anthropological correlation of mental differences with physical differences: "It divorces our power of judging of the mind from the body."[146] If they found Wallace's interpretation ideologically unacceptable, in the same year the Anthropological Society published a translation of the *Lectures on Man* by the German-born polygenist and Darwinian Carl Vogt (translated and edited by Hunt), which offered the more congenial "anthropological" picture of an ever-increasing gulf between the races that was virtually unbridgeable. Hunt indicated, in his preface to this work, that it was Vogt's advocacy of polygenism within a Darwinian framework that made his *Lectures* so valuable to the members of the society:

Prof. Vogt acknowledges that, to a great extent, he is willing to

144. Alfred R. Wallace, "The Origin of Human Races and the Antiquity of Man Deduced from the Theory of Natural Selection," *J. Anthrop. Soc.*, *2* (1864), clviii—clxxxvii; Stepan, *Idea of Race* (above, n. 3), pp. 68—70; Joel S. Schwartz, "Darwin, Wallace, and the *Descent of Man*," *J. Hist. Biol.*, *17* (1984), 271—289, esp. pp. 272—275.

145. James Hunt, "On the Doctrine of Continuity Applied to Anthropology," *Anthrop. Rev.*, *5* (1867), 110—120, esp. p. 113. Hunt also objected to Wallace's exemption of man from natural law: Wallace, "Origin of Human Races," p. clxxx.

146. Burke in Wallace, "Origin of Human Races," p. clxx.

> accept the conclusions of England's great modern naturalist, Charles Darwin; but, unlike many of that profound observer's followers in this country, he entirely repudiates the opinions respecting man's unity of origin which a section of the Darwinians in this country are now endeavouring to promulgate. The author's views on this point I hold, in the present state of science to be especially sound and philosophical: and I hope that this work may help to counteract the inconsistent and antiquated doctrines now being taught by one of our government Professors respecting the small distinction which exists between the members of the genus *Homo*.[147]

Hunt and his followers were not opposed to the Darwinian thesis per se, but rather to Huxley's deployment of it. It is quite misleading to state, as does Ronald Rainger, that Hunt's society had an "antagonism to theories of development."[148] As we might expect from a self-proclaimed disciple of Knox, Hunt consistently made it clear in his major writings on the matter that he "accept[ed] the great principle of natural development to explain man's origin."[149] Hunt was not forthcoming on his own theoretical views; for the most part, he confined himself to "hints," formally eschewing "speculation" on the subject. On Knox's authority, evolution by natural selection was merely one of a number of speculations by "popular writers" adopted from the philosophy of Goethe and the morphological speculations of Geoffroy. While such Goethean developmentalism was probably correct, "the really scientific men do not as yet look to the theory as established on a strictly scientific basis."[150] Such vaguely defined developmentalism (or "continuity," as he came to term it) sufficed to provide Hunt with the essential naturalism, and the even more essential naturalistic proscription of the revolutionary ideas of the

147. Hunt, "Preface" (above, n. 120), p. xv. See also Hunt's endorsement of Vogt's interpretation in Hunt, "Doctrine of Continuity," pp. 114, 118.

148. Rainger, "Race, Politics, and Science," p. 58.

149 Hunt, "Application of the Principle of Natural Selection," p. 340; see also Hunt, "Doctrine of Continuity."

150. Hunt, "Application of the Principle of Natural Selection," p. 326. Hunt did make some statements that are suggestive of a Knoxian/Vogtian embryological model of "natural development" in his unsigned "Race in Legislation" (above, n. 139), pp. 120, 129; see Vogt, *Lectures on Man*, pp. 183—192. I have pointed to the affinities between the views of Knox and Vogt (see above, n. 78). However, Hunt was undoubtedly far more interested in the political applications of Knox's views than in the biological details of his developmentalism, which Knox did not present very coherently in his major anthropological writings. Also, Hunt made very clear his preference for an interpretation of development that did not promote revolutionary change; see n. 151.

"so-called rights of man." He approvingly quoted William R. Grove, president of the British Association, to this effect: "Our language, our social institutions, our laws, the constitution of which we are proud, are the growth of time, the product of slow adaptations, resulting from continuous struggles. Happily in this country . . . practical experience has taught us to improve rather than to remedy; we follow the law of nature and avoid cataclysms."[151]

I suggest that Hunt's failure to delineate his own views, or to ally his society with the Darwinian or any other specific developmental model, was largely strategic. In the context of the Darwinian disputes of the sixties, a degree of ambiguity was manipulable. While Darwinism remained a controversial doctrine, particularly in its application to humanity, it was politically expedient for the Anthropologicals to maintain their "positivist" independence of it.[152] At the same time, their commitment to a vaguely defined naturalistic developmentalism could be deployed against outmoded and "unscientific" theological explanations of human origin. It is consistent with this interpretation that Carter Blake — Hunt's closest colleague, and secretary of the Anthropological Society (and also a Knoxian) — could maintain, in the midst of his highly critical review of Huxley's *Man's Place in Nature*: "The day is long gone by when the probability of transmutation could be sneered down as the phantasm of a dreamer, or the product of the scepticism of an infidel. The possibility, nay, even the extreme likelihood of such a law being eventually established is now rapidly becoming a tolerated doctrine in the creed of deep thinking scientific men."[153] It is also in keeping with such a strategy that Hunt and his followers went to some lengths to cultivate the most prominent of the anti-Darwinian developmentalists, Richard Owen.[154]

151. Hunt: "Anniversary Address, 1867," p. lx; and "Doctrine of Continuity," pp. 119, 120.

152. It is possible that Hunt modeled this strategy on Broca's in the "parent" Société d'Anthropologie de Paris. See Joy Harvey, "Evolutionism Transformed: Positivists and Materialists in the *Société d'Anthropologie de Paris* from Second Empire to Third Republic," in *The Wider Domain Of Evolutionary Thought*, ed. David Oldroyd and Ian Langham (Dordrecht: Reidel, 1983), pp. 289—310.

153. C. Carter Blake, "Man and Beast," *Anthrop. Rev., 1* (1863), 161; see also idem, "On the Relations of Man to the Inferior Animals," ibid., pp. 107—117.

154. Carter Blake to Owen, December 22, 1863; September 5, 1865; August 14, 1868; August 29, 1873, British Museum (Natural History), Owen Collection, *4*, fols. 202, 204, 209, 211. See also the invitation to Owen to attend the Anthropological Society meeting of December 6, 1864, to comment on a collection

That the Anthropologists attempted initially to put a conscious strategy of neutrality into practice is indicated by their choice of the first five honorary fellows to be elected to the newly formed society: they comprised the polygenist Crawfurd, three Darwinians (Darwin, Huxley, and Lyell), and Richard Owen (who by this stage had emerged publicly as an advocate of "continuous creation").[155] But this carefully staged neutrality was fragmented when, within a few months, in reaction to Carter Blake's abovementioned "coarse attack" on *Man's Place in Nature,* Huxley resigned his diploma as honorary member of the Anthropological Society and joined the rival Ethnological Society.[156] This same meeting of the Ethnological Society witnessed Hunt's resignation on racist grounds and a takeover of the society by the leading Darwinians: Crawfurd was deposed to vice president and Lubbock elected president in his stead; Galton replaced Hunt as honorary secretary; and Huxley and Busk were made members of the Council.[157] From this point on, relations between the two groups were characterized by "recurring conflict, bitterness, recriminations, and the failure of several attempts at reconciliation"[158] — and an increasingly anti-Darwinian edge to Hunt's rhetoric. When Huxley became president of the Ethnological Society in 1868, this, in the view of the Anthropologicals, consolidated the transformation of that society into "little more than a sort of Darwinian Club."[159]

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of human remains: ibid., *8*, fol. 343a. Note also Hunt's remarks re Owen in "Doctrine of Continuity," p. 117. Owen was another of those who based his developmentalism on embryogenesis; see Richards, "A Question of Property Rights" (above, n. 78).

155. ASL Council Minutes, February 18, 1863.

156. Ibid., May 12, 1863; ESL Minutes, May 5, 1863; Huxley to Carter Blake, May 2 and 5, 1863, Huxley Papers, *V. XI*, fols. 17—20, Imperial College Archives (hereinafter cited as Huxley Papers); Rolleston to Huxley, ibid., *XXV*, fol. 165. Huxley's resignation was ostensibly over Carter Blake's mauling of Rolleston; however, as Desmond has noted, the article was a general attack on *Man's Place*, so Huxley had a more personal reason for resigning. See Desmond, *Archetypes and Ancestors* (above, n. 10), p. 223n 51; Huxley to Lubbock, May 3, 1863, Avebury Papers, Correspondence of Sir John Lubbock, *III*, 49640, fol. 53, British Library (hereinafter cited as Lubbock Correspondence). Matters were not improved when Hunt entitled his proslavery paper "On the Negro's Place in Nature," in obvious paraphrase of Huxley; Stocking, "What's in a Name?" p. 379.

157. ESL Minutes, May 5, 1863. The previous two years had seen an influx of Darwinians into the ESL: Charles Darwin had been elected an honorary fellow on May 14, 1861; Francis Galton became a member on March 1, 1862, and Erasmus Darwin (who served on the Council for a time) on March 18, 1862. On the reasons for Hunt's resignation, see Stocking, "What's in a Name?" p. 376.

158. Stocking, "What's in a Name?" p. 381.

159. Ibid., p. 377.

If it was largely for personal reasons that Huxley broke with the Anthropological Society and threw in his lot with the Ethnologists, it soon became apparent that the differences between the Ethnological-based Darwinians and the Anthropologicals were more political in nature than personal or theoretical. Their opposing institutional locations and affiliations, rather than their theoretical differences, set them apart; as I will argue, they were not so much locked in theoretical conflict, as in ideological and professional competition with one another. The charge of "monogenism" became a convenient peg on which Hunt could hang their differences and thus demarcate the Anthropologicals from the "Darwinian Club." In a number of crucial areas, Huxley's anthropological position was congruent with that of the Anthropologicals, and he soon set about the pressing political task of liberating Darwinism from the "monogenism" with which Hunt and his cohorts persisted in identifying it.

The urgency of the task was occasioned by the phenomenal growth of the Anthropologicals and the formidable professional competition they offered the Ethnologicals. No longer could they be sneeringly dismissed by Huxley as a bunch of "quacks" and a "nest of imposters" and left to their own devices.[160] By mid-1865, they had over five hundred members (about twice the membership of the Ethnological Society) and were on the point of establishing provincial branches (one of which was actually established in Manchester in 1866). The society was involved in an active publication program, including its own *Memoirs*, a series of translations of foreign anthropological works, the *Anthropological Review* (owned and controlled by Hunt), and the society's *Journal*. Moreover, the society had made a formal assault on the scientific establishment with a series of determined attempts to have their "new science" officially recognized by the British Association alongside the traditional ethnology. Although Hunt and his followers were consistently rebuffed by the Association's conservative leaders, who rallied to the support of the established Ethnologicals, Huxley was well aware that not even the powers of the scientific establishment could withstand for long the sheer force of Anthropological numbers. In the mid-sixties the Darwinians were still seeking to establish themselves scientifically, and Huxley saw the tactical need to support the Anthropologicals' claims to recognition by the Association. From this point on, he committed himself to the strategy of reconciling and uniting the rival societies. As he put the case to Lubbock, by contrast with the

160. Ibid.; Desmond, *Archetypes and Ancestors*, p. 81.

Ethnological Society, the Anthropological Society was "certainly alive and vigorous and under proper direction may become a very valuable organization."[161] There was another dimension to this strategy in that the Darwinian disputes of the sixties centered on the highly contentious issue of "man's place in nature"; as the self-constituted chief spokesman of the Darwinians on this "question of questions,"[162] Huxley must have been very conscious of the problems presented by the professional schism within the discipline most closely focused on the study of man. With the leading Darwinians clustered in the minority faction, the obvious solution was conciliation and unification with the all-too-successful and vociferous Anthropologicals, who might then be kept in order and given a "proper direction" by the Darwinians.

Huxley's major anthropological production of 1865, "On the Methods and Results of Ethnology," was designed not only to promote Darwinism as the key to the scientific study of man, but also to bridge the theoretical and, he hoped, the institutional gap between the two societies. He followed Wallace's lead by endorsing Darwinism for its potential of "reconciling and combining all that is good in the Monogenistic and Polygenistic schools,"[163] and he made a number of important concessions to the Anthropologicals. In spite of the ethnological emphasis of his title, Huxley made it clear that insofar as method went he supported the new anatomical method of the physical anthropologists against the traditional linguistic approach of the ethnologists. On the basis of skin color, hair type, and skull shape, he identified eleven racial types, which he designated "persistent modifications" or semi-permanent stocks. Again, while Huxley claimed that the anatomical evidence was against the specific differences asserted by the polygenists and overwhelmingly in favor of the unity of the origin of mankind, he stressed that a belief in the diversity of human species did not necessitate diversity of origin. He excluded direct environmental influences on race as rigidly as any Anthropological, arguing that the races had arisen singly or appeared in a

161. Huxley to Lubbock, October 18, 1867, Lubbock Correspondence, *V*, 49642, fol. 63; Stocking, "What's in a Name?" pp. 377, 381—382. Stocking does not attribute such an overtly manipulative role to Huxley, but see Turner, "Victorian Conflict" (above, n. 141), on the takeover of London science by the Darwinian "young guard"; see also Desmond, *Archetypes and Ancestors*, pp. 110—112, 158—164.

162. Thomas H. Huxley, *Man's Place in Nature and a Supplementary Essay* (London: Watts, 1908), p. 39.

163. Thomas H. Huxley, "On the Methods and Results of Ethnology," in *Man's Place in Nature*, pp. 104—123; quotation on p. 121.

number of contemporaneous examples in some remote epoch and had evolved by natural selection. He suggested that the distinct racial types might have evolved so far as to prevent fully fertile crosses, and although he did not support the polygenist evidence for this, he would be "*A priori* . . . disposed to expect a certain amount of infertility between some of the extreme modifications of mankind; and still more between the offsprings of their intermixture."[164] In conclusion, Huxley even suggested that satisfactory evidence of such infertility might well provide the crucial proof of Darwin's theory of evolution.[165]

Although Huxley's efforts to have the "new science" recognized by the establishment were applauded by the Anthropologicals, his attempts at institutional reconciliation were rejected and his polygenistic overtures met with the ritual incantation of "monogenism."[166] The point was that at this stage the Anthropologicals simply saw no need for the Darwinian bridge that Huxley was intent upon constructing. For one thing, in the context of the ongoing controversy over man's place, Hunt could still make some capital out of demarcating the Anthropologicals from the Darwinians. When the Anthropologicals were forced to hold their own impromptu conference at Dundee in 1867 after the proposed anthropological section of the British Association meeting was canceled at the last minute for fear of local religious reaction, Hunt could vehemently assure the conservative opposition of the anti-Darwinian stance of his society:

> . . . I will invite those who will persist in attacking us, and

164. Ibid., p. 118.

165. Ibid., p. 123. See also Stepan, *Idea of Race*, pp. 78—79. On Huxley's "Persistence," see Desmond, *Archetypes and Ancestors*, pp. 84—112.

166. Hunt, "Application of the Principle of Natural Selection," p. 320. Hunt actually wrote to Huxley in acknowledgment of Huxley's conciliating role, expressing the willingness of the Anthropologicals to consider amalgamation under Huxley's presidency. Whatever the reality of this offer (the Council of the ASL refused to even consider Huxley's candidacy for honorary fellow), a few weeks later Hunt, on hearing that Huxley had joined the Jamaica Committee, publicly derided Huxley for his recent attack of "negromania": Hunt to Huxley, October 6, 12, and 18, 1866, Huxley Papers, *V. XVIII*, fols. 334—357; Hodgson to Huxley, November 3, 1866, ibid., fol. 201. Hunt subsequently lambasted Huxley in print as "for five years . . . our most deadly, and sometimes even our most bitter, foe" (James Hunt, "President's Address," *Anthrop. Rev., 6* [1868], 77). As Stocking has noted, Hunt was capable of some duplicity in his dealings with Huxley, and on one occasion even apologized to Huxley for lampoons that had appeared in the *Anthropological Review* "at the caprice of the Editor" — i.e., Hunt himself, as subsequent enquiries revealed: Stocking, "What's in a Name?" p. 382.

> endeavouring to raise a feeling of disgust against us, because of our adherence to Darwinism — to earnestly look at the real facts. It they will do so, they will find that if there be one society or one body of men who have more earnestly, more continually, persisted in attacking and endeavouring to refute the doctrines respecting man's origin by Mr. Darwin, or either of his disciples, that body is composed of men calling themselves Anthropologists.[167]

Over and above such rhetoric, Hunt's Knoxian biology and anthropology provided a theoretical basis that not only was more congenial to his racism and polygenism, but also rendered the Darwinian anthropological model proffered by Huxley redundant. Knox could be cited chapter and verse in opposition to Huxley's rejection of specific difference between the races, and invoked to support Hunt's contention that the mental differences between the races were crucial to such determinations.[168] As for Huxley's risible suggestion that evidence of human hybrid infertility would establish the truth of the Darwinian hypothesis, a Knoxian was even more disposed to expect such evidence a priori (and, moreover, convinced that its existence was proved), but hardly required the Darwinian hypothesis in order to account for it. Nor was a Knoxian in need of Huxley's Darwinian exclusion of environmentalism. The maxim that each race was specific to its particular locale precluded the possibility of human physical or physiological adaptation to new environments, either in the remote past or in the present, and Hunt had "never yet seen any reason to change my views, which I imbibed from the late Dr. Knox."[169] In view of the contradictions between the interpretations of Darwin's various disciples, it was Hunt's expressed wish that "Mr. Darwin himself may be induced to come forward" and apply his own theory to the origin and future of mankind.[170]

If the Darwinians could not come to some consensus on these matters, Hunt's own views were settled, and he got on with the more important anthropological task of putting them into practice. Armed with Knox's *Races of Men* ("a little mine of suggestive and

167. Hunt, "President's Address," 1868, p. 77. It is significant that this setback to his British Association aspirations provoked Hunt's most vehement denunciations of Darwinism, and it is noteworthy that the *Dundee Courier*, in reporting Hunt's speech, voiced the "faint suspicion" that Hunt's disavowal of Darwinism had been written "with just a tinge of a desire to suit the latitude and longitude of Dundee" (quoted in ibid., p. 83).

168. Hunt, "Application of the Principle of Natural Selection," pp. 322, 325–326.

169. Ibid., p. 336.

170. Ibid., p. 340.

interesting thought"[171]) and the anthropologist's brief to deliver his expert opinion on the practical applications of his science,[172] Hunt engaged the Anthropological Society in a number of topical political controversies. For above all, the Darwinian competitive struggle for existence between races was superfluous (and hardly new and original) for those who accepted the "inexorable" Knoxian laws of race antagonism and race subordination; with their discovery, Knox ("this great practical anthropologist") had brought the science of man down out of the clouds to its "intimate relations with humanity in religion, politics, government, national conduct, and every department of human action."[173] The socio-political implications of these laws were immense, and Hunt could recognize their clear manifestation in a whole range of contemporary social and political issues. Knox was invoked to support the society's anthropological endorsement of Governor Eyre's bloody repression of black revolt in Jamaica:

> Upwards of fifteen years ago, one of the most eminent anthropologists of the country, declared that there would be a Negro revolt in Jamaica. I quote Dr. Knox's own words. . . . These words appear to the mind of the vulgar prophetic; but they were based on sound theories, ignored by nearly all our then statesmen. . . . The merest novice in the study of race-characteristics ought to know that we English can only successfully rule either Jamaica, New Zealand, the Cape, China, or India, by men such as Governor Eyre.[174]

171. [James Hunt], "Race Antagonism," *Pop. Mag. Anthrop., 1* (1866), 24. Hunt's short-lived *Popular Magazine* lasted only from January to October, 1866. Hunt was not only owner and editor, but author of this venture, which was largely devoted to a defence of Eyre on "anthropological" grounds; see Rainger, "Race, Politics, and Science," pp. 62–63.

172. [James Hunt], "Introduction," *Pop. Mag. Anthrop., 1* (1866), 1.

173. [James Hunt], "Knox on the Saxon Race," *Anthrop. Rev., 6* (1868), 276, 278.

174. James Hunt, "Anniversary Address," *Anthrop. Rev., 4* (1866), lxxviii. The ASL organized a public meeting in defence of Eyre, at which Captain Bedford Pim (who had been hastily admitted to the society for the purpose) delivered a racist diatribe on "The Negro and Jamaica" to the loud cheers of his audience and their unanimous vote of thanks: Stocking, "What's in a Name?" p. 379. Huxley, of course, was a noted leader in the liberal attack on Eyre. Some members of the Anthropological Society tendered their resignations over the affair; letters from Bainsford (March 9, April 16, 1866) and Buxton (February 6, 26, and 29, 1866), ASL, Letters to the Society, 1865–66, Archives, Royal Anthropological Institute.

That perennial political problem, the Irish question, could be expertly settled through the application of Knoxian race laws:

> Ireland has been politically sick, and a number of doctors are fighting and squabbling about the efficacy of their respective drugs while the patient is dying. — When anyone ventures to hint that the patient is of a different *race*, and that the medical treatment which exactly suits the constitution of Brittania may be most detrimental to Erin, they unite in laughing the suggestion to scorn. When will our medicine men perceive that what suits Saxon England will not suit Celtic Ireland? Let us call in an anthropological doctor. Let Dr. Knox instruct us from his grave.[175]

Knox was in fact regularly exhumed by that arch-resurrectionman Hunt, and over the years of the Anthropological Society's existence, Knox the erstwhile "savage radical" not only posthumously supported the infamous Eyre and rejected Home Rule for Ireland, but also endorsed British imperialism, became an apologist for slavery, and opposed the extension of the franchise to women and blacks.[176]

Although the Anthropologicals did their best to monopolize them, the politics of race were not their exclusive preserve. Here too, Huxley made some Darwinian bids for the Anthropological brief. In his 1865 "ethnological" essay, he had made his own tribute to white supremacy,[177] and in the same year he spelled out the racial implications of Darwinism more explicitly in his well-known address, "Emancipation Black and White." Here Huxley's ethical "oughts" clashed with the biological "ises" of natural selection. While on the one hand he supported the abolition of slavery on liberal democratic grounds, on the other hand he could reassuringly assert that the innate inferiority of blacks would never endanger white supremacy:

> . . . it is simply incredible that, when all his disabilities are

175. [James Hunt], "Knox on the Celtic Race," *Anthrop. Rev., 6* (1868), 190—191.

176. Hunt. "On the Negro's Place in Nature" (above, n. 137); [Hunt], "Race in Legislation" (above, n. 139).

177. To wit: "With [the white races] has originated everything that is highest in science, in art, in law, in politics, and in mechanical inventions. In their hands, at the present moment, lies the order of the social world, and to them its progress is committed" (Huxley, "Methods and Results," p. 114).

> removed, and our prognathous relative has a fair field and no favour, as well as no oppressor, he will be able to compete successfully with his bigger-brained and smaller-jawed rival, in a contest which is carried on by thoughts and not by bites. The highest places in the hierarchy of civilization will assuredly not be within the reach of our dusky cousins, though it is by no means necessary that they should be restricted to the lowest.[178]

For all their differing political positions, Hunt and Huxley were in fundamental agreement on a "natural" hierarchy of race, and both put their respective anthropologies to sociopolitical use. While the leading Darwinians, such as Huxley, Galton, and Lubbock, did not engage in the provocative political polemics of the Anthropologists, they were as prone to offer biologically based moral and social guidance. What Weber has called a "moralizing naturalism" characterized the dominant Darwinian tradition from the 1870s on, and she suggests that it was the Darwinians who actually realized Hunt's project of raising anthropology to the level of an applied moral science.[179]

In the mid-sixties, however, Hunt was still in control of his project, and Darwinism had not achieved dominance. On the basis of Weber's persuasive analysis, I suggest that what was really at stake in the negotiations and confrontations between the "new guard" Darwinians and the Anthropologicals during this period was the struggle for hegemony of the ideological role of anthropology in Victorian society. In a period when traditional theological modes of explanation were giving way before a secular redefinition of the world, the Anthropologicals and the Darwinians offered two competing versions of a legitimating scientific naturalism. Hunt's overt introjection of Knoxian biology and anthropology into politics and social legislation impinged on the Darwinian program, as described by Frank M. Turner, of "relat[ing] the advance of science and its practitioners to the physical, economic, and military security of the nation, to the alleviation of social injustice, to the Carlylean injunction of a new aristocracy of merit, and to the cult of the expert. . . ."[180] These were all factors in the struggle

178. Thomas H. Huxley, "Emancipation Black and White" (1865), in *Lay Sermons, Addresses and Reviews* (London: Macmillan, 1870), pp. 25—30; Stepan, *Idea of Race*, pp. 79—80. Huxley made the same point with respect to the higher education of women; see Evelleen Richards, "Darwin and the Descent of Woman," in *Wider Domain of Evolutionary Thought* (above, n. 152), pp. 57—111, esp. pp. 92—93.

179. Weber, "Science and Society" (above, n. 53), p. 280.

180. Turner, "Victorian Conflict" (above, n. 141), p. 363.

that Huxley and his fellow scientists with a Darwinian axe to grind were waging to establish science as a profession worthy of middle-class status and rewards. Within science, in the mid-sixties, both the Darwinians and the Anthropologicals were still outside the establishment. Over the next decade, as Roy M. MacLeod has put it, the Darwinians — from the epicenter of the influential X Club — "increasingly, *were* the Establishment."[181] In the process, they shaped and used Darwinism to further their interrelated professional and social interests, and their negotiations and struggles with the Anthropologicals during this period left their lasting impression on the Darwinian anthropological model.

By 1868, the continuing schism between the two societies had become a serious obstacle to Darwinian dominance of this key discipline and an embarrassment to their professional aspirations — in Huxley's words, a "scientific scandal."[182] He accepted the presidency of the Ethnological Society on condition that its Council support his efforts toward amalgamation.[183] In the meantime, Hunt and the Anthropologicals had become more amenable to amalgamation by virtue of a decline in their numbers and serious financial difficulties. However, once again the negotiations broke down in bitterness. Over the next few years, Huxley kept pushing the idea of amalgamation in the face of the (not unjustifiable) suspicions of the Anthropologicals that he intended to take advantage of dissension within their society in order to "crush" them.[184] While Hunt's active engagement of the Anthropological Society in topical political controversies and the provocative free-wheeling discussions of the meetings initially attracted a large and enthusiastic membership, his iconoclasm and the dominance of the society by Hunt and a small inner coterie, the "Cannibal Clique," alienated more-conventional members and led to factionalism. From about 1868 on, the society was "plagued by debt, resignations, and internal dissension"; in the same period, the

181. Roy M. MacLeod, "Introduction: On the Advancement of Science," in *The Parliament of Science: The British Association for the Advancement of Science 1831—1981*, ed. Roy MacLeod and Peter Collins (Northwood: Science Reviews, 1981), p. 28; and Roy M. MacLeod, "The X-Club: A Social Network of Science in Late-Victorian England," *Notes Rec. Roy. Soc., 24* (1970), 305—322.

182. Huxley to Joseph Hooker, October 24, 1868, Huxley Papers, *V. II*, fol. 140; Stocking, "What's in a Name?" p. 382.

183. Stocking, "What's in a Name?" p. 382.

184. Ibid., p. 383. Peter Martin Duncan had been elected to the Council of the ASL and was actively working on Huxley's behalf to undermine Hunt's authority: Duncan to Huxley, September 8 and 25, 1868; June 2 and 16, 1869, Huxley Papers, *V. XV*, fols. 26—32.

Ethnologicals were reorganized under Huxley's leadership, stepped up their publications, and built up their membership.[185]

As Stocking has pointed out, there was a significant difference in style between the leaderships of the rival societies, which was all to the advantage of the Ethnologicals. While the Darwinians were committed to "one large heterodoxy" and adopted fairly advanced theological positions, they were not inclined to complicate things unnecessarily by flouting the conventions.[186] The leading Darwinians were solid middle-class Victorians — gentlemen and family men "of complete financial, political and sexual respectability."[187] Their collective respectability was of great advantage in the promotion of unorthodox opinion and their acceptance by the scientific establishment, and Huxley and the entire membership of the X Club capitalized on it. By contrast, the members of Hunt's "Cannibal Clique" — who included the notorious Richard Burton — went out of their way to confront middle-class moral values in their dedicated and fearless pursuit of a science untrammeled by theological or social restraint. Their frank and free discussion of subjects such as phallic symbolism, female circumcision, and the anatomy of the "Hottentot Venus," the ferocity and bad taste of their lampoons of prominent scientists, their antimissionary crusade,[188] and their political posturings violated Victorian canons of good taste and propriety. Their unsavory reputation and the internal dissension within the society contributed to their increasing scientific marginalization.

But perhaps of greater importance than the question of style so much emphasized by Stocking (after all, Huxley could be fairly ferocious and unscrupulous in his rout of "parsondom" and in his dealings with scientific opponents) was the narrower ideological appeal of the Anthropologicals' anthropology. Hunt's head-on confrontation with classical liberalism and political economy, his extreme racism, and his biologization of a range of reactionary political and social positions were out of step with the political

185. Huxley to Hooker, January 24, 1868, Huxley Papers, *V. II*, fol. 140; Stocking, "What's in a Name?" p. 383. One of Huxley's innovations was to demarcate between special meetings, where "popular" topics could be discussed, and ordinary meetings, which would be for "scientific" discussions, to which "ladies will not be admitted": "Report of the Council," *J. Ethnol. Soc., n. s., 1* (1869), viii—xv. He thus demonstrated his concurrence with Hunt on this contentious issue, and removed one of the major obstacles to amalgamation. See nn. 130, 178 above.

186. Stocking, "What's in a Name?" pp. 380—381.

187. John W. Burrow, "Introduction" to Charles Darwin, *The Origin of Species*, reprint of 1st ed., ed. J. Burrow (Harmondsworth: Penguin, 1968), p. 4.

188. Rainger, "Race, Politics, and Science," pp. 61—62.

and social needs of a rapidly advancing liberal and "progressive" bourgeoisie. He was ideologically outmatched by Huxley's more subtle accommodation of Darwinian anthropology and biology to the contemporary need for a means by which a "fundamentally inegalitarian society based upon a fundamentally egalitarian ideology rationalized its inequalities."[189] As Desmond has noted, 1866—1870 was a time of "growing trade-unionism and demands for reform, suffrage and educational opportunities," and Huxley's "social stratagem" was to bring science, and Darwinism in particular, to the "*stabilization of capitalist society.*" Huxley was as aware of the socialist threat as Hunt, and his *Lay Sermons* of this period were designed to naturalize the status quo, to make science the "essential accompaniment of right morality and civil order."[190]

Hunt's sudden death in mid-1869 cleared the way for more harmonious relations between the two societies, but Huxley did not succeed in his objective of amalgamation until the beginning of 1871. Even in their state of decline the Anthropologicals were a thorn in the Darwinians' side. While they held out for greater recognition of their science in any proposed amalgamation, they continued with their mix of politics and anthropology, engaging Huxley in a spirited controversy over the Irish problem, which they persisted in interpreting in terms of Knoxian racial history.[191] Among other diversionary tactics, they disrupted a British Association meeting chaired by Huxley by according a tremendous ovation to his old enemy Richard Owen, merely in order to score points against a furious Huxley.[192] Finally, faced with the inevitable amalgamation, they refused to accept Huxley as president, and Lubbock was installed as a compromise candidate. The leading Anthropological dissidents were not ultimately quelled until several years after amalgamation, but by 1873 the Darwinians were firmly in control of the newly formed Anthropological Institute of Great Britain and Ireland, and Huxley's active involvement in racial matters was over. He turned to other issues, while

189. E. J. Hobsbawm, *The Age of Capital 1848—1875* (London: Weidenfeld and Nicolson, 1975), p. 268.

190. Desmond, *Archetypes and Ancestors*, pp. 158—164. Helfand's rereading of Huxley's later famous Romanes Lecture supports Desmond's interpretation: M. S. Helfand, "T. H. Huxley's 'Evolution and Ethics': The Politics of Evolution and the Evolution of Politics," *Vict. Stud., 20* (1977), 159—177. See also Stepan, *Idea of Race*, pp. 80—82.

191. "Professor Huxley on Political Ethnology," *Anthrop. Rev., 8* (1870), 197—216; Rainger, "Race, Politics, and Science," pp, 64—65.

192. "Owen threw wide the door and entered with nods and wreathed smiles, while his great adversary scowled as if he could kill him" (John Beddoe, *Memories of Eighty Years* [Bristol: Arrowsmith, 1910], pp. 212—213).

for the next two decades the Anthropological Institute was led by one after another of the Darwinian "ethnologists": Lubbock, Busk, Lane Fox, John Evans, Tylor, William Flower, and Galton. Significantly, it was Huxley who came up with the name that, as Stocking so succinctly stated, "recognized the science but not the Society" of the Anthropologicals.[193]

CONCLUSION

Historians are now generally agreed that the Darwinian recognition and institutionalization of the polygenist position was more than merely nominal.[194] Wallace, Vogt, and Huxley had led the way, and we may add Galton (1869) to the list of those leading Darwinians who incorporated a good deal of polygenist thinking into their interpretations of human history and racial differences.[195] Eventually "Mr. Darwin himself," as Hunt had suggested he might, consolidated the Darwinian endorsement of many features of polygenism. Darwin's *Descent of Man* was published in the same year that the Anthropological Institute was founded, and it was no coincidence that it was broadly congruent with Knoxian/Anthropological race science. Recent scholarship has stressed the derivative character of the *Descent*, and Darwin's views on race were clearly influenced by the earlier interpretations of the above-cited Darwinians.[196]

However, although the *Descent* was written in the light of the anthropological struggles of the 1860s, it is essential to acknowledge its origins in Darwin's notebooks of the late 1830s and early 1840s. A good deal of the congruence between Darwinian and Knoxian conceptions of race may be traced back to these early notebook constructions. As these document, Darwin, like Knox, brought to his very earliest conceptions of human evolution a "commitment to the idea of human races as discrete biological

193. Stocking, "What's in a Name?" p. 383; Beddoe, *Memories*, pp. 215–216.

194. Stepan, *Idea of Race*, pp. 83–110; Stocking, "What's in a Name?" pp. 384–386; Stocking, "From Chronology to Ethnology" (above, n. 125), p. lxx; George W. Stocking, "The Persistence of Polygenist Thought in Post-Darwinian Anthropology," in idem, *Race, Culture, and Evolution: Essays in the History of Anthropology* (New York: Free Press, 1968), pp. 42–68.

195. Stepan, *Idea of Race*, pp. 126–128.

196. John C. Greene, "Darwin as a Social Evolutionist," *J. Hist. Biol.*, *10* (1977), 1–27; Greta Jones, "The Social History of Darwin's *Descent of Man*," *Economy and Society*, *7* (1978), 1–23; John R. Durant, "The Ascent of Nature in Darwin's *Descent of Man*," in *The Darwinian Heritage*, ed. David Kohn (Princeton: Princeton University Press, 1985), pp. 283–206.

units with distinct moral and mental traits."[197] The young Darwin had been concerned with the same sorts of questions on racial biological and cultural differences that preoccupied Knox around the same time, and he was committed to as ruthless a naturalism. Apart from their individual and independent debts to Quetelet's "moral statistics," both Darwin and Knox drew heavily on the general themes of struggle and adaptation in the contemporary "common context" of biological and social thought.[198] Given their common context, the broad general similarities between the Knoxian laws of race antagonism and subordination and the Darwinian struggle for existence between races need occasion no strained historical explanation of direct influence.[199]

Nevertheless, in more explicit ways, the *Descent* does show the conflation of Knoxian/Anthropological and Darwinian racial views, and Darwin located his discussion of these issues squarely within the dispute "of late years" between polygenists and monogenists.[200] His mature views on race were shaped by the contem-

197. Stepan, *Idea of Race*, p. 51. See Charles Darwin, "M and N Notebooks and Old and Useless Notes," in H. E. Gruber, *Darwin on Man: A Psychological Study of Scientific Creativity* (New York: Dutton, 1974); Gavin de Beer, ed., "Darwin's Notebooks on Transmutation of Species," *Bull. Brit. Mus. (Nat. Hist.)* Hist. Ser., *2*, nos. 2—6 (1960—61), and *3*, no. 5 (1967); Schweber, "Origin of the *Origin* Revisited" (above, n. 30); Herbert, "Place of Man" (above, 122); Jones, "Social History of Darwin's *Descent*."

198. Young, "Malthus and the Evolutionists" (above, n. 53); G. Gale, "Darwin and the Concept of a Struggle for Existence: A Study in the Extra-scientific Origins of Scientific Ideas," *Isis, 63* (1972), 321—344; Steven Shapin and Barry Barnes, "Darwin and Social Darwinism: Purity and History," in Barnes and Shapin, *Natural Order* (above, n. 44), pp. 125—142; John C. Greene, "Biology and Social Theory in the Nineteenth Century: Auguste Comte and Herbert Spencer," in *Critical Problems in the History of Science*, ed. Marshall Clagett (Madison: University of Wisconsin Press, 1959), pp. 419—446. For Darwin's debt to Quetelet see Schweber, "Origin of the *Origin* Revisited," pp. 287—293; and Silvan S. Schweber, "Darwin and the Political Economists: Divergence of Character," *J. Hist. Biol., 13* (1980), 195—289.

199. Although the connection is tenuous, the young Darwin possibly attended some of Knox's famous Saturday lectures on ethnology while he was studying medicine in Edinburgh in the year from 1826 to 1827, when Knox was at the height of his fame as a lecturer and just before the Burke and Hare affair. Darwin's exposure to transcendental and Lamarckian views via his association with Grant in this period is well known, and Manier has recently stressed the young Darwin's enthusiastic response to romanticism: Edward Manier, "History, Philosophy and Sociology of Biology: A Family Romance," *Stud. Hist. Phil. Sci., 11* (1980), 1—24. See also Phillip R. Sloan, "Darwin's Invertebrate Program, 1826—1836: Preconditions for Transformism," in Kohn, *Darwinian Heritage*, pp. 71—120.

200. Darwin, *Descent of Man*, pp. 176, 180. As his references indicate, Darwin had read Knox's major works (see above, n. 5) and (in spite of his distaste

poraneous confrontations and negotiations between the Darwinians and the Anthropologicals. It is within this context that the minor historical puzzle of Darwin's failure to acknowledge Knox's "generic descent" may be explained. Apart from the difficulties of integration and interpretation of his scattered theoretical writings, Knox, through his adoption by Hunt and the Anthropologicals, became identified with anti-Darwinism and therefore with anti-evolutionism.[201] Moreover, Knox, the disreputable and marginal "savage radical" and lately resurrected and equally unsavory "Anthropological," was hardly an acceptable "precursor." Yet, paradoxically, it was via the antithetical medium of the Anthropological platform that Knox's race science made an indirect and unacknowledged, but lasting, impact on the Darwinian anthropological model.

In the *Descent*, Darwin argued that racial traits arose very early in the prehistory of man, were not biologically adaptive, and were therefore relatively fixed in character. By viewing race formation as a distant and closed episode of human history, Darwin endorsed the Knoxian categories of race as fixed and unalterable types. Although he thought it irrelevant whether human races were called species or subspecies, he conceded more to the Knoxian view than Huxley by granting that a naturalist confronted for the first time by specimens of Negro and European man "might feel himself fully justified in ranking the races of man as distinct species."[202] Consistent with the Knoxian interpretation, struggle, competition, and survival occurred between racial units rather than between individuals and, in Darwin's view, accounted for the superiority of the Anglo-Saxon and the inevitable triumph of the more intellectual and moral races over the lower and more degraded ones.

Darwin was as insistent as Knox on the biological basis of intellectual and moral differences, and, through his tendency to

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for their racist ideology) was an assiduous reader of the publications of the defunct Anthropological Society.

201. Richard Owen's struggle to have himself included in the pre-Darwinian evolutionary roll call may be recalled in this connection, and the establishment and ultrarespectable Owen had a good deal more going for him as an acceptable "precursor" than did Knox. See Roy MacLeod, "Evolutionism and Richard Owen, 1830—1868: An Episode in Darwin's Century," *Isis, 56* (1965), 259—280; and Richards, "A Question of Property Rights" (above, n. 78).

202. Darwin, *Descent of Man*, pp. 166—199; quotation on p. 173. Note the reference to Knox in this connection: Darwin characterized Knox as "another firm believer in the specific distinctness of the races of man" (ibid., p. 168n 5). See also Stepan's excellent discussion of the *Descent* in *Idea of Race*, pp. 52—66.

reduce social and cultural differences to biology, he maintained the essential Knoxian/Anthropological link between race and culture.[203] For above all, the *Descent* did much more than offer a naturalistic explanation of human evolution: it proffered social interpretation, justification, and prescription, and its timely appearance gave a powerful boost to the "moralizing naturalism" of Huxley and Galton, and to Spencer's "Social Darwinism."[204] We may draw a straight line from Knox's "moral anatomy," through Hunt's "anthropology," and on to "Social Darwinism" and the "social surgeons" of the eugenics movement.

The Darwinians did not, of course, owe their tendency to naturalize existing economic and social relations to Knox or Hunt and the Anthropologicals — they were simply reflecting the same general intellectual trend that had affected Knox and the Anthropologicals as well. And in the larger context, the forces that had created a climate receptive to Knox's racism had intensified: in the seventies, the need to justify white imperialism and class and racial inequalities was greater than ever. Scientific racism no longer appeared an aberration but the very essence of the scientific study of man, taking on a newfound respectability in the "new" evolutionary anthropology. But in more specific ways, through the struggle between the Darwinians and Anthropologicals for scientific and ideological hegemony, Knox's "moral anatomy" was institutionalized and perpetuated in late Victorian scientific racism. In the process, the delicate balance that Knox had maintained between his radicalism and his racism was outweighed by conservative institutional and social needs, and his "moral anatomy" was retooled — first by Hunt, and then by the Darwinians — to fit those needs.

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203. I have discussed Darwin's biological determinism within the context of Victorian scientific naturalism elsewhere: see Richards, "Darwin and the Descent of Woman" (above, n. 178). Cf. Stepan, *Idea of Race*, p. 86.

204. Richards, "Darwin and the Descent of Woman," pp. 87—89; Weber, "Science and Society" (above, n. 53), p. 280; Robert M. Young, "Darwinism *is* Social," in Kohn, *Darwinian Heritage*, pp. 609—638; James R. Moore, "Socializing Darwinism: Historiography and the Fortunes of a Phrase," in *Science as Politics*, ed. Les Levidov (London: Free Association Books, 1986), pp. 38—80.

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