Chapter One

Climate to Crania: science and the racialization of human difference

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In letters written to a friend in 1790 and 1791, the young, German-trained French comparative anatomist Georges Cuvier (1769-1832) took vigorous humanist exception to recent 'stupid' German claims about the supposedly innate deficiencies of 'the negro'.[1] It was 'ridiculous', he expostulated, to explain the 'intellectual faculties' in terms of differences in the anatomy of the brain and the nerves; and it was immoral to justify slavery on the grounds that Negroes were 'less intelligent' when their 'imbecility' was likely to be due to 'lack of civilization and we have given them our vices'. Cuvier's judgment drew heavily on personal experience: his own African servant was 'intelligent', freedom-loving, disciplined, literate, 'never drunk', and always good-humoured. Skin colour, he argued, was a product of relative exposure to sunlight.[2] A decade later, however, Cuvier (1978:173-4) was 'no longer in doubt' that the 'races of the human species' were characterized by systematic anatomical differences which probably determined their 'moral and intellectual faculties'; moreover, 'experience' seemed to confirm the racial nexus between mental 'perfection' and physical 'beauty'.

The intellectual somersault of this renowned savant epitomizes the theme of this chapter which sets a broad scene for the volume as a whole. From a brief semantic history of 'race' in several western European languages, I trace the genesis of the modernist biological conception of the term and its normalization by comparative anatomists, geographers, naturalists, and anthropologists between 1750 and 1880. The chapter title — 'climate to crania' — and the introductory anecdote condense a major discursive shift associated with the altered meaning of race: the metamorphosis of prevailing Enlightenment ideas about externally induced variation within an essentially similar humanity into a science of race that reified human difference as permanent, hereditary, and innately somatic. The discussion pivots initially on the varied disputes over human unity or diversity and monogeny or polygeny which engrossed the science of man in Britain and France. The resolution or supersession of these debates with the application of evolutionist theory to man shaped the particular national trajectories taken by the discipline of anthropology for the rest of the century and beyond.

Slippery word

According to the *Oxford English Dictionary* (2008, hereinafter *OED*), the etymology of the English term 'race' and its European cognates is 'uncertain and disputed'.[3] The *OED* derives race ultimately from Italian *razza*, via French *race*, and the semantic history of the English term is entangled with continental meanings. Dictionary definitions say nothing *per se* about a word's history and inevitably lag well behind embryonic usages. But inclusion in a dictionary does register the prior normalization of a meaning. The *OED*'s earliest citations date from the sixteenth century when, with reference to man, the concrete noun race signified a family, a kindred, or the posterity of a common ancestor, as in the 'race & stocke of Abraham' (1570). More generally, it meant a 'tribe, nation, or people regarded as of common stock', as in 'the Englishe race' (1572), or served as a synecdoche for humanity, as in 'the humane race' (1580).

The primary connotations of consanguinity and shared origin or descent are patent in the several translations of *une race*, 'a race', in an early French-Latin dictionary — they include *familia* ('house', 'family'); *gentilitas* ('kindred'); *genus* ('birth'); *sanguis* ('blood', 'descendant'); and *stirps* ('stock', 'stem', 'root', 'offspring').[4] The first French dictionary (Nicot 1606:533-4) explains that *race* 'signifies origin [*extraction*]', as in 'man, horse, dog, and other animal of good or bad race' or 'a noble race and house'. The *OED* cites parallel English usages from half a century earlier. This semantic conflation of a race with family breeding served to fortify the prerogatives of nobility over populace.[5] The first edition of *Le dictionnaire de l'Académie françoise* (1694, II:364) defines *race* as 'progeny [*lignée*], lineage [*lignage*], origin, all those who come from a single [noble] family'. Applied to domestic animals, it connoted Latin *species*, 'sort', 'kind', 'species'.[6] This suite of usages hardly varies up to the fifth edition of the *Dictionnaire de l'Académie* (1798, II:407) and recurs in the sixth (1835, II:553). The genealogical definition given for the English term race by Samuel Johnson (1709-1784) was similarly unchanged between the first edition of his *Dictionary of the English Language* (1756) and the revised eleventh edition (1799), published more than a decade after the lexicographer's death. But *race*/race were minor words in French and English before the late eighteenth century while their German equivalent *Race* or *Rasse* was a recent borrowing from French and rarely used (Forster 1786:159).

Importantly, however, the sixth edition of the *Dictionnaire de l'Académie* (1835, II:553) also gives an extended signified for *race*: 'a multitude of men who originate from the same country, and resemble each other by facial traits, by external form. *The Caucasian race. The Mongol race. The Malay race*'. The *OED* likewise cites late eighteenth-century and subsequent uses of race to mean 'any of the major groupings of mankind, having in common distinct physical features or having a similar ethnic background'. These emergent meanings are lexical

confirmation of a series of important shifts in the linguistic and ideological significance of race in western Europe from the mid-eighteenth century as naturalists appropriated the term to serve novel taxonomic ends.[7] The word's dominant scientific sense became narrowly biological while the permeable humoral body of classical conception solidified into the bones, nerves, flesh, and skin of the measurable, dissectible anatomical body (Wheeler 2000:26-7).

Changing connotations

The biologization of race was preceded by significant extension of its older genealogical referents as some writers extrapolated the term to label extensive populations. They included the French physician and Asian traveller François Bernier (1620-1688), the German mathematician and philosopher Gottfried Wilhelm Leibniz (1646-1716), the French mathematician, astronomer, and biologist Pierre-Louis Moreau de Maupertuis (1698-1759), the Anglo-Irish writer, poet, and physician Oliver Goldsmith (1730?-1774), and the French naturalist Georges-Louis Leclerc, comte de Buffon (1707-1788),[8] whose expanded use of the term 'Lapp race' (Sami) provoked some disapproval.[9] In these extended usages, race was usually a concrete noun more or less interchangeable with 'tribe', 'nation', 'people', 'variety', 'class', 'kind', or 'species'. Leibniz used the word rarely but defined it relationally as 'generational series', '*genealogy*'.[10] Race was applied to Oceania in this fluid sense by the French *littérateur* Charles de Brosses (1709-1777), a friend of Buffon, and by the German naturalists Johann Reinhold Forster (1729-1798) and his son Georg (1754-1794), who sailed with James Cook (1728-1779) on his second Oceanic voyage of 1772-75.[11]

As subdivisions of a single human species, varieties or races were distinguished by physical criteria, especially skin colour, in addition to language, religion, customs, and supposed level of 'civility'. In practice, the venerable, widely-held tenet that all people shared a common origin and were essentially alike was in serious tension with pervasive distaste for non-whites and non-Christians. Following the overseas expansion of Europe and growing involvement in the west African slave trade from the mid-fifteenth century, a set of purportedly 'Negro' characteristics had become Europe's negative standard for the description and comparison of human beings. Nonetheless, prevailing Christian or neoclassical cosmologies generally ascribed both physical appearance and degree of civilized development to the transient effects of climate, other external conditions, history, or way of life, more than to heredity, and in principle espoused a universal potential for salvation or progress towards the civilized state.[12]

The changed and charged import of the concept race in the early nineteenth century is commonly seen by historians of ideas as a by-product of the abstract taxonomic method instituted from the 1730s by the Swedish botanist Carl

Linnaeus (von Linné) (1707-1778). By this argument, Linnaeus 'blurred' the frontier separating man from animals by classifying both within the same 'natural system' and thereby 'brought to light new differences between men'.[13] In the tenth edition of *Systema Naturae* (1758:5-24), he classed all known human geographical varieties within the single species *Homo sapiens* but included *Homo*, 'Man', within the 'Animal Kingdom' as the first genus in the mammalian order of primates, alongside *Simia*, 'Ape'. This failure to isolate man from the rest of creation and from the anthropoid apes in particular threatened the dogma of the singularity of mankind and outraged conventional opinions. In the monumental *Histoire naturelle, générale et particulière* (1749-89), Linnaeus's great rival Buffon criticized abstraction and classification alike: he transformed the abstract category *espèce*, 'species', by insisting on its 'real existence' and material historical continuity as a 'constant succession of similar individuals who reproduce themselves'; and he refused to position man in formal taxonomic relationship with animals. But by encompassing humanity within 'natural history', he eventually naturalized man as a physical species distinguished from animals only by the fragile criteria of speech and reason.[14]

Tzvetan Todorov (1989:126) damned Buffon for espousing 'the racialist theory in its entirety' but the charge is scarcely applicable to the haphazard, ambiguous use of *race* in Buffon's long essay on 'Varieties in the human species' (1749, III:371-530). He first systematically applied *race* to human beings in a much later *Supplément* to the *Histoire naturelle*, but with the broad connotation of 'resemblance' rather than direct filiation. He justified his earlier use of the phrase 'the Lapp race' by differentiating 'the word race in the most extended sense' from its 'narrow' (genealogical) meaning, synonymous with *nation*. An extreme climate had produced such 'resemblance' between all people living north of the Arctic Circle, whatever their 'first origin', that they had become 'a single identical race' though they were 'not of the same nation'. Juxtaposing two major signifieds of the French term *espèce* ('kind'/'species') and identifying *race* with the vaguer common sense, he concluded that these polar people were 'a single, similar kind of men [*espèce d'hommes*], that is, a single race different from all the others in the human species [*espèce humaine*]'.[15] The apparent biological modernity of this formulation is deceptive since Buffon continued to assert that the 'great differences between men depend on the diversity of climate'. In this conception, the *variétés*, *races*, or *espèces d'hommes* of the single *espèce humaine* remained flexible, theoretically reversible products of climatic variety and other external influences and were neither innately organic nor immutable.[16]

Though Maupertuis (1745:153-60) rarely used the word *race* in his short biological treatise *Vénus physique*, he proposed a prescient epigenetic theory of reproduction which made human physical diversity primarily the product of internal hereditary processes rather than the external 'influence' of climate and

diet. By contrast, there is no hint of a biological account of race formation in Buffon's original essay which attributes the characteristic physical differences 'of the various peoples' to the impact of climate, food, and lifestyle but does not seek to explain why. From 1753, Buffon gradually enunciated a theory of the organic alteration of species through degeneration triggered by external conditions but he only applied these emerging ideas to human beings in the mid-1760s, when he argued that the quality of food channels 'the influence of the land' to alter man's 'internal form'. Perpetuated 'by generation' — but reversible in principle in a restored favourable environment — such organic changes 'became the general and constant characters in which we recognize the different races and even nations which compose the human genus'.[17] Still later, Buffon (1778:248) qualified his thesis of human degeneration with the proposition that the process of becoming civilized could itself enable and sustain organic improvement in man through better nutrition and 'plentiful reproduction'.

In Britain, Goldsmith (1774, II:212-42) avowedly synthesized Linnaeus and Buffon by distilling a formal classification of mankind into 'six distinct varieties', labelled geographically as the 'polar' race, 'the Tartar race', 'the southern Asiatics', 'the Negroes of Africa', 'the inhabitants of America', and 'the Europeans'. This explicit identification of discrete racial 'classes' flew in the face of Buffon's refusal to indulge in human taxonomy but in most respects Goldsmith's propositions were slavishly, if simplistically Buffonian. He differentiated man mainly on the basis of the 'tincture of his skin' and explained these differences as 'degeneracy' from a 'beautiful' white original caused by 'varieties of climate, of nourishment, and custom'. And, like Buffon, he concluded that such 'accidental deformities' would probably disappear in the long run with a 'kinder climate, better nourishment, or more civilized manners'.

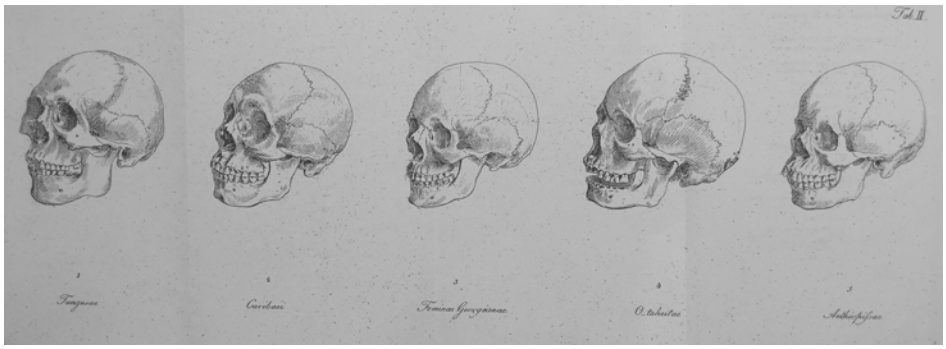
New imperatives: taxonomy and biology

The German comparative anatomist Johann Friedrich Blumenbach (1752-1840) was a pivotal figure in the taxonomic and biological turns in the natural history of man and literally inscribed the changing import of the concept of a race. The oft-asserted primary motives for his 'favourite anthropological studies' were to prove the singularity of man's place in the animal kingdom — 'poles apart from the Orangutang' — and establish the membership of all human beings within 'the same common species'. But he also insisted that the normal process of classifying 'the races and degenerations' of animals and plants be applied to 'the varieties of mankind that had emerged from its common original stock'.[18]

Accordingly, in the radically revised third edition of *De Generis Humani Varietate Nativa*, 'On the Natural Varieties of Mankind', Blumenbach (1795:284-7) formalized his long emergent classification of the 'five foremost varieties of mankind, one true species', and labelled them 'Caucasian', 'Mongolian', 'Ethiopian',

'American', and 'Malay' (Figure 4). Through the three Latin editions of this work (1775, 1781, 1795), the concrete nouns Blumenbach used most often to refer to units of collective human difference were *gens*, 'nation', 'race', 'people', and *varietas*, 'variety'. Neither connoted a race in the narrowly biological sense but whereas he saw *gens* as a real, 'natural division', *varietas* was a 'general division' in a taxonomy 'which we constituted'.[19] In the penultimate section of the third edition of *De Generis Humani*, Blumenbach (1795:114-283) drew extensively on empirical descriptions of actual *gens* to illustrate his deduction that collective human 'degeneration' or change — as indexed particularly in 'national differences in [skin] colour' — resulted from the operation of external physical causes on a single migrating human species rather than from an original plurality of species. In the final section (1795:284-322), he moved from a consideration of abstract *varietas*, 'diversity', 'variety', in the major elements of human physical appearance to the formal classification of human beings into a small number of theoretically concrete *varietas*, 'varieties'. At this point, the empirical noun *gens* almost disappears, to be largely replaced by two botanical metaphors, *stirps* and *stemma*, both connoting descent from an ancestral stock.[20]

Figure 4: Anon., 'Crania collectionis meae quina selectissima adumbrat, ad totidem generis humani varietatum principalium diversitatem demonstrandam: 1. *Tungusae*; 2. *Caribaei*; 3. Feminae juvenis *Georgianae*; 4. *O-taheitae*; 5. *Aethiopissae Guineensis*'.[21]



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The publication in 1798 of a German translation by Johann Gottfried Gruber (1774-1851) of the third edition of *De Generis Humani* was identified by Timothy Lenoir (1980:93) as a key moment in the articulation of Blumenbach's taxonomic lexicon and more generally in the biologization of the term race.[22] A close reading shows why. For much of the text, Gruber paralleled Blumenbach's Latin terminological mix and usually translated his concrete nouns *gens* and *varietas* respectively as *ein Volk*, 'a people', 'a nation', and *eine Varietät*, 'a variety'. *Stemma* and *stirps* are generally *ein Stamm*, 'a stock', 'a stem', but occasionally *eine Rasse* or *Race*, 'a race', always with reference to Blumenbach's problematic category

of the Malay race — in these instances, the term had what Georg Forster called the 'undetermined' implication of a 'crowd' of people of 'idiosyncratic character' but 'unknown ancestry'.[23] Otherwise, *Rasse*/*Race* scarcely figure in the translation until the final section (1798:203-24). Here, *Varietät* is used initially for the taxonomic unit *varietas* but is abruptly supplanted by *Race* as the work climaxes in detailed characterization of Blumenbach's five *Abarten*, 'hereditary varieties', of mankind. The insertion of *Race* where the Latin text moves definitively into taxonomic mode was no mere whim but a deliberate semantic strategy by both author and translator, as Gruber (1798:259-61) made clear in a long appendix. In response to his own rhetorical complaint about the lack of a consistent classificatory vocabulary for the natural history of man, he lauded the precise *Natureintheilung*, 'natural classification', proposed by 'our great Kant'.

Gruber was alluding to a series of papers in which the German philosopher Immanuel Kant (1724-1804) had addressed a paradox at the core of natural history: the presence of radical, seemingly permanent physical diversity in a single human species with a common ancestral stock.[24] Kant's solution was to yoke teleology to genealogy in order to explain present human *Verschiedenheit*, 'variety' in the abstract, in terms of the triggering in different environments of pre-existent *Keime*, 'germs', or *Anlagen*, adaptive natural 'predispositions', within the single original *Menschenstamm*, 'human stock'. In the process, he formally differentiated *Racen*, 'races', from *Arten*, 'species', on the one hand, and from *Varietäten*, 'varieties', on the other: individuals of different races of the same *Stamm* could interbreed and produce fertile hybrid offspring, unlike those belonging to different species; while races, unlike varieties, 'remain constant over prolonged generation' when transplanted and could engender stable hybrids. Accordingly, a race was 'inevitably hereditary' and the demonstrated capacity to propagate a *Mittelschlag,* 'blended character', was a prime determinant of Kant's human classification.[25] This partial epigenetic theory differed from that of the mature Buffon in a crucial respect: for Kant, human races were structurally distinct because the original *Stamm* was predisposed to be permanently and irreversibly adaptive to different external conditions, making skin colour the paramount outward sign of 'natural' inner organic differences and capacities; whereas for Buffon, the human 'germ' was everywhere the same, degeneration was externally induced and theoretically reversible, and variations in skin, hair, and eye colour were 'superficial' products of 'the influence of climate only'.[26]

Lenoir (1980:92-5) linked Blumenbach's formal endorsement of Kant's biological terminology in 1798 to a recent metamorphosis in Blumenbach's thinking: his acknowledgment of reproductive criteria as critical signifiers of human diversity alongside his longstanding emphasis on morphology. In 1797, Blumenbach had modified his earlier insistence on external causes of morphological differences, especially in skin colour, by defining race along

generative Kantian lines and invoking empirically the diagnostic significance of racial mixing: 'the word *race* indicates a character born of degeneration which necessarily and inevitably becomes hereditary through reproduction, as for example when whites engender mulattos with negroes, or métis with American indians'. He then acknowledged Kant as the first to identify heritability as the main 'difference between races and varieties'.[27] The imprint of Kantian terminology is patent in key changes between the 1790 and 1806 editions of Blumenbach's *Beyträge zur Naturgeschichte*, 'Contributions to Natural History'. In the first edition (1790:79-83), he briefly outlined but did not name the pentad of human 'varieties' that he had already sketched, also unnamed, in the second edition of *De Generis Humani* (1781:51-2), translating his own Latin phraseology directly into German as *fünf Spielarten*, 'five varieties/sports'.[28] The second edition of *Beyträge zur Naturgeschichte* (1806:55-66) includes a new section extolling the value of 'anthropological collections', notably Blumenbach's own, for an empirically based natural history of mankind. His unequalled assemblage of the 'skulls of foreign nations' rendered corporeal the paradox of human unity in diversity (that Kant's biology had resolved deductively): the collection displayed the 'identity of mankind as a whole' and the 'boundless transitions' linking its physical 'extremes'; but concurrently it provided 'proof of the natural division of the whole species into the five principal races [*Hauptrassen*]'. In the following section (1806:67-72), rehearsing his now named classification, he retained *Spielarten* as a general term for 'the varieties of mankind within its common original stock' but systematically substituted *Rassen* for *Spielarten* when referring to the particular divisions — his five *Hauptrassen* — suggested by his reading of the 'open book of nature'.

The insertion of *Race* or *Rasse* into Blumenbach's taxonomic vocabulary between 1795 and 1806, where he had previously used *Varietät* or *Spielart*, is a textual marker of the precipitation of a narrower, biological connotation of a race from a much older semantic slurry. It also signals the incipient normalization of hereditarian ideas of human difference in conjunction with new anatomical and physiological knowledge that challenged climatic and humoral explanations. In France, the altered usage slid easily into the technical lexicon of the natural history of man and the term race was duly redefined in the sixth edition of the *Dictionnaire de l'Académie* (1835). For instance, a prospectus for the shortlived Société des Observateurs de l'Homme issued in 1801 by the society's perpetual secretary and Cuvier's ally, the pedagogue and publicist Louis-François Jauffret (1770-1840), called for a 'methodical classification of the different races' grounded in a 'complete work on the comparative anatomy of peoples' (1978:74). On the cusp of this racialization of human difference, Cuvier exercised considerable practical influence in the emerging science of race, belying the relatively little he published on the subject.[29] If in the early 1790s he had refused to attribute supposed Negro shortcomings to their anatomy, by the end of the century

(1978:173-4), he had clearly imbibed Kant's and Blumenbach's reconfiguration of *Rassen* as organic and hereditary.

Cuvier's most authoritative pronouncement on human variation comprises a ten-page segment of his magnum opus *Le règne animal*, 'The Animal Kingdom' (1817a), concluding his discussion of the 'first order' of mammals, the '*Bimana* or Man'. He first sketched a standard four-stage Enlightenment theory of human progress:[30] 'man's development' was 'retarded' or 'advanced' at very different 'degrees' according to 'circumstances' such as climate, soil, and vegetation. But two ominous provisos qualified this universal schema and underwrote a rigid racial taxonomy: that the human species showed 'certain hereditary conformations which constitute what we call *races*'; and that 'intrinsic causes' appeared to 'halt the progress of certain races, even in the most favourable circumstances'. Earlier in the text, Cuvier had expressed strong doubt that all the characteristic differences between 'organized beings' could be produced 'by circumstances'. He now identified three 'eminently distinct' major human races characterized by congenital somatic features: the 'white, or Caucasic', ('to which we belong'), was typified by the 'beauty' of its 'oval head form'; the 'yellow, or Mongolic', by its 'prominent cheek bones', 'flat face', and 'narrow, slanting eyes'; and the 'negro, or Ethiopic' by its 'black' complexion, 'compressed skull', and 'squashed nose' while its 'projecting snout [*museau*] and thick lips put it visibly close to the apes'.[31] Faithful to the genre, the prose of these passages is purportedly scientific and definitive but nonetheless shot through with ill-disguised racialist presumptions. Yet the argument at this point follows logically from the seemingly objective principles of the science of animal 'organization' outlined in the book's introduction.[32] There, Cuvier had asserted a functional relationship between the extent of development of an animal's nervous system, the 'relative size of the brain', and its 'intelligence'. In conjunction, these factors determined the 'degree of animality', Cuvier's core criterion for the hierarchical grading of animals, implicit in his ranking of human races, and the ultimate source of the 'intrinsic causes' that allegedly stymied the 'progress of certain races' (Figlio 1976:24-5).

The novel signified of race as an hereditary natural category percolated more slowly into English, kept at bay by Evangelical philanthropic values — personified in the physician ethnologist James Cowles Prichard (1786-1848) — which retained ideological and moral ascendancy in the natural history of man in Britain until the mid-nineteenth century (Stocking 1973). The term race occurs relatively seldom in the first edition of Prichard's *Researches into the Physical History of Man(kind)* (1813) and more often in the second (1826), but in both is used in the loose eighteenth-century sense. The earlier text (1813:233-9) broadly differentiates 'savage' from 'civilized' but the logic of Prichard's speculative history of mankind made it 'probable' that the 'fairest races of white people in

Europe' were ultimately descended from 'Negroes'. Yet by 1850, the language applied by British humanitarians to non-whites, particularly Negroes and Aboriginal Australians, was often as racialized as that used earlier in the century by uncompromisingly physicalist French naturalists (Hall 1991, 2002). Prichard had rapidly shelved his early thesis that 'the primitive stock of men were Negroes'. In the third edition of *Researches* (1836–47), he reinscribed without comment the scurrilous racial terminology and discriminations of his (often French) sources and in the process essentialized the characters of certain races in very negative terms: 'the Australians', for example, were 'squalid', 'miserable hordes', 'repulsive', 'disgusting', and 'ferocious'. His conventional distaste for stereotyped Negro anatomy, muted in 1813, was now palpable: the corollary of 'black' skin and 'crisp' or 'woolly' hair was 'features of a corresponding ugliness'.[33]

In the earlier editions, the concept of races was sufficiently inconsequential to be left undefined but by the 1830s Prichard was prepared to naturalize 'those varieties in complexion, form, and habits, which distinguish from each other the several races of men'. The discursive dimensions of this shift are clear: the reification of human physical variation is manifest in the 'analogical' sections of the work which address 'the most strongly marked *anatomical diversities of human races*'; in contrast, qualifications, exceptions, and great diversity within races are ruling themes in the 'historical or ethnographical' sections which seek to delineate 'actual' changes in the 'physical characters' of nations or races.[34] The greater salience of the term race in the final edition of *Researches* parallels Prichard's increased resort to taxonomy and comparative anatomy. He had made little attempt to classify human groupings in the first edition but contextually identified a shifting set of descriptors with respect to 'varieties of form and colour': seven 'varieties of colour' but an indeterminate five 'Races' or varieties in the overall 'structure of the parts in which the variety of colour subsists'. At this stage, Prichard privileged colour as a more 'general' and more 'permanent' discrimination than 'peculiarities of figure'. In the second edition, he distributed 'the human family' into unnamed, geographically defined 'departments' marked at once by 'important physical diversities' and conversely by 'remarkable approximations to the characters prevalent in other tribes'. In the third edition, racial taxonomy and anatomy loomed larger still. Exhaustive comparison of 'the principal varieties of form and structure which distinguish the inhabitants of different countries' saw him identify seven 'classes of nations' which differed 'strikingly from each other' and were 'separated' by 'strongly marked lines', especially 'peculiar forms of the skull'.[35]

Yet Prichard always remained ambivalent about the racialization of human variation and at times tried to subvert the growing contemporary hegemony of the term race itself. His modern editor George Stocking, Jr. (1973:lxxi, lxxvi) argued that Prichard's nominalist distribution of human varieties into 'classes

of nations' and his rejection of a higher level classification into a few racial types served to deny his classes 'the assurance of affinity [common descent] that alone would justify their designation as "races"'. There was surely an oppositional politics to Prichard's caveat, 'the various human races, if such exist'; to his consigning 'varieties' to 'the external and less essential parts' of 'the animal economy'; to his avowal of the 'common psychical nature' of mankind; and to his insistence that 'there are differences equally great, and even greater, between individuals and families of the same nation' as between different races.[36] In the end, Prichard was prepared to normalize races and embrace 'diversification and differentiation' in order to turn them against a greater peril — the increasingly fashionable doctrine of 'an original diversity of races'. By defining 'races' as 'properly successions of individuals propagated from any given stock' but insisting that the term not imply 'that such a progeny or stock has always possessed a particular character', he explicitly refuted 'writers on anthropology' who took for granted that racial distinctions were 'primordial' and transmitted in 'unbroken' succession. Such a race 'would be a species in the strict meaning of the word' — a position Prichard consistently rejected, as did most of his British colleagues until after 1850.[37]

That year, in *The Races of Men*, the Scottish anatomist Robert Knox (1791-1862) assailed the Prichardian creed and pronounced his notorious dictum: 'Race is everything: literature, science, art, in a word, civilization, depend on it'. The book was a collection of lectures delivered five years previously in provincial cities. At the time, Knox recalled, his views had been ignored by the London press; but since the outbreak of 'the war of race' in continental Europe — he meant the social and political upheavals of 1848 — the word race was in 'daily use' and his ideas had been appropriated by a 'leading journal'.[38] Prichard (1850:147) also noted the sudden 'importance in public attention' assumed by the 'subject of human races, and their division' within Europe. By 1860, the primacy of race in the vocabulary of human difference in Britain was consistent, prosaic, and empirical. For instance, the word persistently infiltrated the 1865 English translation by Thomas Bendyshe (1827-1886) of the third edition of Blumenbach's *De Generis Humani* (1795): *varietas* and *gens* are sometimes 'race'; adjectival inflections of *gens* are usually 'racial'; and even *stemma* and *stirps* are frequently 'race'.[39]

The biological notion of race emerged and gained potency in a complex historical conjuncture. Intellectually, the information about non-white people pouring into Europe from around the globe both enabled and seemed to require the demarcation of new scientific disciplines — notably biology and anthropology — which classed human beings as natural objects. Publicly, the escalation of European encounters with non-Europeans provoked fear and revulsion about supposed 'savages', not least in Oceania where several famous navigators met

violent deaths at indigenous hands. Morally, the intensifying battle over slavery pushed abolitionists and defenders of slavery to adopt opposed scientific positions on the humanity or otherwise of Negroes. Imperially, a new phase of colonialism sought a philosophical basis for suppressing or governing indigenous people. Politically, revolution in France triggered dark imaginings about savages at home and abroad while its reactionary aftermath domesticated racial thinking by representing internal conflicts as the clash of a 'Gallic' third estate and a 'Germanic' nobility. By the mid-nineteenth century, the propensity to racialize local disputes had gripped much of Europe.[40]

Original unity and the paradox of human differences

In a single chapter, it is only possible to scratch the surface of the complex intersections whereby a novel meaning of race was normalized across a wide spectrum of western Europe discourses, as holistic, 'environmentalist' Enlightenment explanations for human variety and change lost ground to the differentiating physicalist agenda of biological determinism and taxonomy. I focus on the overlapping, recurrent tensions between ideas of human unity and diversity and between monogeny and polygeny, culminating in their partial resolution by evolutionist theory. These mobile, ambiguous relationships and the ideological conflicts, accommodations, transitions, and national variants they condense are illustrated by comparisons of key contributions to ongoing debates in France and Britain from the early nineteenth century to about 1880.

The period in question saw an emphatic shift in thinking about unity and diversity in the natural history of man, with belief in racial differences steadily outfacing the doctrine of human similitude. Anticipated in the semantic history of race, vocabularies of difference hardened, initially in Germany and France and somewhat later in Britain. As with changing usage of the word race, the relative emphasis on human unity or diversity is usefully mapped across the published corpus of several prolific, long-lived authors. The conundrum of diversity in unity dominates the writings on man of Buffon, who vigorously defended the orthodox position that all human beings belonged to a single species but eschewed classification while exhaustively cataloguing the ambiguous, mutable division of humanity into *variétés* or *races*. Blumenbach's lengthy intellectual effort to reconcile his belief in 'the identity of mankind as a whole' with the 'phenomena of corporeal diversity' was an ongoing preoccupation evident from his earliest work in Latin, which classifies mankind into four flexible *varietas*, to his later works in German which redefine varieties as five hereditary *Racen* or *Rassen*.[41] Prichard (1836-47, I:vii, 2, 9), too, always upheld the 'common parentage' and 'unity of species in all human races', despite 'the striking diversities in their aspect and manner of existence' which he spent forty years cataloguing anatomically and attempting to explain along historical or linguistic lines.[42]

In 1800, the French zoologist Etienne de Lacépède (1756-1825), who continued Buffon's *Histoire naturelle*, opened his zoology course at the Muséum national d'Histoire naturelle with a lecture on 'the races or principal varieties of the human species' whose original unity he took for granted. However, he invoked a kind of congealed late Buffonian biology to argue that at a very remote epoch, when climatic extremes were great enough to 'deform' the human body's 'most solid parts', there had been a radical organic differentiation of the human species into 'at least four races': 'Arab-Europeans', 'Mongols', 'Africans', and 'Hyperboreans'. He speculated that the Americas might originally have been occupied by a fifth, 'very distinct', 'truly aboriginal race'. The only Oceanian people to figure in this schema are 'the Malays' whom Lacépède thought were probably Mongols but might be descended from 'individuals of the European race', specifically Arabs or Phoenicians. They had ranged far beyond their place of origin in the Malacca (Malay) peninsula to settle New Holland, New Zealand, the Pacific Islands, and perhaps Peru. He also endorsed Buffon's argument that in 'very civilized countries', 'the art of man' could 'counterbalance the influence of climate'.[43] Two decades later, Lacépède (1821:383-94) revisited the theme of human diversity in a dictionary entry on 'Man'. The tone is markedly harsher and the terminology Cuvierian. Still 'alone in its genus', the human species was nonetheless divided by 'particular hereditary conformations, produced by constant general causes, which constitute distinct and permanent races'. Lacépède's 'great races' have shrunk to Cuvier's standard three — Caucasic, Mongol, and Negro or Ethiopic — which he sharply differentiated according to 'distinctive' physical characters, especially a marked divergence in facial angles.[44] He also identified several 'independent' lesser races. One was the Malays, whom he praised as 'active, audacious, intelligent' and positioned racially 'midway between the Mongols and the Negroes'. Another was 'the Papuans' of New Guinea, New Holland, and New Caledonia whom he vilified as 'the men least favoured by nature' and racialized as 'Asiatic representatives' of Africans but positioned even further from 'the Arab-European race' in physical conformation and their 'almost savage state'.

Notwithstanding his commitment to racial taxonomy and his adoption of a biological terminology to describe it, Blumenbach always insisted that any division of the single human species could only be 'arbitrary, and not at all clear-cut' because all 'national' somatic differences ran into each other 'by so many nuances' and 'imperceptible transitions'.[45] The earlier Lacépède (1800:7, 16-20, 30-1) allowed that the transition from the 'ignorance' of the 'semi-savage state' (epitomized in 'the African race') to the 'science', 'industry', 'ethics', 'sensibility', and 'reason' of civilization (epitomized in 'the Arab-European race') involved myriad 'insensible nuances' over an 'immense time'. But the idea of nuance is absent from Lacépède's later work and was evidently also lost on his Muséum colleague Cuvier who acknowledged human unity at the higher

taxonomic levels but was noncommittal about the singularity of the human species.[46]

From Linnaeus to the early Lacépède, Enlightenment classifications mostly recognized the potential equality of all human beings in contradistinction to other animals and did not systematically rank the varieties or races into which the single human species was partitioned: such divisions were often taken to represent different stages along a unilinear trajectory of common human development from savagery to civility. But Cuvier's comparative anatomy entrenched racial inequality and hierarchy as immutable products of physical organization, notably the size of the brain as indexed by the crude gauge of the cranio-facial ratio: 'the more the brain grows, the more the skull that contains it increases in capacity; the more considerable it becomes in comparison with the face'. At the time — 1800 — the racial corollaries of his theory were still implicit but already damning: the area of a vertical section of 'the European' skull was 'almost four times that of the face'; the area of the face increased 'by about a fifth' in 'the negro', by 'only a tenth' in 'the calmuck' (Mongol), but by a 'slightly lesser proportion' in 'the *orang-outang*'.[47]

That same year, Cuvier (1978:171-3) instructed impending voyagers to seek empirical confirmation of the undoubtedly marked differences between the 'races of the human species' in certain key anatomical features: 'the proportion of the cranium to the face [cranio-facial ratio], the projection of the muzzle [facial angle], the breadth of the cheekbones, the shape of the eye-sockets'. These 'diverse structures', moreover, appeared to have significant 'influence' on the 'moral and intellectual faculties' of races. By 1817 (1817b:273), he was drawing an unequivocal nexus between the size of 'the skull and the brain' and a purported 'cruel law' (of nature) which had 'condemned to eternal inferiority the races with depressed and compressed skulls'. In *Le règne animal* (1817a, I:82, 94-5), Cuvier translated the 'distinctive' physical characters of his three major races into an explicit racial hierarchy expressed in an implicit history of racial progress or stasis: the Caucasic race was 'the most civilized' and 'generally dominated the others'; Mongolic civilization had 'always remained stationary'; while the component peoples of the Negro race had 'always remained barbarians'.

Cuvier's adamant biologism was reinscribed in Britain by the surgeon and comparative anatomist William Lawrence (1783-1867) whose 1818 lectures to the Royal College of Surgeons on the organic nature of life and the natural history of man provoked a storm of criticism when published the following year. His stated aims (1819:119) were 'to consider man as an object of zoology' and to explain 'the principal differences between the various races of mankind'. The perennial tension between human unity and diversity is patent in this book's incongruous mix of scientific logic with humanitarian or relativist gestures and a priori racial essentialism. Lawrence dedicated his work to Blumenbach; praised

Prichard; condemned slavery as 'revolting and antichristian'; proclaimed man's 'broad' distance from 'all other animals'; and asserted human specific unity: 'the various races' were only 'varieties of a single species'. Yet, (unlike Prichard), he refused on the grounds of inadequate 'data' to consider the question of whether all men 'descend from the same family' or to affirm 'that all the varieties of man have been produced from one and the same breed'. He maintained 'unequivocally' the structural approximation of 'the Negro' to 'the monkey'. He lionized Cuvier and echoed his position on the biological discreteness and differential endowments of races: 'comparison of the crania of the white and dark races' revealed 'the retreating forehead and the depressed vertex' of the 'dark varieties' which determined their 'moral and intellectual inferiority', 'limited' their 'natural capabilities' for civilization and Christianity, and ensured that 'Negroes' were 'every where, slaves to the race of nobler formation'.[48]

At the time in Britain, such racialist views no doubt struck popular chords but they were also widely denounced, in large part because they raised the spectre of heterodoxy emanating from France. Philanthropists and Evangelicals accused Lawrence of materialism — because he maintained that life and thought were purely organic — and of denying the equality of all men before God; Tories deplored his democratic politics; and the book was denied copyright and withdrawn from publication. This ensured its success since it circulated in numerous pirated editions for at least the next fifty years.[49] During this period, Lawrence's derivative but accessible synthesis of recent thinking about heredity and race formation was cited approvingly across the spectrum of the emerging British science of race: from Prichard, to the pioneer fieldworker, collector, and evolutionist Alfred Russel Wallace (1823-1914), to the anti-evolutionist, extreme racialist anthropologist James Hunt (1833-1869).[50]

Intimating polygeny

The teleological debate over human unity or racial diversity that convulsed the science of man after 1750 took its most extreme shape in the hostile opposition of the doctrines known from the mid-nineteenth century as 'monogeny' and 'polygeny'. Did all humanity comprise a single species with common ancestry (monogeny), as neoclassical cosmology assumed and the Church insisted? Or did the present existence of (apparently) morphologically distinct groups signify human descent from more than one independent set of ancestors (polygeny), as popular and scientific opinions increasingly maintained? Arguments for multiplicity flourished, especially in France and the United States, usually in tandem with harsh racial attitudes. These arguments in turn provoked vociferous defence of the orthodox position, especially in Britain where negative racial attitudes were nonetheless widespread.

Such debates were not entirely unprecedented. In the sixteenth and seventeenth centuries, scattered challenges to Biblical dogma on the unitary descent of man were repressed as heretical, notably that of the French deist Isaac de La Peyrère (1596-1676) who was forced to recant his theory of pre-Adamite creations (1655). An empirical case for inherent racial or specific differences between extended human groups was put by Bernier (1684:148 150) whose use of the term *race* is in some respects decidedly modern. In an anonymous article, he proposed a classification into 'four or five Species or Races of men whose difference is so notable' — and 'essential' or innate in the case of Africans — 'that it can justly serve as the basis for a new division of the Earth'. But this radical argument was largely ignored at the time and if Bernier anticipated the eighteenth-century natural history of man, he seemingly had little direct conceptual influence on its emergence.[51]

During the eighteenth century, a few sceptical philosophers — notably the Frenchman Voltaire (1694-1778) and the Scots David Hume (1711-1776) and Henry Home, Lord Kames (1696-1782) — contested the prevailing consensus on human unity by projecting the 'perceptible difference in the species of men inhabiting the four known parts of our world' back to nature's 'original' differentiation of plural human 'breeds' or 'species'.[52] The African slave trade, unsurprisingly, spawned polemical judgments on the matter by opponents and supporters alike. The naval surgeon John Atkins (1685-1757) served on the Guinea coast in the 1720s and was a strong critic of slavery, if no admirer of the 'Way of Living' and mental abilities of 'the Africans'. He nonetheless dismissed the capacity of climate to effect 'this remarkable division of Mankind into Blacks and Whites' and pronounced the opinion that 'White and Black must have descended of different Protoplasts', that they had '*ab origine*, sprung from different-coloured first Parents'. Atkins's scientific credentials render his (professedly 'a little Heterodox') verdict especially relevant to this study. In a notably venomous work, the Jamaica plantation owner, historian, and apologist for slavery Edward Long (1734-1813) opined that 'the White and the Negroe had not one common origin'. He concluded that 'the nature of these men, and their dissimilarity to the rest of mankind' proved that Negroes were 'a different species of the same *genus*'.[53] It was against the looming threat of such heterodoxy and the atrocities of Negro slavery that Buffon, Blumenbach, and Kant variously sought a scientific resolution to the problem of human diversity without fatal compromise to the established principle of the common origin of the single human species (Zammito 2006). Kant (2001:3, 12) did so pragmatically, invoking the principle of economy in explanation — why posit 'many local creations' and thereby 'unnecessarily duplicate the number of causes'? Blumenbach (1795:73) concurred but the issue for him was primarily ethical.

Phillip Sloan (1995:123, 133, 135) considered a 'slide into polygenism' to be a 'persistent implication' in Linnaean natural history from the tenth edition of *Systema Naturae* (1758) which posited more than one species of the genus *Homo*. In the 1780s, the German doctor and anatomist Samuel Thomas Soemmerring (1755-1830) — in a work dedicated to his friend Georg Forster — consigned 'the Moors' (Africans) to 'a lower echelon at the throne of mankind' and produced a catalogue of significant anatomical differences between Europeans and Negroes from which he inferred that 'the brain of a Negro is smaller' (1785:xi, 49-67). Blumenbach (1790:62-78) criticized the crude biological determinism of Soemmerring's movement from anatomy to intellect but Forster, who took a consistently morphological approach, professed admiration for this 'physiological and anatomical' proof for 'the corporeal difference of Negroes from Europeans'.[54] In graphic illustration of the liaison of ancient bigotry with a new biology, Forster brought the visual evidence of 'appearance' together with Soemmerring's anatomical argument to speculate that 'the Negro' might be 'a second human species' and 'an originally different stock' from 'white men'.

At the very end of the eighteenth century, the English surgeon and anatomist Charles White (1728-1813) argued for a 'gradation from the European man down to the ape' and located 'the African' much 'nearer to the ape'. He included an appendix of translations of lengthy extracts from Soemmerring's text. White challenged climatic or life style explanations for human variation and concluded that 'material differences in the corporeal organization', hair, and skin colour of 'various classes of mankind' proved that 'various species of men were originally created and separated, by marks sufficiently discriminative': 'the Negro, the American, some of the Asiatic tribes, and the European' were thus 'different species'.[55] White was arguably the earliest polygenist — though the term itself was well in the future — because he grounded his case systematically in comparative anatomy.[56] He was also the last British savant for nearly half a century to profess openly a belief in plural human species.

Origins, races, species

Donald Grayson (1983:140) pointed out that the hypothesis of polygenesis literally imputes separate origins to different human groups 'regardless of how those groups are treated taxonomically' — that is, without necessarily assigning them to distinct species. The reverse also applies: multiple species need not imply plural origins. Accordingly, Claude Blanckaert (1988:31) observed that 'polygenists implicitly identified race with species' and that, although the original unity of races 'remained always controversial', races were differentiated 'by the same triad of attributes that distinguishes "species": the resemblance, the descent, and the permanence of observable characteristics'. In the 1780s, Georg Forster seriously hypothesized the existence of more than one species of men, using species in the 'invariable' Linnaean sense, but as an anticlerical revolutionary

he disparaged the question of origins as 'inexplicable'. Race, however, was a minor term in Forster's empirical vocabulary, positioned in 'tacit subordination' to species as an 'undetermined' synonym for variety. He vigorously rejected Kant's redefinition of races as environmentally determined but permanent and hereditary, on the grounds that indelibility was a character of species, not races.[57] Yet it was Kant's conceptual innovation that enabled the subsequent approximation of race and species. In the mid-nineteenth century, the polygenist entomologist Emile Blanchard (1819-1900) also took issue with '*races*' as a much used but 'ambiguous, even undetermined' word in science, adopted to 'avoid commitment on the importance attached to the differences observed' in the human genus. Yet he himself interchanged the terms *race* and *espèce* and insisted that 'the characters of the races perpetuate themselves from century to century without perceptible modification'.[58]

From 1800, some naturalists in France began to assert the plurality of human species. Buffon's disciple, the politically progressive military physician Julien-Joseph Virey (1775-1846), who had read White and whose own copious writings evidently reached a wide audience, divided the 'human genus' broadly into 'beautiful white' races and 'ugly brown and black' ones (1800, I:145). Sloan (1995:140-1, 151) argued that Virey's work synthesized central strands in eighteenth-century human science by combining Linnaean taxonomy and Buffonian historical geography in a 'fully naturalistic scenario' of man's ascent from the 'state of pure nature' to 'perfect civilization'. Virey nonetheless took serious issue with 'the immortal Buffon' in at least two ways: he represented races as 'primordial', 'permanent', 'hereditary', and resistant to the power of climate; and he hypothesized that 'the negro' — 'less human than the European' and 'close to simple animality' — could be considered a 'distinct species'.[59] In a much later elaboration of his thesis, Virey (1824, II:30) restricted 'permanence' in the face of external influences to specific characteristics and reconfigured races as merely 'variable modifications of a single, primordial species'.[60] The 'indelible perseverance of the physical and moral character of the negro' thereby justified Virey's division of the human genus into 'two distinct species', each comprising 'several principal races or stocks'. The species were unnamed but clearly ranked on the basis of markedly divergent facial angles and highly essentialized sets of opposed physical and moral traits, starting with skin colour. The four races of his '1st species' and the two of his '2nd' were labelled by colour and also ranked: he vaunted the 'white European race' as 'superior to all the others in physical and moral qualities' and positioned it 'at the head of the human genus', as 'no longer a simple animal'; he maligned the 'blackish' 'Papuans' of New Guinea, 'Australasia', and New Caledonia as being of characteristically 'diminished occipital capacity', 'the ugliest of men and the closest to the orang-outangs', while conceding that the latter 'belong to another genus'.[61] Reserving detailed calumny for 'the negro', whom he represented as naturally

'inferior and subjugated', with 'manifest' structural links to orangutans, Virey nonetheless condemned the slave trade and piously allowed that 'this race of men' might advance, with European help, 'to an honourable rank in the scale of perfectibility'.[62]

In the mid-1820s, at the further end of categorical amplification, the soldier-biologist Jean-Baptiste-Geneviève-Marcellin Bory de Saint-Vincent (1778-1846) and the physician, comparative anatomist, and physiologist Louis-Antoine Desmoulins (1796-1828) identified fifteen and sixteen separate human species respectively. In important other respects, though, their analyses are quite divergent. Bory de Saint-Vincent challenged Cuvier's contention that the human genus 'is unique in its order' by insisting that the genus *Orang*, composed of beings 'just like us', belonged 'naturally' to the same order as the genus *Homo*.[63] He then sharply divided the human genus, making physical structure and 'internal organization' his key determinants of the intellectual and moral limits of different 'species of Men' and combining them with skin colour as core criteria of specific differences. Predictably, his taxonomy was crowned by the 'more beautiful', 'Japhetic species', 'to which we belong'. The 'Negroes of Oceanica' or 'Melanians' comprised his 'next to last species' while the 'Hottentot species' — furthest from the Japhetic in 'appearance and anatomical characteristics', 'closest to the Orangs in the inferiority of its intellectual faculties' — purportedly marked 'the passage from the genus Man to the genera Orang and Gibbon, thus to the Apes'.[64] Yet, notwithstanding such clear intimations of ranking, both human and simian, Bory (1827a, II:128-9) denied hierarchical intent — he assigned 'no definitive position' for who 'would dare to raise one species above the others' or declare any 'incapable of emerging from the brutish state?' The disingenuousness of this seeming egalitarianism is evident in the flanking sentences which show the mutual complicity of class, national, and racial prejudices in his rhetoric: the Japhetic species owed its 'first rank' to the 'intellectual superiority of a few favoured men' while nine-tenths of the species were hardly more rational than the 'Hottentots' (Khoikhoi); 'beyond the Pyrenees', 'proud' Europeans had fallen 'to the level of New Caledonian savages' whereas Africans transplanted to Haiti had raised themselves 'to the sublime level of the Anglo-American'.

Desmoulins set out to refute both the Buffonian hypothesis that climate determined human 'physical characters' and its monogenist premise that present human occupation of the globe was a product of 'emigrations' by descendants of a single common ancestral stock. He argued instead for 'the invariability of forms', the 'original diversity of species', and the 'plurality of centres of creation'. His determining principle for the concept of species was the 'permanence of the type in the face of contrary influences' but in practice he treated species and race as synonymous. Species could change or new ones emerge only as a product

of generation through racial mixing. Species and races were reified entities with constant physiological characters that determined intellect, morality, and behaviour.[65] However, unlike Bory, Desmoulins insisted on the 'infinite' anatomical distance separating 'the most perfect of the apes from the most imperfect of men'. Moreover, his racial adjudications were relatively benign apart from a residual distaste for Negroes and some native Americans and a tacit presumption of European superiority. He was remarkably positive, if patronizing, about the usually maligned 'Austro-Africans'. The 'Boschisman' (Bushmen or San) and 'Hottentot' races differed markedly from each other and from 'the Negroes'. The Hottentots were 'gentle, quiet, honest', but indolent, and 'much superior' to most Ethiopians in the level of civilization reached. Any identification of the Boschismans with the apes was 'absurd and false' on anatomical, moral, and intellectual grounds: they were 'lively', 'spiritual', energetic, 'ingenious', and, 'after the Caffres, the most moral and intelligent of the peoples of southern Africa'.[66] Desmoulins's work concludes with a catalogue of 'the species and the races of the human genus': this schematic series of essentialized physical descriptions is relatively dispassionate apart from the recurring negative stereotype of Negro features; moral and intellectual faculties are scarcely mentioned; and racial hierarchy is only implicit in the geographical ordering of species. The inhabitants of Oceania are classified as Species 11-14 under then standard labels: 'Malay or Oceanic'; 'Papuan'; 'Oceanian Negro'; and 'Australasian'.

After about 1800, most naturalists and anthropologists, whatever their theoretical and moral persuasions, subordinated historical conjecture about human origins to the physical description and classification of races or species and abandoned questions of racial genealogy to the avowedly historical disciplines of comparative philology and ethnology.[67] Desmoulins (1826:336-57), exceptionally, did address etymological and historical implications of his zoology. The Italian geographer Adriano Balbi (1782-1848) maintained that the systematic comparison and classification of languages — which he called *ethnographie* — was the only means to reveal the 'primitive origin' of the 'nations' now inhabiting the world but he accepted Desmoulins's innovatory insistence that a shared language in the present need not mean a common racial derivation. Formally committed to the conventional assumption that 'all men' stemmed from a 'single stock, subdivided only into varieties', Balbi nonetheless refused to 'adopt or reject' Desmoulins's 'system' of multiple human species. With respect to the 'Maritime World' of Oceania, Balbi's strongly racialized linguistic geography, gleaned largely from travellers' reports, differentiated a far-flung Malay 'family' of languages from a 'second branch' of unrelated non-Malay tongues designated 'Languages of the Oceanian Negroes'. Their speakers included 'the Australians' whom he disparaged as 'the most brutish savages of the globe' and as 'beings who seem to differ from the orang-outang only by the use of speech'.[68]

Ethnologie denoted a broad field of inquiry established in France in the 1830s by the physician William-Frédéric Edwards (1777-1842) whose blending of physiology, linguistics, and history, Blanckaert noted (1988:22), combined 'the physical idea of race and the cultural principle of "nationality"'. Edwards (1841) gave renewed impetus to the natural history of man but also confirmed the fixity of races as morphological types. Yet, despite Edwards's own polygenist leanings and the considerable influence of his raciology, the focus of *ethnologie* on the 'historic races' of Europe and on the interdependence of the moral and physical characteristics of races made it peripheral to the narrowly physicalist polygenism which controlled *anthropologie* in France during much of the second half of the nineteenth century.[69]

In Britain, the term ethnology was borrowed in the early 1840s as a retrospective label for the venerable Prichardian approach which continued to dominate the natural history of man for a decade after his death in 1848, in the face of serious challenges to its premises and methods. Strongly philanthropic in origin and institutional connections, ethnology was politically less heterogeneous and religiously more orthodox than *ethnologie*. Its fundamentally historical goal was to trace the differentiation of all the existing 'races of men' from a 'single stock', in particular through comparative philology.[70] In contrast, 'Anthropological' enemies of ethnology such as Hunt professed agnosticism on the 'profitless' question of 'Man's origin' but insisted on the specific or even generic division of humanity on physical, intellectual, and moral grounds, including the 'far more numerous' analogies 'between the Negro and apes than between the European and apes'.[71] The elision of origins — 'an Anglicized Hebrew myth' — and the conflation of race with species were patent in the definitions given by the polygenist Egyptologist George Gliddon (1809-1857) in 1857 to his neologisms 'monogenist' and 'polygenist': 'the doctrines of schools professing to sustain dogmatically the unity or the diversity of human races' (1857:402, 428-31).

The triumph of racial difference

The shift in attention from a teleological concern for origins to the measurement and classification of existing groups diminished the practical import of the ideological opposition of monogeny and polygeny, despite the huge rhetorical investment of both sides in the debate. Belief in original human unity coexisted more or less uneasily with perceptions of present diversity in the thinking of several of the savants discussed above, who endorsed the conventional position but with growing equivocation. Cuvier and most of his followers — who included Lawrence as well as several polygenists — evinced little concern for origins.[72] But they espoused the fixity of species, the inheritance of racial characteristics, the primacy of physical organization, and the diagnostic interconnectedness of cranial structure and intelligence as a key racial differentia.[73] In a reminder of

Lacépède, Cuvier (1812:105-6) posited an ancient — perhaps originary? — differentiation of 'the negroes' as the 'most degraded human race', closest in form to 'the brute', and without the 'intelligence' to achieve regular government or sustained knowledge. All the characters of this race, he asserted, showed 'clearly' that it had 'escaped the great catastrophe at another point from the Caucasic and Altaic [Mongol] races' and had 'perhaps' been separated from them long before it occurred. Cuvier's ambivalence about original human unity mirrored the reservations of the geographer Conrad Malte-Brun (1775-1826) about the 'orthodox doctrine', the '*system* of a common human origin', that he would 'neither refute nor confirm'. Balbi was similarly noncommittal with respect to Desmoulins's polygenist 'system'.[74] It was thus not merely politic for Bory de Saint-Vincent to dedicate his polygenist treatise *L'homme* to Cuvier, in whose 'footsteps' he claimed to tread, or inappropriate for him to acknowledge Malte-Brun as his precursor 'in distinguishing the species of Men … under the designation of races'. Bory's functional set of specific differentiae and their pessimistic corollaries echoed Cuvier's racial criteria. Human species did 'not derive their differences from colour only' but were distinguished more by 'structure' and aspects of 'internal organization' which influenced 'the intellectual faculties' and determined 'the level of moral development each can reach'.[75]

Notwithstanding this broad community of racial assumptions, particularly evident in France, polygenists' taxonomies were in general more starkly racialized than those of monogenists because they typically classed some human species close to the apes while quarantining 'civilized man'/'the white man'/'the European' from this debasing association. White's work (1799) is an obvious case in point though that of Desmoulins (1826) is not. Virey (1824, III:460-3) refused absolutely to place 'this king of the globe' alongside 'the orang-outang' because the civilized European 'reigns' over all other beings in the creation, including 'the inferior races of his own species'. Not for him Bory's contemptuous denial of rationality to all but a favoured handful of Japhetic men. In Virey's view, an 'immense distance' separated a 'Hottentot Boschisman' from even a 'simple European peasant'. Therefore, although 'the ape' could not be grouped 'with us', the orangutan genus, in particular, was clearly 'not very far from the least perfect species of men'. Monogenists, in contrast, usually expressed their core premise of human psychic uniqueness by segregating the single human species as the sole genus of a separate order within the animal kingdom.

The number of species identified by polygenists and the degree of disparateness attributed to races by monogenists were key signifiers of the relative acrimony and rigidity of racial discriminations. Multiplication of species widened purported inequalities between groups and heightened scepticism about the improvability of some.[76] Thus, Bory de Saint-Vincent's hairsplitting taxonomy of numerous human species and his bracketing of the genus *Homo*

with the genus *Orang* within the family or order of *Bimana* (see note 64) had invidious implications for certain groups that were not inherent in Cuvier's sweeping division of the human genus into three races isolated as *Bimana*. The systemic metonymy of Bory's ranking of the 'Hottentot species' as the generic 'passage' from man to orang was potentially more injurious — though no more insulting — than Cuvier's incidental analogy of 'negro' resemblance to 'the apes'. Yet assessing the relative obloquy of racialized language is problematic and perhaps futile since the ideological impact of Bory's entire 'zoological essay' on man was arguably outweighed by the 'veritable raciological synthesis' — Blanckaert's phrase — contained in Cuvier's cursory remarks about human races, made by a highly influential savant who rejected speculative 'system' and laid claim to the 'more solid edifice of facts and of induction'.[77] Cuvier's position was also paradoxical with respect to the 'minimally polygenist' Virey who posited two human species but represented the final race of his '1st species' — the 'Malay or Polynesic' — as close to the 'negro type', an 'intermediate nuance between the Mongols and the Negroes', and a 'bastard race' linked by 'diverse gradations' to the 'blackish' Papuans.[78] Such racial indeterminacy was normally an argument for human specific unity but Cuvier's formal adherence to this credo was vitiated by his insistence that races were 'eminently distinct'.

When human variation was judged to be confined within a single species, acknowledgement of the transposability and the internal diversity of races could have the reverse effect to multiplication of species — narrowing rather than widening divergence and attendant inequalities. From this perspective, the greater the perceived intraspecific variation, the stronger the case for a unified human species since apparently different races overlapped or blended and physical differences within races could exceed those between them, points made strongly by Prichard (1826, II:588-9): the 'character of one race passes into that of another' while sometimes 'the most different complexions, and the greatest diversities of figure, known to exist, are to be found among tribes which appear to belong to the same nation, or family of nations'. Contemporary contributors to the polemic on the unity of the human species were aware that 'the fractionating tendency', as Stocking put it (1973:lxxi-lxxii), produced 'monogenetic rather than polygenetic conclusions'. Lawrence (1819:502) maintained pragmatically that 'the very numerous gradations' in human appearance, form, and attributes were 'an almost insuperable objection to the notion of *specific difference*', since any might be attributed to 'original distinction of species', in which case 'the number of species would be overwhelming'.[79] Prichard (1826, II:588) insisted that there was 'no clearly traced and definite line which the tendency to variety or deviation cannot pass, and therefore, no specific distinction'. The English naturalist Charles Darwin (1809-1882) witnessed great human variation in the course of HMS *Beagle's* global surveying voyage of 1831-36. Years later (1871, I:225-6), he distilled that experience into a monogenist

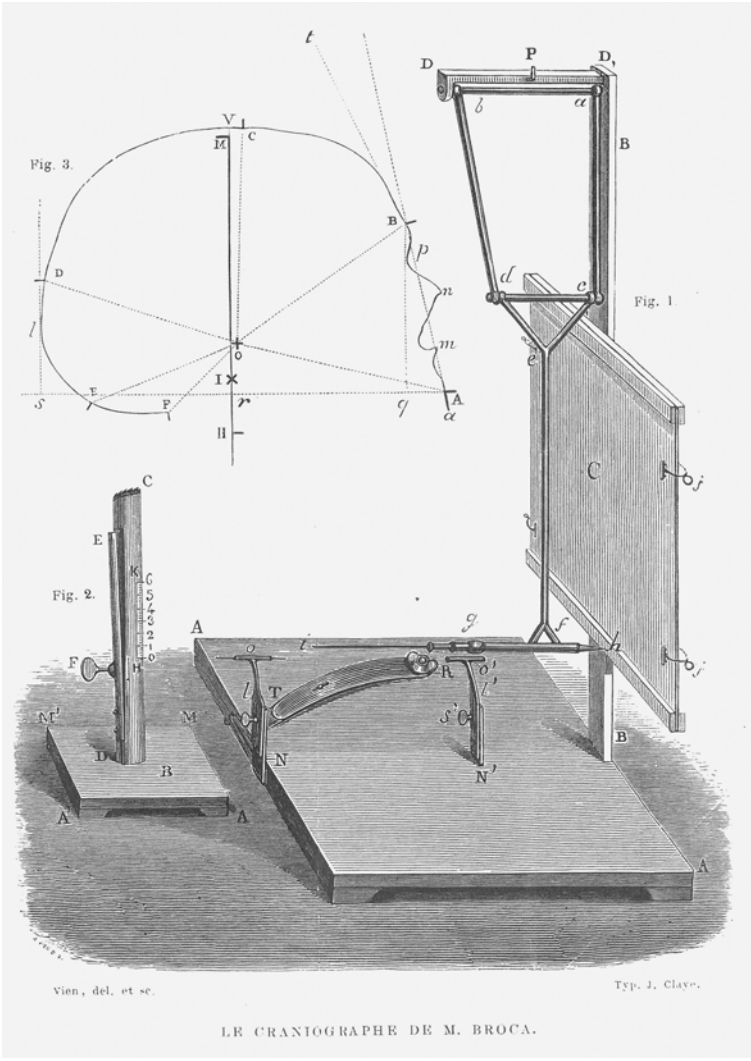
precept: 'the most weighty of all the arguments against treating the races of man as distinct species, is that they graduate into each other … and that it is hardly possible to discover clear distinctive characters between them'.

Yet by 1860, Prichardian ethnology and biblical monogeny had lost scientific credibility in Britain and been overshadowed by more naturalistic approaches to the science of man. A mostly polygenist, highly racialist group of Anthropologicals led by Hunt briefly seized the limelight but were in turn eclipsed by the dominant evolutionism of the next decade.[80] In the face of the growing credibility of polygeny, embattled monogenists normalized racial terminology and logic, as Prichard had steadily done from the 1820s. Lawrence, who had vigorously defended human specific unity in his 1818 lectures, reportedly admitted in 1856 that he was now 'convinced of the diversity of human origin'.[81] In France, polygenist belief in multiple human species was integral to the heavily anthropometric and craniological *anthropologie* practised under the leadership of the physician-anatomist Paul Broca (1824–1880), recent founder of the Société d'Anthropologie de Paris (Figure 5). Leading monogenist naturalists of the Muséum national d'Histoire naturelle, such as the comparative anatomist Etienne-Renaud-Augustin Serres (1786–1868), the zoologist Isidore Geoffroy Saint-Hilaire (1805–1861), and the anthropologist Armand de Quatrefages (1810–1892), co-existed uneasily with Broca'a institutional control of *anthropologie* by combining equivocal belief in original human unity with firm commitment to the scientific worth of craniometry and acceptance of the irreversibility, permanence, and inequality of races, regarded as biological types.[82]

In 1841, Serres had endorsed a significant gesture toward polygeny in presenting a special report of a commission of the Académie des Sciences on the anthropological collections made by the phrenologist Pierre-Marie Alexandre Dumoutier (1797–1871) during the recent global circumnavigation of Jules-Sébastien-César Dumont d'Urville (1790–1842). With respect to the contentious issue of the unity or plurality of human types, the report argues for a 'double character': the human species was 'unique' with respect to generation but definitely plural with respect to 'the hereditary transmission of characters'. By conceding that Aboriginal Australians might 'at a pinch' be seen as autochthonous, the commission left open the possibility of a separate origin for this allegedly 'most inferior' of Oceanian races. The members agreed with Dumont d'Urville (1832:15–16) that the 'black race' was the 'mother stock' of the 'primitive inhabitants' of the region who had been displaced by successive 'invasions' of 'more advanced' races. The supposed displacement process climaxed in the onset of vastly 'superior' European civilization and imminent racial 'fusion'. The report thus implies a teleological trajectory from a single human creation, to the very ancient differentiation of 'three primordial types', culminating in the prospect of ultimately renewed unity through colonialism and asymmetric racial crossing.

Since the final stage was still 'in full swing' in Oceania, the region exemplified the realization in practice of the universal scheme. Throughout the report, a compromised monogenism jostles with profound ambivalence about the 'black race' and a smug conviction that the European race 'dominates all the others by the superiority of its physical and moral characters'.[83]

Figure 5: [Alphonse] Vien, 'Le craniographe de M. Broca'.[84]



Engraving. Photograph B. Douglas.

Two decades later, in a paper published posthumously, Geoffroy rejected Cuvier's authoritative ternary division of the human genus on the basis of skin colour but followed him by defining races as characteristic 'modifications of the species' and stressing 'constancy' in their 'hereditary transmission'. His threefold

criteria for anthropological taxonomy show significant accommodations of polygenist and racialist thinking: the multiplicity of human races; their 'unequal' anatomical, physiological, and psychological value; and the importance of traits derived from the conformation of the head. Accordingly, he increased the number of races to twelve and nominated four as 'principal types' — the 'cardinal points of anthropology' — by adding 'the Hottentot type' to Cuvier's standard racial trinity of Caucasic, Mongolic, and Ethiopic.[85] Geoffroy's classification 'diametrically opposed' two of these types: the Caucasic — racially glorified as 'the most beautiful' with the 'highest intellectual faculties'; and the Hottentot — racially vilified as the 'inferior' and 'last term in the anthropological series', a branch so 'profoundly separated from the common trunk' as to compromise the 'tradition' of the '*original unity*' of the human genus.[86] These unsubstantiated assertions of 'relative superiority or inferiority' depended scientifically on the hoary Cuvierian measure of the cranio-facial ratio: the theory that the greater the development of the 'superior parts' (the skull and the brain), the higher the race; and that the greater the development of the 'inferior parts' (the sense organs and the jaws), the lower the race. The Caucasic had 'maximum cranial development' and was therefore 'superior'; the Hottentot had 'maximum facial development' and was therefore 'inferior'.[87]

Species, hybrids, synthesis

Defining a species

Before the publication of Darwin's *On the Origin of Species* (1859), the concept of species was given diverse, often ambiguous meanings depending on a shifting constellation of relative emphases: on reproductive or morphological criteria; history or taxonomy; environment or heredity; hybridization or racial purity; and transmutation or fixity. From Linnaeus to Darwin, definitions of species oscillated unsteadily between versions of fixism and transformism, often pivoted on the vexed question of racial crossing and its status in the unity or otherwise of the human species. Linnaeus initially professed what James Larson called a 'naive religious faith' that species were fixed, discrete products of the original creation of a 'single pair of all living beings'. Though this early conviction consistently informed Linnaeus's abstract taxonomic practice, from about 1760 the oft-reiterated dictum *nullae species novae*, 'no new species', vanished from his writings as he became convinced empirically that new plant species could emerge through cross-breeding — indeed, his contemporaries often branded him a transformist.[88]

Although Buffon paid lip service to the dominant contemporary dogma that species were original and eternal, he represented them in practice in secular historical terms as real, dynamic physical entities comprising 'similar individuals who reproduce themselves'. His mature formulation that animals might be

reduced to 'a quite small number of families or principal stocks, from which it is not impossible that all the others have issued' through degeneration, acknowledged the problematic of transformation in altered environments. As with Kant (who, however, always insisted on the original permanance of races and species and rejected developmentalism), Buffon's breeding criterion for species membership — the capacity for 'constant reproduction' — qualified the strong morphological emphasis common to most taxonomists, foregrounded the question of hybrids, and served to validate his principled belief that all human beings belonged to 'a single same species' since, despite dramatic differences in appearance, they could all interbreed and produce fertile offspring.[89] While Blumenbach did not doubt human interfertility, he saw the 'principle sought from copulation' as 'uncertain' and 'not sufficient' to define the concept of a species or differentiate it from a variety. He resorted instead to the morphological criteria of '*analogy* and resemblance'. Blumenbach dismissed coupling between different species as rare and usually sterile but attributed some transformative potential to 'hybrid generation' between different varieties of the same species which produced offspring identical to neither parent but 'midway' in form between them.[90] Yet in his ultimate view, the *Umschaffung*, 'remodelling', of species over time signified only 'the great mutability in nature' which he attributed in turn 'to the benevolent, wise dispensation of the Creator'. Lenoir pointed out that Blumenbach was not an evolutionist because he did not posit 'a transformation of species by means of the acquisition of *new* characters', an impossibility in Kantian theoretical terms.[91]

Cuvier's immense institutional prestige in France no doubt enhanced the authority of his core premise of the integrity and fixity of species: a species comprised 'all the beings' with a common 'fixed' form, perpetuated 'by generation' and 'confined within quite narrow limits' that had remained intact and unchanged 'since the origin of things'. Nature, moreover, sought to prevent the alteration of species through mixing by ensuring their 'mutual aversion'.[92] He successfully discredited the transformist theories promulgated by his Muséum colleagues, the zoologists Jean-Baptiste de Monet de Lamarck (1744-1829) and Etienne Geoffroy Saint-Hilaire (1772-1844), the father of Isidore, who proposed materialist narratives about the transmutation over time of 'lower' into 'higher' organisms.[93] In Martin Rudwick's judgment (1997:179, note 4), Cuvier's refutation of Lamarck determined the direction of research on the question of species 'right up to the time of Darwin'.

In Britain, Lawrence endorsed Cuvier's twin dictums that species were 'constant and permanent'; and that uniformity was maintained 'by generation' and instinctive 'aversion to union with other species'. But unlike Cuvier, he sought to explain the formation of new races within the single human species, though he too was no evolutionist. He concluded that human diversity was not

original but the 'result of subsequent variation' produced by the inheritance of 'native or congenital variety', rather than by the effect of 'external agencies' such as climate, nutrition, or mode of life. Such 'native variety' occurred spontaneously in individuals; or might in principle, on the model of plant and animal breeding, result from 'hybrid generation' between different varieties of the human species.[94] In his derivative way (the book was a published collection of lectures), Lawrence evidently owed the hypothesis of heritable variations to Prichard who had argued that 'connate variety' always tended 'to become hereditary and permanent in the race', though neither man could explain how the process worked.[95] In the first edition of *Researches* (1813), Prichard denied the capacity of 'external powers' to produce permanent human varieties. In the second (1826), he restated the dictum that all 'connate peculiarities of body' were hereditary but brought milieu back into his equation by outlining a 'law of adaptation' to 'particular local circumstances' to account for localized specific diversities within a genus and varieties within a species, including humanity.[96] Kentwood D. Wells (1971:346-8, 356) saw this tacit recognition of 'conservative aspects of natural selection' as an anticipation of Darwinian evolution though Prichard, like Lawrence, was not an evolutionist since he believed in the fixity of species and was oblivious to the 'creative role' of natural selection in the formation of new ones.

Buffon's breeding criterion had been unproblematically rehearsed by Cuvier: as a young man, he maintained that sexual union was 'the only certain and even infallible character' distinguishing a species; and as a mature savant he allowed that 'the human species appears unique, since all individuals can intermix without distinction, and produce fertile offspring'.[97] But, like Blumenbach, neither Prichard nor Lawrence thought the breeding criterion a sufficient rationale for human unity because of reported 'exceptions' to the 'supposed law' that cross-species hybrids were sterile. Prichard modified the classic norm by promoting the theoretical premise of 'instinctive repugnance' to the intermixture of species in the wild, with the twin corollary that 'there are no hybrid *races*' (said of plants) and that animals which propagate together 'frequently and habitually' in their natural state are of the same species. By analogical reasoning, since there was no 'invincible' repugnance between men and women of different races and since human 'mixed breeds' were invariably prolific and capable of engendering 'an entirely new and intermediate stock', they were 'not hybrid' and 'the several tribes of men are but varieties of the same species'.[98] Lawrence (1819:265-71) invoked Blumenbach's morphological criterion of 'analogy and probability' to draw the same conclusion on similar grounds.

Confronting hybrids

If Buffon's principle of 'continuous fecundity' within the human species was an article of faith for monogenists (Flourens 1850:167-9), a related postulate in their

creed, also attributed to Buffon, gave greater scope for racialist cynicism. In 1849, Buffon speculated that some 'Tartars' were 'less ugly & whiter' than others because of intermixture with neighbouring 'European nations'; he later formalized the proposition that it would take only a couple of hundred years to 'wash the skin of a Negro' through 'mixing with the blood of the White' whereas climate alone would take many centuries to produce the same effect.[99] Early nineteenth-century monogenists reworked Buffon's idea as the principle that 'racial mixing' was ameliorative, at least for the allegedly inferior of the races involved. Prichard, unusually evenhanded, cited anecdotal instances of 'mixed breeds' who were physically superior to either European or indigenous components and made it a dictum, in response to the rising racial hysteria of the late 1840s, that the 'mixture of races' was often 'much more advantageous than their separation'. But Lawrence, relentlessly racialist, declared that 'contamination' by an admixture of 'black or red blood' would cause the 'intellectual and moral character' of Europeans to 'deteriorate', whereas 'an infusion of white blood' would 'improve and ennoble the qualities of the dark varieties'.[100] Improvement or degeneration thus became two sides of a single racialist coin.

Somewhat paradoxically, the early polygenists tended to be less doctrinaire than Cuvier, Lawrence, and Prichard about the fixity of species and more relaxed about racial crossing which provided their proof for the plurality of human species and their motor for specific change. In works published over more than two decades, Virey spanned a wide gamut of opinion, from empirical to essentialist, though his ambivalent words betray a hankering for the certainty of fixed species and racial purity. On the one hand, he did not doubt the fecundity of human hybrids but subverted Buffon's breeding criterion into an argument *against* human 'specific unity' on the pragmatic analogy that distinct but adjacent species of animals and plants commonly produced fertile offspring from 'adulterous mixings'. If such crossings could engender 'bastard, intermediary lineages able to propagate themselves continuously' (denied by monogenists), the 'formation of new species' was not theoretically impossible. On the other hand, since nature abhorred specific mixing and inspired universal 'repugnance' against it, species were 'essentially unalterable' in type.[101] Virey's ambivalence is patent in his discussion of 'mulattos'. He denigrated them as an 'ambiguous', perhaps unstable 'caste', a 'multitude of bastards' produced 'in the colonies' from the abuse of grossly unequal power relations between white men and female slaves. Yet he applauded their physical strength, agility, and vigour as proof of Buffon's supposed claim (endorsed by monogenists) that 'racial crossing improves individuals'.[102] Bory de Saint-Vincent (1827a, II:134-6) took for granted that human species, races, and varieties were 'naturally and constantly reproduced through innumerable mixtures' and that, as with domesticated animals, their 'characteristic limits' had 'partly disappeared'. Desmoulins (1826:158, 194-7) explicitly qualified his argument that it was 'the permanence of the type, in the

face of contrary influences, which constitutes the species' with the proviso that altered or new species could emerge through 'generation', as products of 'the mixing, the fusion of heterogeneous peoples'.

Blanckaert (2003b:46–8) identified the 'status of racial crossbreedings' as the key site for conflict between monogenists and polygenists from about 1830 to 1860. A striking feature of such debates is the tendency for protagonists across the board to camouflage their a priori, value-ridden points of view as scientific and objective while recycling a limited stock of tenuous, circumstantial 'facts' as evidence for radically opposed positions (Stocking 1968:49). Another feature is the steady increment in racialization crosscutting the monogeny/polygeny fault line. Serres's report on Dumoutier's collections is a case in point. It splices nominal monogenism to a theory of physical, intellectual, and moral 'improvement' through racial crossing and gradual 'fusion', trumpeted as the creator's 'natural means' to restore human unity. Though egalitarian in theory, the process envisaged was profoundly 'unequal' in operation since the characters of the 'superior' race were said to 'predominate' in the offspring over those of the 'inferior'.[103] An identical vision for a monochromatic future, but without the egalitarian veneer and with overt advocacy of racial obliteration, was outlined by the polygenist surgeon-naturalist Jacques-Bernard Hombron (1798–1852), Dumoutier's colleague on Dumont d'Urville's final voyage of 1837–40 (1846:104–5): 'men will one day comprise only a single race; civilization will extend everywhere, and the inferior races and species will exist only in the archives of history'.

During these three decades, most polygenists took fundamentalist positions against the viability of human hybrids and in favour of morphological criteria for the constancy of species. The presumption of multiple human types enabled them to pervert the monogenists' analogical reasoning by appropriating the axioms of interspecific repugnance and continuous intraspecific fecundity to their own agenda. Notable amongst them were three men with close links to Dumont d'Urville's final voyage: the ships' surgeon-naturalists Hombron and Honoré Jacquinot (1814–1887) who invoked their wide global experience to authorize the individual volumes on 'man' and on 'anthropology' and 'human races' that they contributed to the co-authored *Zoologie* section of the official voyage publication; and Blanchard, a naturalist at the Muséum national d'Histoire naturelle, who wrote the *Anthropologie* volume based on Dumoutier's collections.[104] Hombron insisted that all species, including the 'several species of men', had been created for particular locales and were 'unchangeable'; that only parents of proximate species could produce fertile offspring; and that the lower a species was in the 'human series', the less its hybrid 'fruits' would share the physical and moral qualities of the 'more beautiful' parent. On these grounds, he damned the progeny of Chinese-Malay and Malay-Papuan unions as 'very

disagreeable', 'very ugly', 'monstrous', and probably of limited fertility.[105] Jacquinot maintained the 'persistence and conservation' of the three 'unalterable' primitive types into which he divided the human genus and took a particularly hard line on human mixing. He denied the prospect of specific change through interbreeding and condemned interspecies sexual relations as a 'perversion of the generative impulse' which occurred in man only through the 'shameful exploitation' of female slaves. The products of such unions were 'abnormal, monstrous', and 'very limited' in fertility. They were almost unknown in New Holland. Jacquinot claimed to be 'the first' to signal the 'sterility' of interspecific human crossbreeds but admitted his lack of 'rigorous' statistical evidence: rather, it was a 'well-known fact' in the colonies and the 'impression' gained from his own 'general observation'.[106]

Nearly a decade later, Blanchard synthesized and modified the positions taken by Hombron and Jacquinot. He asserted with Hombron that many 'different species of men', comprising a 'natural genus', were created in the countries they still occupied and retained their characters indefinitely 'without perceptible alteration'. He agreed with Jacquinot that racial 'mixtures' were numerically insignificant 'relative to the mass' and rehearsed the theme of natural 'repugnance' against inter-specific coupling. Contra Prichard, the claim of repugnance became his proof that all human beings could not have issued from the same stock and that 'the racial instinct is innate in man's heart'. Blanchard, too, admitted the 'little true knowledge' so far available and leaned heavily on colonial rumour. He moderated Jacquinot's scepticism about durable human crossings: on the one hand, the hybrid products of 'the most different races in the human genus', such as 'whites and negroes', could not be perpetuated indefinitely 'without new mixings'; on the other, 'neighbouring peoples' of very similar races had undiminished interfecundity.[107] The attribution of differential fertility to human hybrids on racial grounds would be a cornerstone of subsequent debates and often became a critical issue in Europe's colonies.[108]

Before 1850, polygeny was primarily a continental and American doctrine with few acknowledged advocates in Britain. Even Knox, whose extreme racial and physical determinism and hard line on human hybrids were the equal of any French polygenist, did not profess literal poly*genesis* since he insisted on the 'evident' unity of man within 'one family, one origin'. However, this 'unity of the organization' was 'embryonic' or 'generic', 'not specific', and the 'one great natural family' of mankind comprised 'many distinct species'.[109] An institutional outsider, pessimistic and nihilistic, he preached an incongruous amalgam of uncompromising racialism with anticolonial political radicalism and nonprogressive developmentalism, synthesized by an idiosyncratic transcendental biology imbibed from Germany and France via the elder Geoffroy Saint-Hilaire.[110] Knox discerned 'remarkable' organic, mental, and moral differences between the

'races of men' while race was an 'all-pervading, unalterable, physical character', the prime determinant of human history and human character, 'individual, social, national'. Historically, at least, human races were 'permanent' and not interconvertible. Since 'species never mingle' due to 'innate dislike', human hybrids were 'a monstrosity of nature' which could not 'hold their ground' over more than two or three generations and hybrid races were non-existent, even in the case of 'closely affiliated' parents.[111]

Flatly rejecting the possibility of the slow, unilinear 'transmutation of species' or of 'successive perfectability', Knox argued that the only transmutation known to Nature was '*generic*, and not *specific*' and was as likely to be 'retrogressive' as 'progressive': 'the development, in time and place, of natural families and species already provided for in the structure of the embryo'. Thus, every human embryo embodied 'the type of all the races of men', past, present, and future.[112] This anti-transmutationist biology underwrote Knox's denial of 'all theories of human progress in time' and fuelled his profound racial and historical pessimism. He pronounced it likely that the 'dark races', (who included 'the Jewish, Coptic, and Gipsy races'), were 'doomed to destruction and extermination' by the 'inextinguishable hatred of races', the 'savage energy' of the 'fair races', and their own physical and psychological 'inferiority', since they could or would not 'progress' and were uncivilizable.[113] Yet, paradoxically, he also declared any successful colonization to be impossible due to the 'great physiological law' of 'continental influences' — the indirect but powerful influence of milieu, exemplified in the expulsion of the French from Haiti. By this law, which Knox claimed to have discovered, every race was naturally adapted only to its continent of origin: the white man was unable to 'colonize a tropical country' and no race could permanently seize 'any other continent than the one to which they are indigenous'. Thus, not only were races unalterable by 'metamorphosis' or 'intermarriage', but they could not be 'extinguished' by conquest, providing they still occupied 'the soil on which nature first placed them'.[114]

Darwinian synthesis

Though Knox was institutionally marginal in the science of man in Britain during his own lifetime, the extreme racialist views expounded during his provincial lecture tours evidently struck popular chords.[115] Moreover, as Evelleen Richards (1989:406-35) has shown, Knox's 'moral anatomy' was far from marginal to the hardening science of race in the 1860s and 1870s or to the well-known struggle for ideological control of anthropology between the Ethnological and Anthropological Societies of London. Not only was Knox acknowledged as the main theoretical inspiration of Hunt and his (mostly) scientifically disreputable, ultra-conservative Anthropological followers, but racial opinions congruent to Knox's were common intellectual currency, including amongst the (mostly) scientifically respectable, politically liberal or radical Darwinians.[116] Indeed,

the application of natural selection to human groups — *the Preservation of Favoured Races in the Struggle for Life*, Darwin's subtitle (1859) — is inherently racialist, notwithstanding any associated philanthropic values.

Thus, the biologist and comparative anatomist Thomas Henry Huxley (1825-1895), who campaigned strongly for emancipation on moral grounds, maintained in 1865 in a popular polemical essay that, even when freed, 'our prognathous relative' lacked the natural intellect 'to compete successfully with his bigger-brained and smaller-jawed rival' or to attain 'the highest places in the hierarchy of civilisation' (1893:66). Wallace (1864:clxiv-clxv), the co-inventor of the concept of natural selection and an egalitarian utopian socialist,[117] contended in an address to the Anthropological Society that Europeans were intellectually, morally, and physically 'superior' to the 'low and mentally undeveloped populations' they had encountered in the Americas and the antipodes, whose 'inevitable extinction' he confidently predicted through the operation of Darwin's 'great law'. He partly recanted a few years later on the still highly ethnocentric grounds that natural selection could not explain certain key human physical and intellectual characteristics: even the 'lowest savages' might follow the European trajectory of 'gradual development' since their brains were 'so little inferior in size and complexity to that of the highest types (such as the average European)'.[118] Darwin himself was a passionate opponent of slavery who normally eschewed overtly racialist language and acknowledged his first-hand experience of the 'mental similarity' of the 'most distinct races of men'. But he did not doubt the reality of a human racial hierarchy or the certainty of displacement of 'the lower races'.[119] One notorious passage in *The Descent of Man* (1871:200-1) grafts the ancient idea of the 'organic chain' to the 'principle of evolution' to produce a chilling prognosis: the 'savage races' were positioned nearer to the 'anthropomorphous apes' than were the 'civilised races of man' who would before long 'exterminate and replace' both savages and anthropoids. By positing differential human racial affinity with apes — a position taken by most polygenists — Darwin violated the traditional monogenist concern to quarantine all humanity from categorical intimacy with animals.

Yet Hunt's (1866:327, 339) primary charge against the Darwinians was that they had reinstated the 'unity hypothesis' as a 'new form of monogenism'. Indeed, Wallace candidly explained to the Anthropological Society the Darwinian logic that 'if you do but go far back enough, you must come to a unity of origin', so that man must once have been 'a homogeneous race'. Huxley was more equivocal but reasoned pragmatically that even if the differences between human beings were 'specific', they were so small that it was 'altogether superfluous' to presume 'more than one primitive stock for all'. Darwin made much the same point.[120] At once historical and rigorously naturalist, environmentalist and hereditarian, his 'principles of evolution' rehabilitated human origins as a legitimate subject

for secular, scientific inquiry, shorn of any lingering implications of scriptural authority, but left the question of the present singularity or plurality of the human species largely a matter of definition.[121] As early as 1845, in a private letter endorsing Prichard's and Lawrence's hypothesis of human variation through the propagation of spontaneous individual 'peculiarities', Wallace had remarked that a 'permanent peculiarity' owing nothing to 'external causes' was zoologically a 'distinction of species & not of mere variety': thus, 'the "Negro" the red Indian & the European' should be considered 'distinct species of the genus Homo'.[122] Both he and Huxley argued diplomatically that the theory of speciation through natural selection could 'harmonise', 'reconcile', and 'combine' the conflicting positions of the 'Monogenistic and Polygenistic schools'. Darwin, for his part, merely anticipated the 'silent and unobserved death' of the dispute with general acceptance of his theory and expressed 'indifference' about terminology: man might be equally be classed into races, species, or sub-species though he preferred the latter.[123] Huxley (1894:209) compromised with the term 'persistent modifications'.

Broca and the degrees of hybridity

Stocking read this contemporary British sensibility to the synthesizing potential of Darwinian theory as an 'institutional dialectic', largely brokered by Huxley and culminating in the emergence of the Royal Anthropological Institute in 1871 out of the bitter Ethnological/Anthropological conflict.[124] Stocking (1973:lxx) tartly remarked on the aptness of evolutionism as an intellectual circuit-breaker in this contest because it was 'at once monogenist and racist'. Blanckaert (1988:48) saw no such synthesis occurring in France where Broca's rigidly physicalist, harshly racialist, polygenist *anthropologie* held sway. The principal human 'types', Broca argued, must have been created separately because the 'anatomical characters' that differentiated them were 'hereditary and unalterable' and such 'profound' differences were totally at odds with the hypothesis of common origin. Throughout the 1860s, he retained the opinion that species were fixed but allowed for some modification through the 'durable' intermixture of 'neighbouring, but distinct' species.[125]

In a polemical synthesis on the 'thorny' question of human hybridity, Broca (1858-9, 1859-60) launched a concerted attack on earlier work across the discursive spectrum. He denounced polygenist racial purists such as Knox, the aristocratic French social thinker Arthur de Gobineau (1816-1882), and the American physician Josiah Clark Nott (1804-1873) for their pessimistic 'opinion' that racial crossing was inevitably degenerative and that no 'crossed race' could procreate independently. And he equally condemned the conclusion of monogenists like Prichard that there were no hybrid races because all human beings were uniformly prolific.[126] Broca instead built on the hypothesis outlined by the American polygenist physician-anatomist Samuel George Morton

(1799-1851) that differential 'disparity or affinity' between species resulted in 'degrees of hybridity': thus, the interbreeding of 'remote species of the same genus' produced no hybrids; 'allied species' produced infertile offspring; and 'proximate species' produced fertile progeny. Applying Morton's model to mankind, Nott then sharply differentiated the 'prolific' crossings of proximate human species such as Saxons and Celts from the supposed sterility or limited fertility of the offspring of unions between the 'most widely separated' species, such as Europeans and Negroes, Hottentots, or Australians.[127]

Broca used an exhaustive survey of hybridity in animals to invert the conceptual core of the monogenists' 'unitary' system — the premise that continuous fecundity at once defined the limits of a species and supplied proof of common origin. By showing that certain interspecific animal crossings could produce 'perfectly and indefinitely fertile' hybrids, he claimed backing by analogy for the polygenist doctrine of plural human species.[128] The second, more problematic part of his agenda was to demonstrate that not all human couplings were equally fertile, enabling him at once to defend the 'crossed races' of France against the racial purists' accusation of hybrid degeneration; and to distance the 'highest' races in the 'human series' from proximity to the 'most inferior'. Here, too, Broca worked by animal analogy, mapping a four-stage taxonomy of 'degrees of hybridity' according to the relative fecundity of first-generation hybrids: *agénésique*, 'quite infertile'; *dysgénésique*, 'almost entirely sterile'; *paragénésique*, 'partly fertile'; *eugénésique*, 'fully fertile'.[129] Transposed to humanity, this classification condensed his deductions that there were 'very varied' degrees of *homœogénésie*, 'sexual affinity', in the human genus, resulting in 'very unequal' degrees of hybridity; and that the 'more distant' the parent species, the more 'more defective' the hybrids. Given these premises, it is hardly surprising that Broca's scale of human hybridity spanned eugenesic unions between proximate European races; paragenesic unions of Europeans and Negroes; and purportedly dysgenesic unions between the 'two extremities of the human series' — the Anglo-Saxons, 'humanity's first race', and the Australians and Tasmanians, the 'two most inferior races'.[130] In marked contrast, the monogenist Quatrefages (1868-9) devoted much of his 1869 anthropology course at the Muséum to refuting polygenism on the grounds that crossings of the most 'distant' human groups, such as Tasmanians or New Hollanders with Europeans, could produce fertile, viable mixed races.

Broca's 'theoretical antihumanism' (Blanckaert 2003b:60) was cloaked in a cynical scientistic rhetoric and logic. A political radical and opponent of slavery, he at once acknowledged a 'vast hiatus' in the 'animal ladder' between the highest apes and 'inferior' human types but bracketed this 'profession of faith' with a priori assertions that the Negro was physically 'intermediary' between the European and the ape while the Australians and Tasmanians were 'nearest the

brute'. He deplored the contamination of science by religion and politics and yet hypocritically defended polygenism on the prejudicial grounds that its doctrine was not 'humiliating' to 'inferior' races, unlike the monogenist attribution of racial inequality to divine curse or degeneration from original perfection.[131] Similarly, in advocating greater precision for the notoriously ambiguous term *race* (1859-60:608, 613), he differentiated its 'particular and exact' use to describe collections of physically similar individuals of plausible common descent (such as Arabs, Celts, Australians, *Papouas*), from its 'general and deceptive' application to classify a few broad 'natural groups' comprising all individuals with certain 'common characters' and some 'morphological affinity' (such as the Caucasic or Ethiopian races). The collection of characters common to such a group constituted its *type* but human types were 'fictive', 'ideal', heuristic 'abstractions' and should not be granted a 'real existence' as 'facts'. Yet, Broca himself used race haphazardly in both senses and consistently stands accused of reifying racial types.

The study of hybridity eventually impelled Broca to jettison entirely the 'classic' doctrine of the inalterability of species. In 1858, he had proposed hybridization as the sole motor for past specific change: actual species were permanent outcomes of 'fusions' and 'modifications' resulting from past 'crossings'. Agnostic about transmutation in 1866, he formally endorsed the principle of 'the evolution of organic forms' in 1870, echoing the celebrated quip that it was better to be 'an advanced ape than a degenerated Adam'.[132] Notwithstanding this conversion, Broca did not renounce polygenism and coined the term '*polygenic transformism*' to designate the principle — rather bizarrely attributed to Buffon (1766:358) — that living beings as evolving 'natural products' had 'multiple origins' and multiple 'primordial forms'.[133]

Topinard's synthesis

If Broca's formulation was more compromise than resolution with respect to the war over human origins and the challenge of evolutionism, a French synthesis of sorts was mooted by his self-avowed disciple and institutional successor, the physician-anthropologist Paul Topinard (1830-1911) whose first significant anthropological publications were detailed surveys of craniological or ethnographic materials on Aboriginal Tasmanians (1868) and Australians (1872).[134] Though no less committed than Broca to the paradigm of a highly physical *anthropologie* rooted firmly in morphology and comparative craniometry, Topinard was polygenist more by default than conviction. He reasoned (like Wallace) that, while the great human ideal types (Mongol, Australian, European, and Negro) undoubtedly had the 'morphological value of species', the vast expansion in the time span of human existence had rendered irrelevant the old controversy over origins — the question, he complained, left him cold, though he glimpsed, 'in a prodigiously distant past, a generic trunk common to all humanity'.[135] A convinced transformist, Topinard asserted French theoretical

precedence by tracing evolution's intellectual genealogy directly from Lamarck to Darwin and reconfiguring transformism as historically the 'first' opposition to classic monogenism, more 'serious' than polygenism, rather than as the subsequent dialectical synthesis it looked like to the English.[136]

As ever, the question of interracial unions was pivotal in this new series of debates on the classificatory status of human diversity. Broca's contentious hypothesis of very unequal degrees of human hybridity was sceptically received by English Darwinians and quietly ignored by Topinard. Huxley and Darwin brought their usual pragmatic mix of emphatic naturalism and racialized philanthropy to the matter. Both rejected the extremist position that 'mixed breeds of mankind' were infertile or unviable and cited in evidence the Pitcairn Islanders, thriving progeny of English sailors and Tahitian women. Darwin refuted claims that Australian and Tasmanian women could not procreate with European men with the equally global assertion that 'the half-castes are killed by the pure blacks'. He concluded that the 'races of man' were 'not sufficiently distinct to co-exist without fusion'. Huxley admitted both his predisposition to expect some infertility between the 'extreme modifications' of humanity but lack of 'any satisfactory proof' of its reality.[137] Topinard sketched a classification of species parallel to Broca's: '*hostile*' (no fertile crossings), '*intermediate*' (no sustained posterity), and '*friendly*' (indefinitely fertile). But although he identified 'different degrees' of interracial fertility, 'the closest more, the more distant relatively less', Topinard nonetheless encompassed the entire human genus, Australians included, within the third category. He proposed racial crossing as the 'mechanism' that had at once produced 'the infinite diversity of present races' and ensured the survival of traces of purportedly extinct types, such as Tasmanians, in their hybrid descendants.[138]

Arguably, Topinard's most important contribution to his science was his attempt to specify and dereify the anthropological notion of *race*. In a detailed history of the concept (1879), he showed how the terms *race* and *espèce* were plucked from common usage to serve the abstract taxonomic needs of eighteenth-century naturalists and quickly concretized as real entities. But historians, ethnologists, and linguists confused matters by using *race* in an expanded 'public' sense, conflated with the social and political idea of *peuple*, 'people', in ignorance or defiance of the anthropological verity that *races* were physically determined constituants of *peuples*.[139] Thanks to countless migrations, crossings, and fusions over innumerable generations, there were no pure *races*, only *types*: assemblages of 'common characters' identified in *peuples* by observation or measurement and subject to the vicissitudes of the struggle for existence — fusion, absorption, disappearance, atavism. It was *peuples* large or small that anthropologists actually studied and the *type*, like the *race*, was an abstraction without 'indefinite permanence'.[140] Yet in the end, Topinard's demand

for a more systematic terminology petered out in limp re-endorsement of his 'master', Broca's, partition of anthropology between the science of man in general and the science of human races, or ethnology, in particular; while Topinard's clarion call to dematerialize race as an idea, not a reality, came to grief on his own and his colleagues' inability to shake their conviction that 'the determination of race' was 'anthropology par excellence'.[141]

Residual monogeny and the spectre of extinction

In certain important respects, Darwin and Wallace's (1858) revolutionary concept of 'natural means of selection', its elaboration in Darwin's theory, and its application to man at once confirmed and required a sea change in the concept of species, in ideas about man's place in nature, and in explanations for human differences. Yet however novel Darwinism looked in Britain (though not in France), rupture is an insufficient metaphor for this intellectual transformation since its logic was also historically embedded in contemporary discourses. Moreover, Darwinian speculations on the origins of human diversity — dysteleology notwithstanding — recall in part certain earlier monogenist strategies to combat polygenist assaults on their doctrine by compromising with the racialization of anthropology. Wallace and Darwin both endeavoured to reconcile the premise of a unitary human origin with the seeming reality of 'those striking and constant peculiarities which mark the great divisions of mankind' by hypothesizing that 'the races of man diverged at an extremely remote epoch from their common progenitor' and thenceforth evolved differentially during the immensely long process of speciation.[142] Wallace's proposition that human races originated through the ancient operation of natural selection on the physical structure of a 'single homogeneous' primitive race (with the power of natural selection afterwards confined to man's 'mental and moral' character) is analogous to Lacépède's projection of the organic differentiation of very divergent races to a long-distant past when the impact of climate on the single original human species was much greater. So too, Serres's concept of 'three primordial types' had served tacitly to rationalize the premise of original unity with the alleged facts of actual racial difference and inequality.[143]

Wallace's conjectural history of human racial evolution culminates in a utopian scenario in which the 'inevitable extinction' and displacement of the 'lower and more degraded races' would produce a world 'again inhabited by a single homogeneous race, no individual of which will be inferior to the noblest specimens of existing humanity'. Darwin similarly anticipated a 'not very distant' future in which 'man in a more civilised state, as we may hope, than the Caucasian' would be separated from the remaining apes by a 'break' wider than the present one 'between the negro or Australian and the gorilla'. In his textbook on anthropology, Topinard evidently agreed. These evolutionist prognoses of a bleak future for all 'lower' — non-white — races resemble more the polygenist

Hombron's prediction of the obliteration of 'inferior races and species' than they do Serres's more optimistic forecast of the restoration of human unity through racial 'fusion'.[144] Yet elsewhere, Topinard proposed a variation on Serres's theme, envisaging 'plurality of races in the past and unity in the future' as a necessary outcome of endless crossings and extinctions. Theoretical future unity, however, would be limited by the 'influence of the milieus', an 'adjuvant cause' without effect on 'ancient, fixed types' but which would come into its own as a modifying force on 'types decomposing through crossings', thereby ensuring the persistence of diversity and the continued hybrid existence of otherwise extinct types.[145]

Recent scholarship has shown how 'extinction discourse' or 'doomed race theory' with respect to newly colonized dark-skinned autochthones developed from the late Enlightenment as a corollary of readings of Spanish colonial history, recent experience in North America and Oceania, and confidence in the necessity of progress. For most of two centuries, belief in the inevitable demise of 'inferior races' in the face of civilization served as an umbrella discourse transcending ideological differences within imperialism, notably between anthropologists, philanthropists, settlers, and administrators.[146] Humanitarian credence in the scenario and the tension thus engendered between philanthropic and scientific imperatives are patent in a paper 'On the Extinction of Human Races' read by Prichard (1840:168-70) to the British Association late in 1839. Deploring 'the extermination of the native tribes' with the onset of European colonization, he called on 'Christian nations' to make a serious effort to prevent 'these calamities'; yet he took racial 'destruction' for granted as the inevitable outcome of encounters between 'simple' tribes and 'the more civilized agricultural nations' — 'this seems to have been the case from the time when the first shepherd fell by the hand of the first tiller of the soil'. Accordingly, he focused 'philosophical' concern on the need for what would later be called salvage ethnography, 'to obtain much more extensive information than we now possess of their physical and moral characters'.

In contrast to Prichard, John Lort Stokes (1812-1885), a shipmate of Darwin on HMS *Beagle* and its commander during the latter part of that vessel's Australian survey voyage of 1837-43, challenged the widely-held opinion that an 'all-powerful law', confirmed by 'history', necessitated 'the depopulation of the countries we colonize'; he took serious issue with the humanitarian rationalization of 'extinction' as a 'mysterious dispensation of Providence' that left no part for philanthropy but 'to smooth, as it were, the pillow of an expiring people'; and he called for acknowledgement of 'moral responsibility on the part of the whites'. Yet, even though he had celebrated the 'sharp', 'intelligent', 'fine-looking' appearance of the half-caste offspring of Tasmanian women with foreign men that he had met in the Bass Strait Islands, Stokes too pronounced a specific elegy for the handful of Tasmanians still surviving on Flinders Island:

'Their destiny is accomplished'; 'all we can do is to soothe their declining years, to provide that they shall advance gently, surrounded by all the comforts of civilization, and by all the consolations of religion, to their inevitable doom; and to draw a great lesson from their melancholy history'.[147]

Conclusion

Semantically, this chapter has traced the crystallization by naturalists and anthropologists of an old genealogical term and an ancient mindset of widely shared European distaste for certain visible human characters into the scientific concept of a race. Initially a concrete denominator for essentialized human groups, it was ultimately systematized as an abstract noun condensing a total theoretical system, as in Knox's aphorism, 'Race is everything', and Blanchard's assertion that 'the instinct of race is innate in man's heart'.[148]

Discursively, the chapter has investigated a major transition hinged roughly on the passage from the eighteenth to the nineteenth century: the broad shift from the Enlightenment differentiation of universal stages of linear social development in the natural history of man to the hierarchical classification of discrete biological races by the science of race; and the parallel displacement of optimistic scenarios of general human progress by pessimism about the aptness of non-Europeans for civilization or even in some cases for survival. Though the case for discursive hiatus is compelling, it should obscure neither the significant continuities in European attitudes to non-white people over at least five hundred years nor the tenacity with which certain cardinal concepts and dispositions — among which race has been pre-eminent for the past two centuries — can and do metamorphose and recur across ideological spectrums. Moreover, by modern antiracist standards of verbal propriety, my metaphors of movement and transformation may seem irrelevant, with Enlightenment and nineteenth-century writers deemed equally guilty of racism: Buffon, Blumenbach, and Kant have each been portrayed as precursors of Anthropology's ambivalent complicity in the normalization of scientific racism.[149] Yet the blanket charge of racism is too blunt and anachronistic an instrument for most historians who want to discriminate precisely between discourses, ideologies, vocabularies, and authors and to understand them in contemporary terms. Such a perspective, for example, sharply differentiates Blumenbach's relativism, professed lack of anti-Negro prejudice, and insistence on the 'perfectibility' of 'our black brethren' from the diverse racial fundamentalisms of Cuvier, Lawrence, Knox, Hunt, Broca, or most of the polygenists.[150]

Intellectually, the chapter has tracked the tortuous trajectories by which climate and crania, environment and heredity, reproduction and morphology were opposed or interwoven as divergent relative emphases in hostile schools of anthropological explanation and were eventually fused in evolutionary theory.

The environmentalist monogenism of Buffon, Kant, and Prichard heavily emphasized reproductive criteria. Like them, Blumenbach also attributed human diversity to external stimuli but he only belatedly acknowledged reproduction as a key index of racial variation, in addition to cranial structure. Before 1850, most polygenists denied environmental influences on race formation in favour of a static morphological approach while Broca brought reproduction and morphology together in his work on hybridity and craniology. So too did his transformist disciple Topinard (1879:655) who admitted the 'action of the milieus' on races made unstable by the twin impact of the struggle for existence and crossbreeding. Darwinian synthesis conceived species, races, or 'persistent modifications' as labile products of very long-run adaptations to milieus, transmitted by generation, but remained heavily reliant on morphology and anthropometry. Thus Darwin (1871:231) remarked that the 'form' of every organic being 'depends on an infinitude of complex relations': the 'variations' which have 'arisen' and 'been preserved' in response to 'surrounding physical conditions', to rival 'surrounding organisms', and to 'inheritance from innumerable progenitors' whose forms had resulted from 'equally complex relations'. Huxley (1894:219), the comparative anatomist, insisted on the application of 'purely zoological methods' to man. All these strands ultimately came together in the new science of 'ecology' as conceived by the German evolutionary biologist Ernst Haeckel (1834-1919): the 'whole science of the relationships of the organism to the surrounding external world'.[151]

Feeding back and forth, to and from common usages, the biological idea of race underwrote the explosion of race pride in nineteenth-century Europe and the United States together with its negative corollary, the steady hardening of prejudice against racial difference. Such pride and prejudices — shared, theorized, and justified by scientists of race — had, by the end of the nineteenth century, become a key component of the ideological underpinning of Euro-American imperialism and the colonial domination it was extending over significant portions of the world.

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Notes

[1] The works in question were by Soemmerring (1784, 1785) and Meiners (1785).

[2] Cuvier to Pfaff, 31 December 1790 and 19 February 1791, in Cuvier 1858:201-3, 215-16. See also Blanckaert 2003a:147-8; Stocking 1968:35.

[3] For discussions of the problematic etymology of race see, e.g., Boulle 2003; Dover 1951; Hudson 1996:247-8; Topinard 1879; Trevor 1951; Williams 1983:248.

[4] Estienne 1539:411. Latin-English translations are based on Lewis and Short 1879.

[5] Blanckaert 1988:25; Boulle 2003:12-13; Venturino 2003.

[6] Richelet 1732, II:536.

[7] Bernasconi 2001a; Blanckaert 1988:24-34; 2003a; Douglas 2005; Duvernay-Bolens 1995:10; Hudson 1996; Stocking 1968:35-41; Topinard 1879; Williams 1983:248-9.

[8] [Bernier] 1684; Buffon 1749, III:371-530; Goldsmith 1774, II:213-31; Leibniz 1718a:37-8; 1718b; Maupertuis 1745.

[9] Buffon 1749, III:379; 1777:455-63.

[10] Leibniz [1677-86], quoted in Fenves 2006:13, original emphasis.

[11] E.g., [Brosses] 1756, I:17, 80; II:348, 376, 378-9; Forster 1777, II:226-31; Forster 1778:276-9; see Chapter Two (Douglas), this volume.

[12] Blanckaert 2003a:138; Stocking 1968:35-8; Venturino 2003:31.

[13] Duvernay-Bolens 1995:9-10, 12-13, 25; see also Broberg 1983; Sloan 1995:121-6; cf. Blanckaert 1998:17-20.

[14] Buffon 1749, II:437-44; 1753:386; Eddy 1984:4-12, 39; Farber 1972; Sloan 1995:128-33, 135-9.

[15] Buffon 1777:462-3, 478-80, 484. The contemporary dictionary of Jean-François Féraud (1725-1807) defines *espèce*, first, as a term in logic meaning 'What is below the genus and contains several individuals below itself'; and, second, as *sorte*, 'kind', 'type' (1787-8, II:148).

[16] Buffon 1749, III:371-9, 523-4, 530; 1766:313; 1777:462; see also Blanckaert 2003a:135-8; 2006:458-61; Douglas 2005; Eddy 1984:31, 38; cf. Hudson 1996:253-5; Sloan 1995:135.

[17] Buffon 1749, III:446-8, 526; 1766:313-16; see also Eddy 1984:12-39.

[18] Blumenbach to Banks, 24 January 1797, in Banks [1770-1820]: 8098/314; Blumenbach 1795:322; 1806:50, 68-9.

[19] Blumenbach 1775:60; 1795:167. Latin *gens*, 'that which belongs together by birth or descent', literally means 'clan' and has a strong connotation of common origin when used in its extended sense of 'a race, nation, people'.

[20] *Stemma* literally means 'garland (hung upon an ancestral image)' and by extension 'pedigree, genealogical tree'; *stirps* literally means 'stock, stem, stalk' and, by extension to human beings, 'stock, race, family, lineage'.

[21] 'Five very select skulls from my collection, to demonstrate the equivalent number of the principal varieties of mankind: 1. Tungun [Mongolian]; 2. Caribbean [American]; 3. young female Georgian [Caucasian]; 4. Tahitian [Malay]; 5. Ethiopian of Guinea [Ethiopian]' (Blumenbach 1795:324-6; plate 2).

[22] The translation received Blumenbach's input and approval (Blumenbach 1798:xii).

[23] Blumenbach 1795:121, 303, 320; 1798:94-5, 213, 223; Forster 1786:159-60. As early as 1793, Blumenbach had privately applied the English term race in this indefinite sense to the Pacific Islanders (Blumenbach to Banks, 1 November 1793, in Banks [1770-1820]: 8098/116-17); see Chapter Two (Douglas), this volume.

[24] Kant first explicitly addressed in print the question of *den verschiedenen Racen der Menschen*, 'the diverse races of men', in 1775, in a prospectus for a summer course on physical geography (2001). A revised version was published in 1777 and subsequent articles on the theme followed in 1785 and 1788. For the wider philosophical and ideological settings of these papers, see also Bernasconi 2001b, 2006; Greene 1954:36-9; Lagier 2004; Lenoir 1980:90-5; Liebersohn 2006:197-208; Sloan 1979:125-37; 2002:238-41; Strack 1996:290-9; Zammito 2006:36-43.

[25] Kant 1777:125-32, 156-60; 1785:404, 407-8; 2001:2-4, 6-12.

[26] Buffon 1766:311, 313-14; Kant 1777:139-64; 1785:394-5, 402-17; see also Blanckaert 2003a:142-6; Eze 1995:214-19; Greene 1954:36-8; Lenoir 1980:87-92.

[27] Blumenbach 1803, I:29, original emphasis. This passage first appeared in the fifth edition of the *Handbuch der Naturgeschichte*, 'Manual of Natural History' (1797), which I have not seen. My rendition is from François Artaud de Soulange's French translation of the 1799 sixth edition which, he said, was produced 'under the eyes' of Blumenbach who reviewed the manuscript (Blumenbach 1803, I:xvi). Lenoir (1980:83-96) saw Blumenbach's acceptance of reproductive criteria as a symptom of the steady theoretical convergence since the late 1780s of his signature concept of the *Bildungstrieb*, 'formative force' — 'the agent responsible for organic structure', conceived as a 'Newtonian force' — with Kant's equally teleological idea of the *Stamm* and its *Anlagen* as the generative source of different races. This meeting of minds paralleled the shift by both men from preformationist to epigenetic theories of generation. Blumenbach described the *Bildungstrieb* or *nisus formativus* as linking the 'two principles which explain the nature of organic bodies, the physico-mechanical with the *teleological*' (1789; 1795:82-8, original emphasis; see also Sloan 2002:246-53).

[28] In *Beyträge zur Naturgeschichte*, Blumenbach mostly preferred *Spielart* to *Varietät* but they were clearly synonyms, both used to translate Latin *varietas*, 'a variety'.

[29] Blanckaert 2003a:145-9; Figlio 1976:23-8, 35-9; Stocking 1968:29-39.

[30] See Staum 1996:26-7.

[31] Cuvier 1817a, I:18-19, 91-100, original emphasis. According to the *Dictionnaire de l'Académie française* (1835), the term *museau*, 'muzzle', 'snout', referred specifically to 'the dog and some other animals' and was sometimes 'popularly' extended to people, 'but only with contempt or in jest'. It was routinely applied to certain people by the science of race.

[32] Cuvier 1817a, I:16, 30-56. Karl Figlio (1976:21, 33-5) pointed to the metaphor of 'organization' as 'the central concept of life sciences' in the early nineteenth century, to comparative anatomy as 'the science of organization' and its 'methodological partner', and to Cuvier's seminal position 'at the centre of comparative anatomical thought'.

[33] Prichard 1813:233; 1836-47, I:xix, 2, 257, 284-97; V:285.

[34] Prichard 1836-47, I:1, 110-11; V:547, original emphasis. E.g., Prichard (1836-47, I:284-97) allowed that his 'physical history of the different tribes' of Africa would reveal that 'the features of the Negro races' were less 'widely diffused in so strongly marked a degree' than was implied by his anatomical discussion.

[35] Prichard 1813:15-25, 166-7; 1826, II:589; 1836-47, I:246-7.

[36] Prichard 1836-47, I:4, 113, 216, 304, 358, 376.

[37] Prichard 1836-47, I:vii, 109; Stocking 1973:lxxi.

[38] Knox 1850:7, 13, 22-4.

[39] E.g., *generis humani varietatum principalium*, 'principal varieties of mankind', as 'principal human races'; *hominum gentes et nationes multifarias*, 'the peoples and the multifarious nations of men', as 'the races and the multifarious nations of men'; *varietates craniorum gentilitiae*, 'national varieties of skulls', as 'racial varieties of skulls'; *hominum stemmata*, 'human stocks', as 'races of men'; *pulcherrimam hominum stirpem*, 'most beautiful human stock', as 'most beautiful race of men' (Blumenbach 1795:1, 65, 114-283, 303, 324; 1865:162, 163, 188, 207-63, 269).

[40] Blanckaert 1988:25, 29; Stocking 1968:36-8; Venturino 2003:20-2.

[41] Blumenbach 1775:41-2; 1795:73; 1798:208; 1806:60, 67-9; Buffon 1749, III:529-30.

[42] See Chapter Two (Douglas), this volume.

[43] Lacépède 1800:2, 7, 14, 22-4, 27-9.

[44] In the late eighteenth century, the Dutch anatomist and artist Petrus Camper (1722-1789), a founder of craniometry, had proposed that the 'lines which mark the countenance, with their different angles' could be systematically measured and compared to provide an aesthetic diagnostic of characteristic 'difference' in 'national physiognomy'. The resultant 'facial angle' was that formed on a profiled head between a horizontal line drawn from the bottom of the nose to the opening of the ear and the 'facial line' drawn from the upper lip to the forehead along the nasal bone. Camper published his measurements of 'an assemblage of craniums' with results ranging from angles of 58° for an orangutan to 100° for an idealized Greek image; his living human range was from 70° for a Negro to 80° for a European. Camper himself argued ardently for the singularity and the unity of 'the whole human race' and dismissed as merely 'superficial' and 'amusing' the 'striking resemblance' that his juxtapositions seemingly displayed 'between the race of Monkies and of Blacks' (1794:1, 9, 32-44, 50). However, others were less scrupulous — notably the Englishman Charles White (1799) — and the facial angle or its derivatives became staples in subsequent racial mensuration and differentiation. See also Meijer 1999.

[45] Blumenbach 1775:40-1; 1795:308, 322; 1803, I:73; 1806:68-9.

[46] Cuvier (1817a, I:81, 94) proclaimed: 'Man forms only one genus, and that genus is unique in its order'. However, he was more circumspect about asserting human specific unity, prefacing his definition of *races* as 'hereditary conformations' with the qualification: 'Although the human species appears unique …'.

[47] Cuvier 1800-5, II:2-15. Cuvier's cranio-facial ratio incorporated and elaborated Camper's equally crude comparative measure of the facial angle (see note 44).

[48] Lawrence 1819:iii-iv, 31-5, 126-7, 245-6, 271, 300, 341, 363, 481, 500-1, 516, 555.

[49] Bynum 1975:8-14; Ellingson 2001:250-1; Lawrence 1819:1-16; Stepan 1982:11; Wells 1971:321-2, 330-6, 359-60; see also Chapter Six (Gardner), this volume.

[50] Ellingson 2001:250-1; Hunt 1868:432; Prichard 1826, I:vi; 1836-47, I:vii; Wallace 1845; Wells 1971:336-51.

[51] Boulle 2003:20; Stuurman 2000:2, 12-16. In a letter written in 1697, Leibniz (1718a:37-8) mentioned 'a certain traveller [who] had divided men into certain tribes, races, or classes', evidently an allusion to Bernier. But in implied qualification of this position, Leibniz affirmed his own belief in essential human unity: 'this does not mean that all men, who inhabit this globe, are not all of a single race, which has been altered by different climates'. Blumenbach (1795:296) acknowledged the anonymous author of the 1694 article simply as the first to divide 'mankind into varieties'.

[52] In 1753, in a notorious footnote to a new edition of his essay 'Of national characters', Hume (1987:262-3, cf. 98) declared 'the negroes, and … all the other species of men (for there are four or five different kinds) to be naturally inferior to the whites' as a result of 'an original distinction' made by nature 'betwixt these breeds of men'. In 1769, Voltaire (1829, I:7) maintained that the 'prodigious' physical differences between Negroes and 'the other species of men' were 'inherent' and could not be explained in conventional climatic terms. Kames (1774, I:37) also rejected Buffonian climatic determinism and argued: 'were all men of one species, there never could have existed, without a miracle, different kinds, such as exist at present'.

[53] Atkins 1734:18-21, 23-4; 1735:39, 176-9; [Long] 1774, II:356, original emphasis.

[54] Forster 1786:76-7, 163-5; Sloan 1979:131-4. See also Strack 1996:302-5, 303, note 69.

[55] Soemmerring 1799; White 1799: 56, 67, 83, 98, 125, 134.

[56] I thank Claude Blanckaert for this insight (pers. com., 23 May 2006; see also Blanckaert 1988:31).

[57] Forster 1786:79-80, 86, 157, 158-60, 161-5.

[58] Blanchard 1854:18-19, 30, 213.

[59] Virey 1800, I:86, 87, 124, 138, 145, 189, 413.

[60] However, Virey did not consistently maintain the distinction between species and races since he also claimed that certain *races* — notably the Jews — maintained 'permanent characters, an indelible type' (1824, I:435; see Blanckaert 1988:30-1). Between the first and second editions of his *Histoire naturelle du genre humain*, 'Natural History of the Human Genus', Virey had refined his thesis on human specific

differences in the course of lengthy entries on 'Man' published in several dictionaries of natural history or the medical sciences (1803:217-65; 1817b:142-98; 1817c:244-73).

[61] Virey 1824, I:431, 436-8, 439, 452; II:17-18, 22, 30-195, 30-1, 106-7; III, 460. Virey sometimes used the term *orang-outang* in the generic sense of 'ape' but his phrase 'the true orang-outang' referred to a particular animal genus, positioned 'closest' to the human genus and comprising two species: Linnaeus's *simia satyrus* (the modern genus *Pongo*, the orangutan of Malaysia and Indonesia) and his *simia troglodytes* (the modern genus *Pan*, the African chimpanzee) (Virey 1824, III:428, 448-92, 508). See Broberg 1983:179-93 on the troubled history of the nomenclature of the great apes generally and the orangutan in particular during the eighteenth century.

[62] Virey 1824, I:431; II:30-195, 106-7; III:460-3.

[63] Bory de Saint-Vincent 1822; 1827a, I:1-5; 1827b; Cuvier 1817a, I:81.

[64] Bory de Saint-Vincent 1827a, I:72, 82, 103-5; II:104, 113, 124. Like White's (1799) notion of 'gradation', Bory's concept of 'passage' (1827a, I:14-15) reinscribed the classical notion of the 'great chain of being' in support of a polygenist agenda (see Bynum 1975:12-22; Stepan 1982:6-19). Unlike Bory, most contemporary French naturalists, including the polygenist Desmoulins (1826:189), more or less followed Cuvier who, (himself following Blumenbach and rejecting global application of the 'so called scale of beings' as 'erroneous'), isolated man within the order *Bimana*, the first of the class *Mammalia*, and positioned the genera *Orang* and *Gibbon* in the family *Simia*, 'Ape', as the first of the *Quadrumana*, the second order of *Mammalia* (Cuvier 1817a, I:xx-xxi, 70-104; Geoffroy Saint-Hilaire 1828, 1829). In a dictionary entry on 'Orang' , Bory (1827b:262-4, 268-81) elaborated his zoological taxonomy by coupling the genus *Orang* with the human genus as the 'first' 'tribe' of the family *Bimana* of the order *Anthropomorpha* — thus reinstating a term that Linnaeus had used originally and relabelled *Primates* in 1758. Though 'notably inferior' to orangs in physical organization and intelligence, the genus *Gibbon* was 'still quite close' to man and constituted the 'second tribe' of *Bimana*. The families *Singe* and *Lémurien* completed the order. Bory's genus *Orang*, like Virey's, comprised two species: the African chimpanzee and the southeast Asian orangutan.

[65] Desmoulins 1826:4-7, 158, 194-7, 219, 294-5, 335; see also Blanckaert 1988:27, 31-3.

[66] Desmoulins 1826:189, 299-300, 304-8, 312-17.

[67] Blanckaert 1988; 2003a:146-7.

[68] Balbi 1826a:XXIV; 1826b:xxi, lxxx-lxxxii, 61, 231.

[69] Blanckaert 1988:34-49; Staum 2000; see below and Chapter Five (Anderson), this volume.

[70] Prichard 1836-47, I:2; 1848; 1851; Staum 2003:125-57; Stocking 1973; 1987:48-53, 239-46. 'The history of nations, termed ethnology', wrote Prichard in a late work (1843:132-3), 'must be mainly founded on the relations of their languages'.

[71] Hunt 1863a:9-10, 17; 1863b:386-7; 1864a; 1864b:liii, lv; 1867:lvii, lxvi. On the one hand, Hunt (1866:321, 327; 1867:lvii, lxvi) refused to 'give any preference to the various theories of man's origin'; on the other, he maintained that 'there were at present several distinct species, if not genera, of man'. He nonetheless found the polygenist hypothesis 'the most reasonable', if 'of no great scientific value', and railed against the renewed 'monogenism' of the Darwinians: to allow the 'diversity of existing species of man', he warned, did not necessarily mean belief in 'diversity of origin'.

[72] In 1790, for instance, Cuvier had privately questioned the usefulness of the naturalists' definition of a species as 'the entire posterity of the first couple created by God', on the grounds that it was now impossible to 'recover the thread of that genealogy' (Cuvier to Pfaff, 22-23 August 1790, in Cuvier 1858:178-9). See also Rudwick 1997:260-1.

[73] Fausto-Sterling 1995:27-8; Stocking 1968:39.

[74] Balbi 1826:lxxx-lxxxi; Malte-Brun 1803:540; Mentelle and Malte-Brun 1804:377, original emphasis.

[75] Bory de Saint-Vincent 1827a, I:[i], 72, 94.

[76] Duvernay-Bolens 1995:14-15, 20-5; Staum 2003:119.

[77] Blanckaert 2003a:148; Cuvier et al. 1807:135, 137.

[78] Blanckaert 1988:31; Virey 1824, I:437, 500, 511.

[79] Original emphasis.

[80] Ellingson 2001:248-323; Stocking 1971; 1987:246-57; see also Chapter Four (Turnbull), this volume.

[81] Stocking 1973:lxx, lxxvi; 1987:66. In an important recent work, the historian Colin Kidd (2006:122) put a convincing case that 'white racial self-confidence' was underpinned by 'persistent and troubling

religious doubts, to which the problem of racial diversity itself contributed' and that 'race turns out to have been a significant … feature in the wider ecology of religious crisis'.

[82] Blanckaert 1988:45; Staum 2000:462-5; see also Chapter Five (Anderson), this volume. Geoffroy Saint-Hilaire held the chair in the Zoology of Mammals and Birds at the Muséum from 1841-61; Serres was the inaugural holder of the chair in the Anatomy and Natural History of Man from 1839-55 and was succeeded by Quatrefages who held the chair, renamed Anthropology, until 1892. Both men were avowedly naturalists first and anthropologists second (Quatrefages 1867-8:366). Quatrefages was co-author of a monumental global survey of 'ethnic skulls' (Quatrefages and Hamy 1882).

[83] Serres et al. 1841:645, 648, 649-50, 653-4, 655, 656-7.

[84] 'Mr Broca's craniograph' (Broca 1860-3: pl. 7).

[85] Geoffroy Saint-Hilaire 1860-3:127-8, 131-3, 137, 141, 143.

[86] Original emphasis.

[87] Geoffroy Saint-Hilaire 1860-3:132, 137, 139-40, 143.

[88] Larson 1968:291-2, 296-9; see also Hörstadius 1974:274-5.

[89] Buffon 1753:377-91; 1766:358; Kant 1785, 1788, 2001:2-4; see also Blanckaert 2003b:44-8; Farber 1972:262-5, 275-84; Glass 1960:227-32; Quatrefages 1870:240-1; Sloan 2002:244-50.

[90] Blumenbach 1795:66-71, 85-8, 98-102; 1803, I:27-31.

[91] Blumenbach 1790:23-31; Lenoir 1980:93-5, original emphasis.

[92] Cuvier 1812:76; 1817a, I:19-20.

[93] Appel 1987; Bynum 1975:20-1; Geoffroy Saint-Hilaire 1833; Lamarck 1907; Rudwick 1997:82-3, 168, 179, 253, 260-4; Cuvier 1812:58, 73-5; 1817a, I:xx-xxi.

[94] Lawrence 1819:260-2, 268, 293-4, 297, 303-4, 502-3, 510, 515-49; Wells 1971:323-5, 329.

[95] Lawrence 1819:127, 515; Prichard 1813:25, 194-5, 198; Wells 1971:355-60.

[96] Prichard 1813:204, 231-2; 1826, II:537, 558-83.

[97] Cuvier to Pfaff, 22-23 August 1790, in Cuvier 1858:179; 1817a, I:94.

[98] Prichard 1826, I:95-8, 126-8; 1836-47, I:147, 150; 1843:11-26, my emphasis.

[99] Buffon 1749, III:382-4; 1766:313.

[100] Lawrence 1819:296, 300; Prichard 1826, I:127; 1836-47, I:148-50; 1850:147.

[101] Virey 1800, I:412; 1817a:458-9; 1817c:244, 267-8.

[102] Virey 1824, II:183-5, 192-5.

[103] Serres et al. 1841:645-50, 655, 657.

[104] Blanchard 1854:7-13; Hombron 1846:272; Hombron and Jacquinot 1846-54; Jacquinot 1846:5. See also Blanckaert 2003b:49-50; Staum 2003:115-17; Chapter Two (Douglas), this volume.

[105] Hombron 1846:76-8, 85, 104, 275-84, 301, 302, 395.

[106] Jacquinot 1846:36, 90-104. His claim to precedence was ill-founded as the belief that 'Mulattos' were 'of the mule-kind, and not so capable of producing from one another as from a commerce with a distinct White or Black' ([Long] 1774, II:335) had been commonplace in literature on the West Indies and the American South at least since the eighteenth century (Nott 1855:397-8).

[107] Blanchard 1854:19, 30, 31-6.

[108] See Chapter Eight (Luker), this volume.

[109] Knox 1850:145-7, 296-8, 301; 1855a:357-8.

[110] Knox 1850; 1855a, b, c; 1862; Richards 1989.

[111] Knox 1850:9-23, 52, 66-7, 107, 145, 298; 1855a:358; 1855b:626.

[112] Knox 1850:297; 1855b:627, original emphasis; 1855c:25-6, 45; Richards 1989:400.

[113] Knox 1850:28, 145-91, 300-6; Richards 1989:404.

[114] Knox 1850:88, 178, 319, note 10; 1855a:357-8.

[115] Knox 1850:22-5; Stocking 1971:374; 1987:65-6.

[116] Ellingson 2001:248-323; Stocking 1971; 1987:238-73; see Chapter Four (Turnbull), this volume.

[117] Darwin and Wallace 1858; Jones 2002; Schwartz 1984.

[118] On the earlier occasion, Wallace was perhaps pandering to the racial extremism of some Anthropological Society members since the later paper — a review of the work of the geologist Charles

Lyell (1797-1875) published in the Tory *Quarterly Review* — is racially more temperate, if also generally more snide (1869:391-2): natural selection 'could only have endowed the savage with a brain a little superior to that of an ape, whereas he actually possesses one but very little inferior to that of the average members of our learned societies'.

[119] Darwin 1839:25-8; 1871, I:34, 169, 232, 238-40; 1882, I:181-92; 1958:73-4.

[120] Darwin 1871, I:229; Huxley 1894:248; Wallace 1864:clxvi, clxxxiv; 1867:103.

[121] Darwin 1871, I:233-6; Wallace 1867:103.

[122] Wallace 1845: folio 1, 3-4; see also McKinney 1969.

[123] Darwin 1871, I:228-9, 235; Huxley 1894:242, 248; Wallace 1864:clviii-clix, clxvi, clxxxiv.

[124] Stocking 1971:384-6; 1987:269-73.

[125] Broca 1858-9:434, 451-71, 684-728. In 1858, Broca (1858-9:440) condensed his current position on the fixity of species in the 'short formula' that 'species no longer change, because they have already done so as much as they can'.

[126] Broca 1858-9:434; 1859-60:601-3, 614-16; Gobineau 1884, I:24; Knox 1850:107; Nott 1855:407; Prichard 1843:12-13. Blanckaert (2003b:51-3, 57-63) lucidly summarized Broca's contributions to mid-nineteenth-century debates on human hybridity.

[127] Morton 1850-1:82; Nott 1855:376, 397-8. Blanckaert (2003b:56-8) saw the renewed emphasis on gradation as yet another reincarnation of the 'great chain of being' (Bynum 1975). In this vein, Broca's prose is peppered with terms like 'ladder', 'degrees', and 'series' (e.g., 1858-9:716, 218; 1859-60:412, 616, 620).

[128] Broca 1858-9:727-8, 218-58, 345-96; 1859-60:428, 433-4.

[129] Broca 1858-9:237-8; 1859-60:618-25, 412.

[130] Broca 1858-9:232-3; 1859-60:616-25, 392-429. Broca's (1859-60:412-13) seemingly authoritative relegation of Australians and Tasmanians to the negative extreme of the 'human series', as 'absolutely incorrigible savages', cited only three works by men with significant Australian experience — a naval surgeon, a naturalist, and a geologist (Cunningham 1828; MacGillivray 1852; Strzelecki 1845); plus a handful of scientific publications by French naval naturalists who had fleetingly visited Australia or Tasmania in the course of scientific voyages (Garnot 1836; Jacquinot 1846; Lesson 1839; Quoy and Gaimard 1830).

[131] Broca 1858-9:716; 1859-60:414, 435-9.

[132] Broca 1858-9:435-41; 1866:62; 1870:169-70, 193-218. The author of the epigram was the Swiss comparative anatomist René-Edouard Claparède (1832-1871).

[133] Broca 1870:190-3, original emphasis; see also Chapter Four (Turnbull), this volume.

[134] See Chapter Five (Anderson), this volume. Topinard succeeded Broca as director of the Ecole d'Anthropologie and as secretary-general of the Société d'Anthropologie de Paris.

[135] Topinard 1876; 1879:599, 603, 613-14, 627, 633-42, 655, 659. See also Blanckaert 1988:48; Chapter Five (Anderson), this volume.

[136] Topinard 1876:15, 547-64; 1879:600-3, 612. He defined Darwinism as '*Natural selection through the struggle for existence, applied to Lamarck's transformism*' (1876:550, original emphasis).

[137] Darwin 1871, I:215, 220-6; Huxley 1894:219-24, 234, 240-2, 252.

[138] Topinard 1875; 1879:599, 613-14, 645-7, 652, original emphasis.

[139] Topinard 1879:589-600, 612-28.

[140] Topinard 1879:631-3, 642-3, 648, 651, 657.

[141] Topinard 1876:2-9; 1879:589, 660.

[142] Darwin 1871, I:229-35; Wallace 1864:clxv-clxvi.

[143] Lacépède 1800:22-4; Serres et al. 1841:645-6; Wallace 1864:clxiii-clxvi, clxxxiv. See also Haller 1970; Stocking 1987:146-50; Richards 1989:406-35; Wells 1971:336-51.

[144] Darwin 1871, I:201; Hombron 1846:104-5; Serres et al. 1841:647-50, 655-7; Topinard 1876:435-8, 557-9; Wallace 1864:clxiv-clxv, clxix; 1867.

[145] Topinard 1875:235-6; 1879:596, 645-8, 652-5, 657-8.

[146] See especially Brantlinger 2003; McGregor 1997. See also Chapters Two (Douglas) and Four (Turnbull), this volume.

[147] Stokes 1846, I:263-4; II:450-1, 463-4, 470.

[148] Blanchard 1854:32; Knox 1850:7.

[149] Eze 1995:237; Gailey 1996:37; Gould 1994; Sloan 1995:148, note 79; Todorov 1989;126. See also Blanckaert 2003a:133-4; Bowler 1984:87-8.

[150] Blumenbach 1795:178, 289; 1806:73-97.

[151] Haeckel 1866, II:286-7; Stauffer 1957:140-1.