

## From Monster to Ancestor: The Emergence and Animation of the Deep Past

*De « monstre » à « ancêtre » : les espèces éteintes et la représentation du passé géologique chez les pédagogues victoriens*

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# From Monster to Ancestor: The Emergence and Animation of the Deep Past

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- 1 The first volume of Charles Lyell's seminal *Principles of Geology*, published in 1830, opened with a bold analogy comparing the practice of geology to the practice of civil history.

When we study history, we obtain a more profound insight into human nature, by instituting a comparison between the present and the former states of society. [...] As the present condition of nations is the result of antecedent changes, some extremely remote and others recent, some gradual, others silent and violent, so the state of the natural world is the result of a long succession of events, and if we would enlarge our experience of the present economy of nature, we must investigate the effects of her operations in former epochs. (Lyell: I, 1)

- 2 Lyell took this tack because he was seeking to promote his 'actualist' theory of geological process which, in contrast to the then predominant outlook, stipulated as a fundamental principle the claim that the forces responsible for shaping the earth's surface have been equivalent in their nature and in their strength throughout all time. For Lyell, this principle was the *sine qua non* of empirical geology; for without it, practitioners could only offer suppositious explanations for the geological features they observed. But if they accepted it, then present phenomena would provide a reliable yardstick by which to estimate the nature of the forces which shaped the earth in earlier periods as well as the amount of time that had been required to produce a given feature. Lyell compared the 'economy of nature' to the 'state of society' or the 'condition of nations' as a way of transferring the notion of historical dynamics from the domain of civil history, where its action is self-evident, to the domain of natural history, where it seemed much less so. His intention was merely to argue that nature should be treated as a historical process ruled by unchanging principles, but the implications of the strategy were further-reaching. It

suggested that the ‘condition of nations’ was a derivative branch of the ‘economy of nature’, which in turn implied that humans and beasts were not ontologically distinct sorts of beings, but participants in a unified and all-encapsulating organic system or economy.

- 3 This sort of outlook, which Lyell was able to turn to argumentative advantage in furthering his theoretical agenda, was only just beginning to coalesce during the period in which the geologist produced his famous manual. Prior to this, it had seemed self-evident that the human world and the natural creation were different sorts of things; that humans were unique in enjoying a moral character which meant that they alone existed in and for themselves. Meanwhile the animal, lacking any moral qualities, existed only for the benefit of humans, in accordance with the wise foresight of the creator of the relationship. This order of things was necessarily fixed: any movement within it would destroy the logic of the system as a whole.
- 4 So how did this outlook begin to change? And how, once stability had given way to existential continuity and temporal flux, was a moral policing of the system arranged? How was the changing relationship between animals and humans directed and moulded so that it might continue to structure mankind’s sense of his place in a world whose scope and nature were changing so radically? These are some of the questions that we hope to address in this article. We will do so by looking at a series of nineteenth-century figures involved in the dissemination and popularisation of the findings of palaeontology, focusing in particular on their presentation of those ancient extinct species which were beginning to be reconstructed from their fossil remains. Extinct species were of special interest not only because of their intrinsic novelty, but also because of the problems of interpretation they posed for writers hesitating at the threshold of a historicised way of constructing the relationship between man and nature.
- 5 In what follows we will consider writings that can be treated as emblematic of three distinct stages in the process by which the historicisation of nature was absorbed by the reading public through exposure to the interpretative narratives offered by scientific popularisers. The central stage is the threshold period around 1830, when the possibilities of historicisation emerging from within the scientific establishment first started to be processed by popularising authors. The other two stages are those that lie on either side; first, an earlier period in which the extinct beasts of the past can still be treated as otherworldly curiosities; and then, on the other side of the threshold, a period in which the background fact of organic continuity can be taken for granted, but the dynamics by which it is supposed to operate have become a central concern and matter for debate. The examples we will use thus cluster around 1800 for the first stage, 1830 for the second, and 1880 for the third.

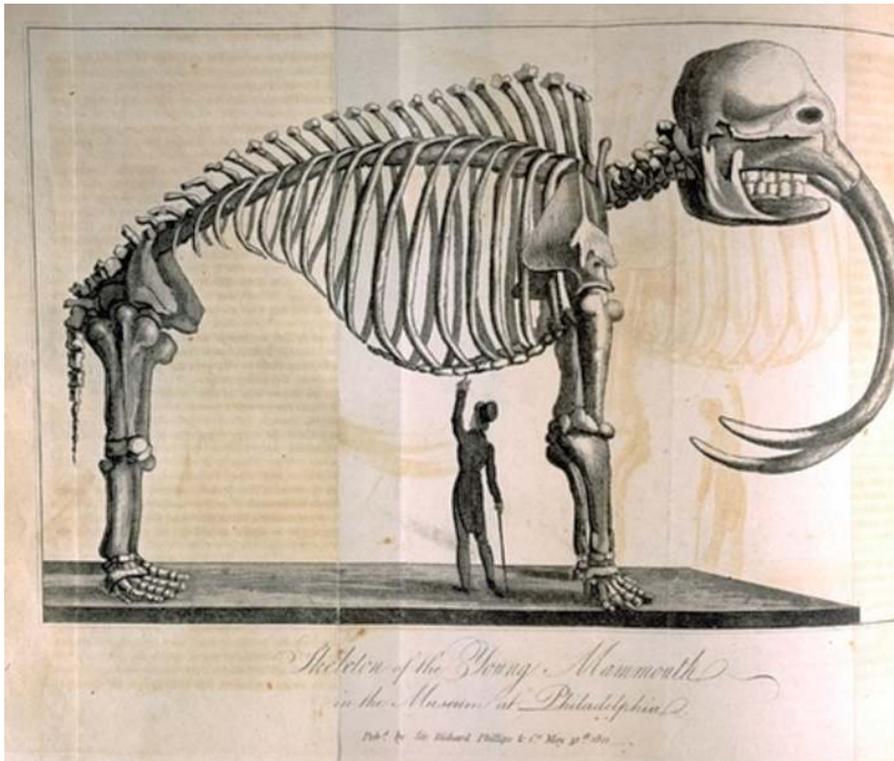
## Early Reconstructions of Extinct Species

- 6 By the 1790s, the systematic study of fossils was well-established. The fossilised remnants of large quadrupeds such as the mammoth and the mastodon, as well as the giant ground-sloth, the Megatherium, were classified at the turn of the century by Georges Cuvier and other naturalists according to the same taxonomical categories as applied to living animals. The reality of the extinction of these large terrestrial quadrupeds seemed inescapable, there being little reason to believe that such conspicuous animals could have escaped observation even in the less-explored continents. Unless one wished to deny the

organic character of fossil remains, there was little option but to accept that certain species had died out during the course of the earth's history. But among the extinct species, many were identified by the naturalists as generically related to living species.

- 7 This pattern of facts seemed to imply that life on earth had a history. What was less clear was the shape and extent of that history, and, most of all, the nature of the dynamics that drove it. The technicalities of stratigraphy and classification provided the field with its raw information which in turn fed into the bigger picture as to the possible or probable nature of the deep past and its relation to the present; yet a matter of such world-changing import would obviously not be left under the exclusive control of the small group of institutionally-sanctioned specialists. Instead, a wide array of voices joined in with the debate, and used it to promote a variety of theoretical, ideological or economic interests; often taking on something of the mantle of the scientific expert in order to enhance the credibility of their contributions. Indeed at this early stage in the professionalization and institutionalisation of the natural sciences, it would be anachronistic to attempt to divide the field into distinct 'scientific' and popularising voices.
- 8 The earliest attempts in Britain to reconstruct complete skeletons of extinct animals were undertaken by figures whose motivations were at least as much economic as scientific. We can take as examples Rembrandt Peale (1788-1860) and Thomas Ashe (1770-1835), both of whom brought reconstructed fossil skeletons from North America and put them on display in private museum spaces that they created for the purpose in Liverpool and in London. The writings they produced about these fossil collections were presented as a contribution to the scientific debate, but their more immediate function was that of museum guide for paying visitors.
- 9 In 1802 Rembrandt Peale brought to Britain a complete skeleton of a 'mammoth' excavated by his father in Ohio. The specimen was in fact a mastodon, but Peale seems to have preferred the older and no doubt more evocative name of 'mammoth'. The accompanying pamphlet was given a suitably colourful and descriptive title: *An Historical Disquisition on the Mammoth, or, Great American Incognitum, an extinct, immense, carnivorous animal, whose fossil remains have been found in North America*. From the outset, then, Peale focused on the spectacular qualities of his specimen. It was an 'extinct, immense carnivorous animal', a most alluring combination of mystery, size and ferocity.
- 10 An engraving of Peale's 'mammoth' made in 1821 when it had returned to Philadelphia shows the beast as a museum specimen with its tusks curiously turned downwards (fig. 1). Also integrated into the scene is a top-hatted gentleman standing underneath the skeleton, one uplifted hand just touching the bottom of its rib-cage. The caption announces the specimen to be a 'young mammoth'—naturally leading the viewer to assume that an adult specimen would have been even bigger than this one.

Figure 1. Peale's Mastodon displayed in Philadelphia (1821)



- 11 The claim about the carnivorousness of the mastodon/mammoth was an old one. It was based on the fact that the shape of the teeth was different from that of modern elephants; but Cuvier had definitively scotched this argument in 1796, insisting that despite the difference they were still designed for grinding not for cutting. The persistence of the carnivorous claim—in Peale's piece as in other later ones as we will see—was surely mainly due to the showman's instinct for the spectacular. It has likewise been argued that the downward-pointing tusks were meant to enhance the ferocity of the creature's appearance, and to make it more credible as a redoubtable predator (O'Connor 34). However, Peale's text did not particularly depict the animal in these terms. Instead, it was presented rather like a large land-dwelling walrus using its tusks to grub up shellfish and molluscs from riverbanks and lakeshores (Peale 77-79).
- 12 In comparison, Thomas Ashe was a more flamboyant and perhaps more unscrupulous character. According to Ralph O'Connor, he acquired his fossil collection by dishonest means and then passed himself off in the account he wrote as their heroic discoverer (O'Connor 36-39). The title of his 1806 tract—*Memoirs of Mammoth, and various other Extraordinary and Stupendous Bones, of Incognita, or Non-descript Animals*—recycled some of the tropes already used by Peale; and the title-page also informed readers that the publication was intended 'for the information of those ladies and gentlemen, whose taste and love of science tempt them to visit the Liverpool Museum', where Ashe hoped to install his collection. But despite these overtures to genteel taste and to scientific respectability, Ashe's text was distinctly sensational in tone. Not only did he talk up his own (probably fallacious) exploits in finding and retrieving the fossil remains, but he also systematically depicted the animals themselves and the world they inhabited as one of unremitting savagery. Here, for example, is what he had to say about some unassembled bones of the *Megalonyx* collected in one of his cabinets:

Case 4: Contains an object of inexpressible grandeur and sublimity. . . . The animal to whom it appertained, with superior agility and ferocity to the tiger, with a body, too, of unequalled magnitude and strength, must have been the terror of the forest and of man. This monument stands alone. It has no competitor. . . . Furnished with carnivorous teeth to consume, and with claws to rend and destroy: in short, a monster of the tiger line, endowed with every bloody and malignant property. (Ashe 7-8 & 37)

- 13 Ashe either did not know or else failed to mention that Cuvier had two years earlier classified the *Megalonyx* with the sloth family: it was a smaller version of the *Megatherium*, a ground-dwelling sloth of distinctly herbivorous tendencies. The *Megatherium* had even larger claws, but Cuvier speculated that these were probably used for pulling down the branches of trees.
- 14 The striking common feature of these early reconstructions of extinct life forms, then, is the appeal to the idea of monstrosity. The beasts inhabiting the geological past are not beasts like any others; they seem to have almost mythical proportions in comparison, and to inhabit a terrifyingly *other* world characterised by ceaseless conflict and bloodletting. This depiction serves to make sense of the fossil remains of extinct species in a way that resists historicisation. These creatures are not of this world, nor is there any direct continuity between their world and ours. The monstrosity of the former world fits with its providential annihilation. The palaeontologist who uncovers its traces is prompted to celebrate the contrasted world of stability and harmony which we are lucky enough to live in today. The luridness of the contrast is fascinating in itself, but also effectively sanitises and preserves the existing order as deriving from a special source, distinct from the more brutal norms of the merely natural world.

## Constructing a Stadial ‘Natural History of Life’

- 15 By around 1830, new findings and new claims coming from within the palaeontological establishment were putting this ahistorical polarity under pressure. Most significantly, the systematic association of fossil types to geological strata had enabled geologists to put relative dates on the various formations, and so to produce what were effectively chronological maps of land masses. In Britain, the first such maps were produced by William Smith (1769-1839) and George Greenough (1778-1855) in the 1810s and 20s. This tool was critical to the creation of a sense of “geohistory” (Rudwick 2005, 1-2); the notion that the earth’s crust can be read chronologically, and that the organic remains found in its strata thus form what we now call the ‘fossil record’, a sequential ‘archive’ of information about the successive ages of the deep past. Fossil remains were therefore not all of one single category, the undifferentiated vestiges of ‘monstrous’ beasts from a former state of the world. Not only were they more or less related to modern animals, but particular classes of animals could be systematically associated with particular geological formations; that is, each class of animal appeared to have emerged at a particular stage of the fossil record. One of the earliest pieces to have brought this fact explicitly into the view of a general audience was a brief article by Gideon Mantell (1790-1852) in the *Edinburgh Philosophical Journal* of 1831. Its title was ‘The Geological Age of the Reptiles’, and it opened with a paragraph that immediately set out the paleontological case for an earth history marked by a sequence of successive ages in the emergence of the variety of the modern forms of life:

Among the numerous interesting facts which the researches of modern geologists have brought to light, there is none more extraordinary and imposing than the discovery that there was a period when *the earth was peopled by oviparous quadrupeds of a most appalling magnitude*, and that reptiles were the *Lords of the Creation*, before the existence of the human race! These creatures of the ancient world, many of which, from their extraordinary size and form, rival the fabled monsters of antiquity, existed in immense numbers and in latitudes now too cold for the habitation of modern oviparous quadrupeds. . . . It is, moreover, interesting to remark, that some of these ancient and lost races are, as it were, the types of the existing orders and genera; and that in the pigmy *Monitor* and *Iguana* of modern times, we perceive striking resemblances to the colossal *Megalosaurus* and *Iguanodon* of the ancient world. (Mantell 1831, 181)

- 16 In his popular lecture series of 1836, published in 1837 as *Wonders of Geology*, Mantell did not choose to follow a chronological plan, despite the potential glimpsed in his 1831 essay; instead he maintained the conventional pattern of starting with the most recent strata and working his way down towards the oldest. In other words, he retained the viewpoint of the empiricist studying the available evidence, rather than taking up the stance of a storyteller reconstructing the story of life suggested by the fossil record. Nevertheless, when it came to the chalk and clay strata of the Secondary epoch—Mantell's particular specialism—he allowed himself a brief poetic sally into the imaginative reconstruction of the period and all its features. The section was entitled 'The Country of the Iguanodon', and it provided the reader with a sort of 'virtual landscape' of the epoch. To complete the evocation, the skills of the celebrated artist John Martin were called upon to provide a frontispiece on the same theme<sup>1</sup>:

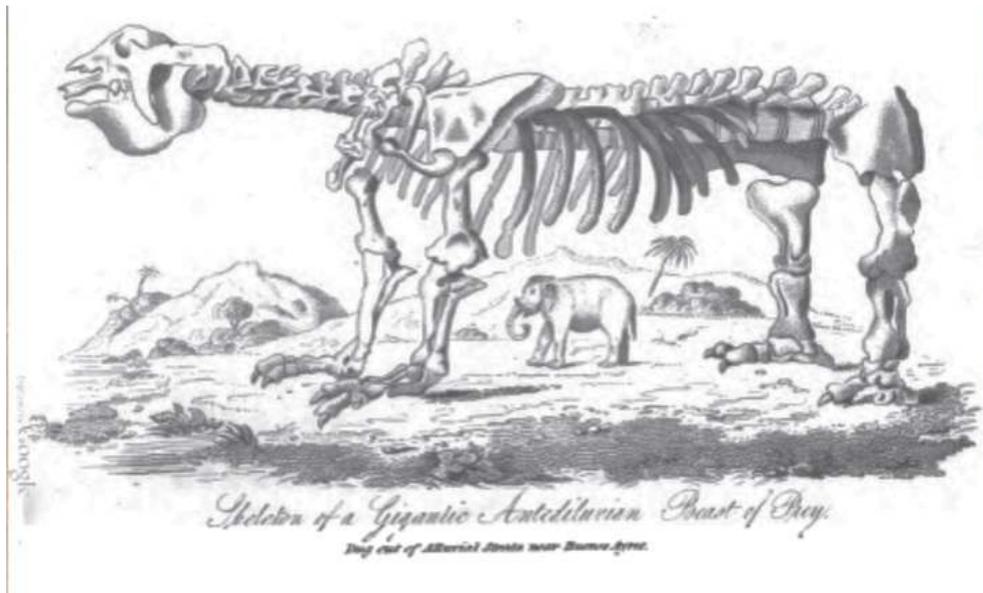
Whether the country was an island or a continent cannot be determined; but that it was diversified by hills and valleys, and irrigated by streams and rivers, and enjoyed a climate of a higher temperature than any part of modern Europe, is most evident. Arborescent ferns, palms, coniferous trees, and cycadeous plants, constituted its groves and forests, and delicate ferns the vegetable clothing of its soil; and in its fens and marshes the equisetæ, and plant of a like nature, prevailed. Its principal herbivorous quadruped was the enormous lizard, the Iguanodon; its carnivore, the *Megalosaurus* and other predacious reptiles; crocodiles and turtles frequented its rivers, and deposited their eggs on the banks and shoals; and its waters teemed with fishes, mollusca and crustaceans. . . . Such was the country of the Iguanodon—a country, which language can but feebly portray, but which the magic pencil of a Martin, by the aid of geological research, has rescued from the oblivion of the past, and placed before us in all the hues of nature, with its appalling dragon-forms, its forests of palms and tree-ferns, and the luxuriant vegetation of a tropical clime. (Mantell 1838, 1, 442 & 444)

- 17 This passage and the image that illustrates it are characterised by a striking combination of empirical detail tending to render the scene familiar, and overall impressions tending to reinstate the sense of strangeness. It is a world inhabited by 'appalling dragon forms', but its 'hills and valleys' were 'irrigated by streams and rivers' much as they might be today. The animal life is extraordinary in its individual forms, but taken generally it inhabits the landscape in a way that seems thoroughly familiar, with amphibians laying eggs near the edge of water courses that abound in fish, molluscs and crustacea. Even the giant reptiles perform the normal roles of 'herbivorous quadruped' or 'carnivore', much like the larger mammals of today.

## Natural Histories of Life: Popular Appropriations

- 18 This sort of description, emanating from within the scientific establishment, gave material substance to the possibility of a narrative history of life that would trace the main stages in its development. A number of more or less popularizing authors seized upon the opportunity. Adopting a variety of narrative strategies, they were all trying one way or another to recruit the empirical historicisation of nature offered by the geologists and palaeontologists in defence of some particular outlook as to the place of human beings in a natural environment that was no longer static or fixed. Some form of naturalistic becoming seemed inevitable, but just what form it might take was up for grabs. In this section we will briefly consider four such authors, two of whom were moving in unison with the possibility of a unique and naturalistic narrative connecting natural to human history, and two who were resisting it. We will focus in particular on their evocation of extinct species and the strategies by which they excluded or integrated them into their narratives.
- 19 Our examples of pieces written in a ‘resisting’ vein are James Rennie’s *Conversations on Geology* and Mary Roberts’s *The Progress of Creation, Considered with Reference to the Present Condition of the Earth*, published respectively in 1828 and 1837. Both of these works were motivated by a pious concern to prevent the lessons of geology from rendering redundant the lessons of the Scriptures. But neither attacked the legitimacy of geology’s attempts to decrypt the past by empirical means; nor, technically, were they attempts to ‘reconcile’ scripture and geology as systems. James Rennie (1787-1867) chose to focus uniquely on empirical matters to the exclusion of all scriptural material in the hope of showing how the ‘Mosaic geology’ of his mentor, Granville Penn, constituted a more convincing account of the material phenomena than that of any of the existing geological schools of thought. Mary Roberts (1788-1864) took just the opposite approach, maintaining the traditional ‘six-day’ narrative framework and showing how it might be filled out with empirical detail. Her object of study was ‘creation’ not nature, but the claim to be studying ‘the progress of creation’ implied a belief in a naturalistic continuity; not, of course in the material processes by which creation occurred, but in the underlying logic according to which it progresses from one stage to the next towards an ultimate and definitive goal.
- 20 The formal approaches adopted by each author were also radically different, calculated for different audiences. Rennie used the mother-child dialogue of traditional pedagogies, while Roberts engaged in a more direct résumé of the stages of the history of life and was probably aiming at an older readership. Rennie’s account was largely devoted to geological phenomena, while Roberts’s tended to foreground the current variety of living things. Neither devoted much space to extinct animals, a problematic group of beings for Biblical literalists; but since both authors claimed to be working within an empirical framework, they could not reject out of hand the reality of extinction as a phenomenon. Instead they had to find ways of marginalising the species concerned; ways, that is, of removing them from the core narrative of the story of life. To do this, they maintained some of the representational norms of the earlier generation of popularisers—especially those of monstrosity and carnivorousness.

Figure 2. 'Skeleton of a Gigantic Antediluvian Beast of Prey'. Rennie's mastodon/megatherium



- 21 When Rennie first raises the matter of extinct forms of life near the end of *Conversations on Geology*, he introduces an illustration in some ways reminiscent of Peale's 1802 reconstruction of the Mastodon. The extinct species depicted is a Megatherium (fig. 2)—though Rennie seemed unsure of the creature's identity as we shall see in a moment. As with Peale's illustration, the specimen is shown in skeletal form and it is foregrounded to make it look imposing. In the distance appears a miniscule living elephant, literally dwarfed by the colossal bones of the skeleton that tower above it. No effort is made properly to identify either of the species depicted, or to situate them in time: the caption tells us only that the principal specimen is 'a Gigantic Antediluvian Beast of Prey'. The accompanying text seems to identify the beast in question as a Mastodon—which might explain why it is compared in the scene to an elephant:

A single tooth . . . of the mammoth or antediluvian elephant, or a foot of the mastodon, with its enormous claws, are amply sufficient to demonstrate the enormous size of the animals to which they belonged. (Rennie 364)

- 22 Rennie's presentation of his exemplar of an extinct species is riddled with errors of the most elementary sort. The animal represented is a giant ground sloth, not closely related to the elephants, and certainly not carnivorous—as should have been obvious from the visibly largely toothless jaws. But the author avoided making specific claims about the carnivorousness of mastodons or mammoths. He simply displayed an ill-identified but spectacular ancient beast sporting giant claws and dwarfing its modern equivalent for size and, presumably, strength and ferociousness. The details seem scarcely to have mattered to Rennie: he was simply trying to sideline extinct animals as dangerous to man, and incompatible with a world designed for human enjoyment.
- 23 The extinct animal is still as 'monstrous' as Peale's or Ashe's, but the addition of a naturalistic setting nevertheless introduces questions of temporal contextualisation. By putting his skeletal 'monster' into the same scene as a modern elephant, Rennie was suggesting that there was some sort of relationship between the two. The relationship was contrastive: both animals belong, in a sense, in the same 'history', but unlike the 'normal' animals of the existing creation, the extinct ones belong in an abortive or

undesirable version of the definitive created order of things, and were properly eliminated by providential intervention in the Biblical Deluge. This argument was developed by Mary Roberts, who explicitly defended Mastodon carnivorousness against the authority of Cuvier (Roberts 243), and offered aesthetic justifications for her thinking:

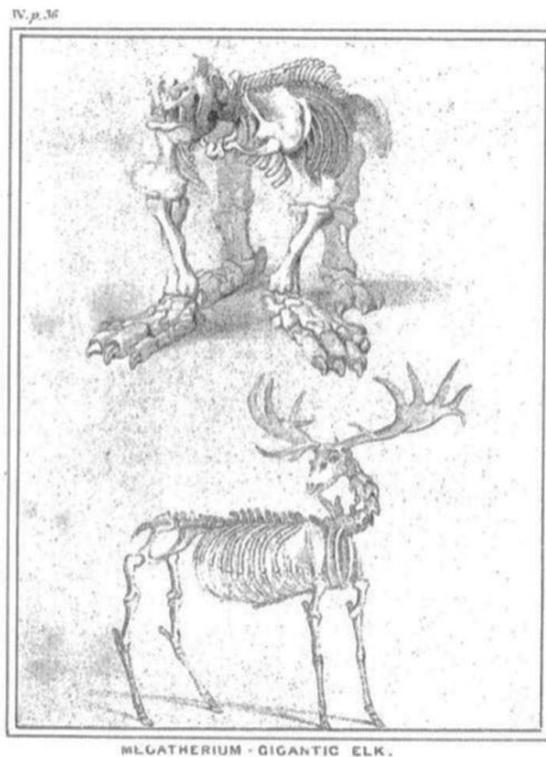
Surrounded as we are by graceful species of animal creation, among which the elephant, rhinoceros, and hippopotamus are the only ones that appear to us as unwieldy, and colossal, we can scarcely figure to ourselves such enormous animals, with their formidable grinders, or terrific spines. Yet such there were, and these, we have reason to conclude, perished at the era of the deluge. (Roberts 245)

- 24 For Rennie and Roberts, extinct species were indeed a part of the natural history of life on earth, but only in a negative sense. They had no formative place in the story of the ‘progress of creation’, to use Roberts’s expression. They seemed to inhabit a sort of natural limbo from which they are not permitted to emerge. Being eliminated by the Deluge, like the sinning part of humanity, the account invites the supposition that these ferocious beasts were, in some obscure analogous sense, the sinning part of the animal creation; though of course they could be faulted only for their existence not for their actions.
- 25 Other popularising authors did not seek thus to set the inhabitants of the ancient world so radically apart. The examples we will consider here are Maria Hack’s *Geological Sketches, and Glimpses of the Ancient Earth* (1832) and the anonymous *Peter Parley’s Wonders of the Earth, Sea and Sky* (1837), attributed to Samuel Clark. Like Rennie, Maria Hack (1777-1844) made use of the pedagogical dialogue format in a work that was clearly intended for younger readers. The central goal of her text was to demonstrate the educationally and morally improving effects of the study of geology as an empirical discipline. The mother-son dialogue was thus presented in exemplary terms, and the reader witnesses the scientific and moral maturation of the book’s young ‘hero’, Harry Beaufoy, as he pursues his course of study. As far as conceptual outlooks were concerned, Hack offered an up-to-the-minute ‘actualistic’ understanding of geological processes, effectively promoting the position advanced by Charles Lyell in the first volume of his *Principles of Geology* (1830). But Hack’s pupil was meant to learn by direct empirical observation, not by authority or precept; so Harry acquires an actualist attitude spontaneously, as a result of the observations he makes under his mother’s guidance. Invited to inspect a perfectly preserved fossil fern from a slate mine in Lancashire, for example, Harry infers for himself that the condition of the specimen renders untenable the thesis that the plant was swept away from the tropics by a Deluge-like event, and that it must have grown and died in a normal way *in situ* (Hack 212-13).
- 26 Hack thus mainly used fossils as offering evidence about the nature of former processes, not as elements formative of a geohistorical narrative. It was for this reason, no doubt, that she chose not to foreground the extinct species of the past. Only towards the end of the book are such beings mentioned at all, and when they do come up, Harry’s mother refers the matter to the recognised experts. On their authority she offers a speculative reconstruction of the lives of extinct species that draws naturalistically on the familiar lives of modern equivalents (Hack 307). On the other hand, the text and its accompanying illustrations seem designed to discourage any tendency to place fossil types in a chronological sequence. The only illustrations of extinct species represent a Plesiosaur and an Ichthyosaur; both are simple specimen diagrams showing black silhouetted outlines on a plain white background, with the skeletons visible within. There is no contextualisation. When these illustrations are presented to Harry by his mother, the

lesson they are meant to inspire is pointedly oriented away from chronological reconstruction and towards the moral qualities required of the skilful naturalist. 'The history of the fish-lizard', Mrs Beaufoy informs her son, 'offers great encouragement to perseverance' (Hack 295).

- 27 So Hack seems to have been willing to naturalise the extinct animals of the deep past enough to relate their worlds to the current one, but not to allow the emergence of an underlying narrative of stadial progression in the sequence of extinct forms. This is exactly what Samuel Clark (1810-1875) would do in his 1837 text, *Peter Parley's Wonders of the Earth, Sea and Sky*. This text was published anonymously, abusively adopting the popular 'Peter Parley' penname of the American author Samuel Goodrich (1793-1860) (Secord vi-vii). Clark also imitated Goodrich's narrative technique, in which lessons about geography, history and the natural world were offered in a friendly first-person voice, incarnated by the avuncular traveller and observer, 'Peter Parley'. The paleontological material occupies only a small part of the first section of Clark's book; thereafter, the author moves on to other more familiar subjects of natural history. But the basic ground plan of the Parley series—constructed around travel and observation—created interesting possibilities for inventive treatment of fossils and the history of life.
- 28 Clark's narrator travels from Dorset to Paris and beyond, visiting various sites where fossils have been unearthed. The sequence of sites visited is chosen to produce an implied chronology: in Dorset the reader is introduced to the giant reptiles of the Secondary epoch; in Paris the quadrupeds of the Tertiary; and in subsequent visits to various 'bone caves', the Quaternary inhabitants of Europe that resemble modern tropical species such as elephants and hyenas. Along the way Clark focused not just upon the fossil remains but on the probabilistic reconstructions of the living animals and the landscapes they inhabited. Each chapter opens with an illustration depicting the animals of the epoch in question, captured naturalistically going about their daily existences in contemporary landscapes. The chapter headings explicitly connect these reconstructed worlds to current geography: hence we pass in chapter 2 from 'What creatures once lived where Dorsetshire now is', to chapter 3 and 'What sort of a place existed where the neighbourhood of Paris is now'. Clark thus proposed to understand the geological past by thinking of it as a series of 'pictures' capturing the successive states of the world and its life forms. The difficult idea of a changeful nature was made accessible by the appropriation of the geographical norms of travel writing: transit through space is used to lend substance to transit through time.

Figure 3. Specimens of extinct species in Clark: Megatherium and giant elk



- 29 As part of the process, Clark pushed the ‘naturalisation’ of extinct species further than most. We have already seen how the animals of the past were described and depicted in naturalistic settings, and that these settings were arranged to suggest a sequence of successive ages of life. In the closing section of the material relating to fossils, Clark completed the sequence with a survey of some of the more recent examples of extinct species, starting with mammoths and giant elks and finishing with beavers and dodos—the latter having been killed off by man, either just locally (the beaver) or from the face of the earth (the dodo). The illustrations here are different from the chapter-head scenes, and at first sight they may seem similar to the ‘skeletal confrontations’ used by Rennie and Roberts; but the underlying logic is in fact quite different (fig. 3). First of all, the specimens are not arranged to suggest a confrontation between a vitiated or monstrous past and an improved or tamed present; instead they are simply aligned as contemporaneous examples of recent extinctions. In the accompanying text, each of the beasts is briefly described with some admixture of contextualising remarks. On the Giant Elk, for example, Clark remarks that ‘It is not known when these creatures became extinct, but it is probable that it may have been since Britain has been inhabited by man’ (Clark 36). Appearing just two pages before shifting to beavers and dodos, the extinctions of prehistoric beasts are thus seamlessly integrated into the fabric of modern existence. The treatment of the Megatherium is particularly striking in this respect, and Clark seems to go out of his way to offer a picture of its lifestyle at the opposite end of the spectrum from the lurid image that had been offered most particularly by Rennie. According to Clark, the Megatherium’s teeth

show it lived on vegetables, and the great ungainly fore feet, armed with tremendous claws, would lead one to suppose that it used to dig in the ground for roots, and tear down the branches of trees. If one might decide from its likeness to

other animals in its various parts, it was a sulky beast, and, if it could have spoken, would only have said to its neighbours, 'Let me alone—I want nothing of you, if you want nothing of me'. (Clark 37)

- 30 By having the extinct beast speak, and express a commonplace sentiment, Clark playfully produces a different sort of engagement with the deep past. Rather than appealing to the sensationalism of shocking otherness which had allowed Rennie or Roberts to hive off the pre-historical past as a different sort of space in which a different order of being had been allowed temporarily to reign, Clark normalised this past even more thoroughly than had been managed by Hack with her de-dramatisation of extinct species. More importantly, he showed that the story of the deep past did not have to rely on the shock of monstrous otherness to generate a sense of spectacular engagement; instead, the reader's interest might be engaged by the pleasure of following a naturalistic plot as it unfolds, in a series of dramatic scenes leading up to a familiar finale. The engagement here came from a sense that the reader was discovering something of his own ancestry; that this material was not just a curiosity from some strange and failed past, but that it was somehow constitutive of the character of the world we know and inhabit. There was thus a sense of connection and continuity that offered a new way of reading the past, and of relating to it.

## Incorporating Evolution: Bestial Revivals in a Two-way Man-animal Relationship

- 31 We have seen that some popularisers of the 1830s were able to find quite convincing schemes for the naturalising of the deep past, and indeed for its elaboration as a stadial history. The theme of continuity would become increasingly central in the mid and late century as the evolution debate took centre-stage. In this form the question of continuity became one of *descent*. The continuity of the history of life no longer implied a merely material sequence of taxonomical developments, but an intimate connection with earlier forms from which, it was now claimed by those who accepted the evolutionary hypothesis, all later forms had derived. The intimate nature of the historical connection was given strong expression, for example, by the French populariser Camille Flammarion (1842-1925)—best known for his work in astronomy but who also produced a history of life. In this 1886 presentation of the findings of palaeontology, he simultaneously stressed the monstrous appearance of extinct species, and the relationship of ancestry that connected them to us, the beholders of the strange spectacle they constitute. Some of his illustrations were designed to capture this relationship (fig. 4 [Flammarion 97]), while the text argued that the appearance of monstrosity was largely in the eye of the beholder. Our gaze had to be educated to see beyond the superficial otherness, to detect the underlying continuity of descent and derivation:

De toutes parts, péniblement, lourdement, léthargiques, brisés en morceaux, la tête ici, les jambes plus loin, souvent incomplets, ces vieux cadavres, déjà pétrifiés au temps du déluge, ont entendu la trompette du jugement, du jugement de la science, et ils se sont ressuscités, se sont réunis comme une armée de légions étrangères de tous les pays et de tous les siècles, et les voici qui vont défiler devant nous, étranges, bizarres, inattendus, gauches, maladroits, monstrueux, paraissant venir d'un autre monde, mais forts, solides, satisfaits d'eux-mêmes, semblant avoir conscience de leur valeur et nous disant dans leur silence de statues : 'Nous voici, nous, vos aïeux ; nous, vos ancêtres ; nous, sans lesquels vous n'existeriez pas.

Regardez-nous et cherchez en nous l'origine de ce que vous êtes, car c'est nous qui vous avons faits . . . Oui, nous voici : saluez vos pères !' (Flammarion 6-7)

Figure 4. Flammarion's parade of extinct forms



- 32 In the 1830s, authors underlining the monstrosity of extinct species were typically trying to write them out of the history of life; but by the 1880s monstrosity no longer had the same significance. Now it was typically used not as a way of resisting natural developmentalism, but as a way of drawing attention to the progressive character of that process. The 'monsters' of the deep past now helped to give a sense of gradient to the story of life.
- 33 Particularly in the British context, the 'resurgence of the monster' tended to go hand-in-hand with a moralizing problematisation of the evolutionary process. The characteristic mapping was no longer moral man as against pre-moral animals, but a derivative sequence connecting savage monster to half-feeling animal to civilized man. The unique actor of this story was Life itself, implying an absence of ontological distinction between the various forms it had adopted in the course of its long career. Such an erasure of categorical distinctions also implied that individual movements across apparent frontiers could occur in either direction, not only in a progressive but also in a regressive sense. If the animal was now a liminal being, with at least some of its representatives at the threshold of a form of moral existence, the same was true of man, but for the opposite reason. Since all individual humans carried the whole natural past in their beings, some submerged part of that past might intemperately resurface in the most unexpected places, and bestial atavism strike even in the midst of the most apparently civilised society. The strength of this anxiety is perhaps most familiarly and most compellingly incarnated by Robert Louis Stevenson's 1886 character Dr Jekyll and his bestial alter-ego Mr. Hyde.

34 Similar sorts of concerns can also be detected in the pedagogical literature and the popular science writing of the period. The revival of the 'monstrous' attribution for prehistoric forms of life was particularly evident in titles such as Henry Hutchinson's *Extinct Monsters: a Popular Account of some of the Larger Forms of Ancient Animal Life*, published in 1892. This book contained chapters with such colourful titles as: 'The Great Fish-Lizards', 'The Dragons of Old Time', or 'Flying Dragons'. A further example that is useful to us for its attempt to sum up the whole complex of issues in a single image, is an illustration produced by Linley Sambourne for a posthumous 1885 edition of Charles Kingsley's scientific fable for children, *The Water Babies* (fig. 5). The illustration is entitled 'Alpha and Omega', a reference to the redemptive powers of Christ; but the dominant mood of the image is more pantheistic than Christian. The swirling design contains a variety of different sorts of figures, all connected by the branches, leaves and fruit of a tree that grows in their midst. Starting from the bottom left and moving in a clockwise direction, we have: what looks like a pre-historic couple locked in a sensuous embrace, though she seems also to be picking fruit from the tree; a pensive or perhaps dying old man hugging his knees, with the word 'Alpha' engraved on a rock-face alongside; the central deity or spirit, perhaps nature, a dreamy and erotically charged female form; a nymph-like figure sitting on a branch playing a pipe; below him a primitive man (an American Indian?) climbs up or down the tree, with bunches of grapes nearby; then below him again an ape also holding on to a branch stares out at the viewer; in the background between these two figures appears a large feline form sniffing the ground near a human skull; and finally, below the ape, crouches a fantastic demonic creature with hairy body, pointed ears and large threatening fangs. Just below its arm is printed the word 'Omega'.

Figure 5. 'Alpha and Omega': an 1885 illustration for *The Water Babies*



- 35 It is difficult to know where to start reading the image. All these figures seem to be manifestations of the human kind in different states, and the whole to suggest the contradictions of its complex nature. The portrait includes youth, beauty, sensuality, but also age and death; it offers manifestations of man as a primitive material being, but also mythical and spiritual manifestations of an idealised form, and, finally, bestial and demonic contortions. The unity of the overall scene is ensured by the sinuous composition of the whole, and the leafy branches of the tree connecting each figure in a sort of abstract genealogy; also by the placement of the ‘alpha’ and ‘omega’ inscriptions at opposite ends of the scale, the pensive old man for the one, and the demonic beast for the other. All of these beings are what humans are or can be, at any moment. His being is not fixed but fluid, and what defines him best is not what he *is* but what he *might be*.
- 36 In a more conventional setting, we might also mention the efforts of the science educator Arabella Buckley (1840-1929) to present in her 1882 book, *Winners in Life’s Race*, a picture of the natural order of things as one characterised specifically by the emergence of moral qualities; a process which she saw as starting among the animals. Birds, for example, occupy a particularly favoured position:
- Ah! Now we really are coming to the nature’s feathered favourites, for what can be sweeter than the song of the nightingale, the skylark or the thrush? Or more touching than the fact that the young ones learn from their father the loving notes; that they, in their turn, may be able to woo and win some gentle mate to share their nests and bring up their young ones? . . . The birds, with their feathery covering and powerful wings, have left their early friends, the reptiles, far far behind. (Buckley 168 & 179)
- 37 In striking contrast, the apes are treated almost as an aberration, and much more distant from humans in their true natures than their illusory physical resemblance seems to suggest:
- The gorilla is, on the whole, most advanced [among the apes] and nearest to man in structure. But his legs are still too short and thick, and his arms long, reaching to his knee; and the large projections on the back of his neck bones prevent him throwing his head well back, so that he stoops like a hunchback, while his feet are twisted so that he treads on the outside and not on the sole. . . . We know very little of their daily life, . . . but all that we do know teaches us that in their rough way they have developed into strangely man-like though savage creatures, while at the same time they are so brutal and so limited in their intelligence that we cannot but look upon them as degenerate animals, equal neither in beauty, strength, discernment, nor in any of the nobler qualities, to the faithful dog, the courageous lion, or the half-reasoning elephant. (Buckley 255)
- 38 Buckley had little to say about extinct species, preferring instead to structure her account by taxonomical criteria. But despite the apparent non-engagement in geohistory implied by this choice, she was nevertheless able to propose a narrative of progression which highlighted the emergent moral qualities in selected classes of animals, as we have just seen. This approach enabled her to depict the implied connection between animal and human worlds in an essentially positive light, the most admirable animals seeming to sketch out a sort of ground-plan of the essential qualities that man, the complete moral being, should possess. For Buckley, it was the song-loving birds rather than the ‘brutal’ apes that gave man his essential heritage: evolutionary progression was more about the refinement of moral qualities than adjustments in physiological form.
- 39 We have cited a wide variety of examples in this section: Hutchinson’s manual for adults or Buckley’s manual for children; Sambourne’s illustration for Kingsley’s tale, or

Stevenson's schizophrenic hero-villain. What each had in common was a concern to address the newly problematised frontier between human and animal conditions. The basic strategy involves re-dramatising the bestial depths of the prehistoric past the better to stress the gradient of moral progress represented by the subsequent course run by life. This schema may be presented in purely positive terms, especially where young audiences are concerned, but it was also often experienced as a double-edged blade. In the Christian tradition, man had always been presented as a frail being, easily tempted away from the path of moral rectitude; but if the moral qualities spring not from transcendental precepts but from a natural heritage, then to stray from them takes on a particular significance. Wayward individuals had been labelled 'sinners', but in a world governed by natural forces they became perverse, or even unnatural. Faust had sold his soul to the devil because he aspired to knowledge; Dr Jekyll sought only the capacity to transgress with impunity all the fundamental laws constitutive of society. However, the very baseness of the fault gives the moralist added leverage: Jekyll's punishment did not have to await the eternal hereafter, but was imprinted for all to see in the bestial transformation of his body. Our individual duty to our souls had become a collective duty to our species; the wages of sin are not just spiritual death, but material degeneracy.

- 40 Historicised nature provoked a reorganisation of man's existential sphere. From a unique status defined by positive moral precepts, the domain of 'the human' became a polarised space traversed by the antagonistic forces of aspirant rationality on the one hand and moral sentiment or animal instinct on the other. A being essentially in movement, Man seemed to the later Victorians in constant danger of losing touch with his essential humanity even as he sought to explore its component parts. An existential ideal could only be expressed in terms of a normative balance between opposing constitutive forces; but inevitably, the ideal always seemed out of reach, and the individual's sense of humanity was thus constantly undermined. It is hardly coincidental that this era saw the centre of existential gravity move away from ministers of religion and towards professional and semi-professional dispensers of moral wisdom, whatever their specific field of expertise. Novelists, critics, psychologists, science educators, university tutors, even doctors: many traditional and emergent middle-class professions had a new duty to advise on existential balance.

## Concluding Remarks

- 41 The authors we have considered in this paper allow us to outline a clear development in modes of relating to an emergent history of life; and as a central part of this narrative, the changing relationship between humans, animals, and extinct prehistoric beasts. We have seen how the changing status of the last of these categories, in particular, was instrumental in shaping the relationship between the other two. Initially, the extinct species of the prehistoric past occupied a distinct space as 'monsters', extravagant constructions almost unthinkable as actual beings. In this form they do not impinge upon man or his identity: they are curious and thrilling remnants of some strange past world whose logic has thankfully been superseded; they are specimens disposed for our inspection in a museum gallery. The distance imposed by this scientific setting protects us from the dangers of encountering the animal itself, face to face. The only humans ever depicted in these early reconstructions are modern gentlemanly observers. The next stage involved a 'naturalisation' of the prehistoric monster, transforming its condition to

that of a normal animal, living in its particular environment in much the same way as familiar modern species live in theirs. This transformation allows the deep past to be envisaged in historical terms, and the beings inhabiting it to be figured as a series of progressive forms. The normalisation of the extinct 'monsters' of the geological past was resisted by many, even once it could no longer be doubted that they represented specific phases in the history of life. Such authors hoped that a narrative of the natural history of life could still be constructed in such a way as to make it compatible with either the factual or the formal model offered in the Scriptures. The weakening of this defensive position arose perhaps not just because of the increasing weight of empirical evidence, but also because the alternative strategies elaborated by new generations of popularisers allowed the new historicity to find an adequate echo in Establishment ideology. Although the collapsing of the barrier of animality inevitably implied a fundamental identity crisis for humans, the popularisers were nevertheless highly effective in showing how the very terms of the crisis could be turned to unprecedentedly powerful instruments of moral control.

- 42 This series of experiments with the relative statuses of 'monster', 'animal' and 'man', were all at heart motivated by the need prompted by palaeontology to negotiate an acceptable place for mankind within a natural sphere characterised by a complex of dynamic relations between its constituting members. The negotiations produced a natural world from which the ontological stability of specific identity had been banished, to be replaced with an alternative identity based upon relational bonds of similarity and difference, permitting the plotting of the pathways of genealogical derivation and, by analogy, of degree of advancement. The parallel to the practice of civil history, with its long-established aptitude to distinguish peoples by their degree of civilisation, is evident. The tendency to eliminate fixed ontological categories can be interpreted as liberating for the world of living things, human and animal; but it also entails their embroilment in new forms of mythologizing and controlling discourses.

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## NOTES

1. John Martin (1789-1854) was chiefly known for his large-scale apocalyptic paintings of Biblical scenes, such as *Belshazzar's Feast* (1820), and for his mezzotint engravings, including a series of illustrations for an 1825-27 edition of *Paradise Lost*. He produced another depiction of the deep past for the amateur naturalist and eccentric author, Thomas Hawkins. See Rudwick (1992): 21-24, 78-83.

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## ABSTRACTS

This article looks at the treatment of extinct species by scientific popularisers in the nineteenth century, and seeks to show how their status changed over time, and why. Starting out as exotic otherworldly monsters, they retained this status amongst those authors seeking to present the findings of palaeontology as consistent with the Biblical narrative of creation, while authors willing to envisage an alternative natural history of creation tended to naturalise them. By the end of the century, however, the relationship had become more complex, with authors seeking to

balance similarity and otherness, and using the mix as a way of naturalising their preferred reading of the 'story' of evolutionary processes. The article thus shows how the changing relationships between the categories of 'monster', 'animal' and 'man' reflected the strategies of educators for dealing with a perceived existential crisis for man and his relationship to the natural world.

Cet article porte sur la question de l'évolution de la représentation des espèces éteintes chez les vulgarisateurs et pédagogues victoriens ainsi que sur les raisons de cette évolution. Ces espèces sont d'abord perçues comme de simples monstres, point de vue que soutiennent ceux qui défendent une lecture croisée de la paléontologie et de la bible. Puis, elles retrouvent une place dans la chaîne des animaux chez les auteurs qui mettent en avant une autre histoire de la nature. À la fin du siècle, les auteurs proposent une interprétation mêlant familiarité et altérité, ce qui leur permet de construire un récit fondé sur la progression évolutive des espèces. L'article cherche à montrer que l'évolution dans les relations entre les catégories 'monstre', 'animal', 'homme' est en partie due aux efforts des vulgarisateurs qui utilisent les récits évolutionnistes pour illustrer la crise existentielle de l'humain dont la place dans la nature reste à définir.

## INDEX

**Mots-clés:** éducation et vulgarisation scientifiques, évolutionnisme, reconstruction des espèces éteintes, récit

**Keywords:** popular science, evolutionism, reconstruction of extinct species, narrative

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