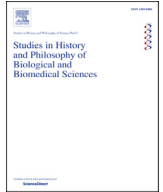




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Manifest ambiguity: Intermediate forms, variation, and mammal paleontology in Argentina, 1830–1880

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ABSTRACT

This paper presents the impact of diverse aspects of Darwin's works on the practices of mammal paleontology in different moments of nineteenth-century Argentina. Starting with Darwin through the publications of Florentino Ameghino, it shows the extraordinary complexity of systematic paleontology that characterized the second half of the nineteenth century. Neither "natural selection" nor "struggle for life" seemed to have shaped the practices of vertebrate paleontology in Argentina. Darwin's earlier work as a voyageur and geologist together with later concerns about intermediate forms and variation allow for an assessment of the impact of Darwin's work on the practice of paleontology in Argentina.

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1. Introduction

Studies of late nineteenth-century Argentine politics, medicine, philosophical ideas, culture and social thought have shown that the notions of evolution and progress, keyed to Charles Darwin, appeared widely in fashionable speech. Historians have tended to see this rhetoric as the "literary reception of science," in the words of Argentinean historian of science Marcelo Montserrat (1995). It is surprising, however, that there is no assessment of Darwinism's concrete impact on scientific practices in Latin America (Barahona & Ochoa, 2014). The following pages fill this gap by assessing the impact of Darwin's works among natural historians in nineteenth-century Argentina. They start with Darwin's publication of 1839 from the *Beagle* expedition and finish with Florentino Ameghino's massive study of mammalian fossils of 1889. The resulting picture is complex and subtle. Neither "natural selection" nor "struggle for life" seems hegemonic in vertebrate paleontology in Argentina.

A proper assessment of Darwin's scientific impact on Argentine paleontology requires an examination of specialist work about intermediate forms and variation as well as Darwin's work as a voyageur and geologist (Brinkman, 2010; Herbert, 2005). The description and publication of the material collected by Darwin on

his *Beagle* voyage, as shall be shown, encouraged trade in fossils, and it defined a structural relationship between commerce and the discipline of paleontology in Argentina. At the same time, Darwin's *Geological Observations on South America* (1846) contributed to what can be called the geography of Argentinean paleontology, an agenda that remained basically unchanged until late in the nineteenth century. Darwin's idea that South American fossil mammals, found in the Pampean mud and in other deposits, were geologically recent became a subject of scientific debate in the 1880s. It did so in a context that one can consider post-Darwinian, in that it was characterized by a kind of second-generation evolutionism whose protagonists were interested in South America's centrality in the history of the origin and distribution of mammals (Podgorny, 2005b). In that search for primitive South American mammals, the long-standing discussion of intermediate forms acquires special meanings.

Here I shall refer to the definition of fossil taxa as they were pieced together by a paleontologist at work, contemplating a collection of bones. In particular, I analyze the work of Hermann Burmeister (1807–1892), a former professor from Halle who took charge of the Buenos Aires Public Museum and its paleontological collections in 1861. I also reflect upon the early work of Florentino Ameghino (1854?–1911), a school preceptor and fossil collector from the Argentine countryside who sketched a phylogenetic classification of fossil mammals in the 1880s. Historians have insisted that Argentine Darwinism, filtered by the French

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translations of the *Origin of Species*, was marked by Lamarckian views and French transformism (Glick et al., 2001).¹ Whereas the French vocabulary is certainly present in Argentina, I contend that this fact is connected more with Argentine naturalists having trained in Parisian *laboratoires* than with their reading Darwin in translation. I refer to the problems of variation, individual differences, intermediate forms, and the criteria by which species were defined by both anatomists who adopted Darwinian evolution and those who were reluctant to accept Darwin's ideas.

2. Dealers in old bones, the succession of types, and the expansion of the fossil market

Between February 1838 and October 1843, Darwin edited *The Zoology of the Voyage of H.M.S. Beagles*, a work, which appeared in five parts, made up of nineteen numbers. The authors of the parts were Richard Owen (Fossil Mammalia), George Robert Waterhouse (Mammalia), John Gould (Birds), Leonard Jenyns (Fish) and Thomas Bell (Reptiles). As the Project "Darwin online" describes, Darwin contributed a geological introduction to Part I, the Fossil Mammalia (pp. 3–12), and a geographical introduction to Part II, the Mammalia (pp. i–iv). The numbers were issued as they were ready, the first by Richard Owen being announced for January 1st 1838, but not appearing until February.² Owen (1840) introduced his work with the following words:

It may be expected that the description of the osseous remains of extinct Mammalia, which rank amongst the most interesting results of Mr. Darwin's researches in South America, should be preceded by some account of the fossil mammiferous animals which have been previously discovered in that Continent. The results of such a retrospect are, however, necessarily comprised in a very brief statement; for the South American relics of extinct Mammalia, hitherto described, are limited, so far as I know, to three species of Mastodon, and the gigantic Megatherium.

In fact, the inventory of South American fossil mammals had been limited to two genera and four species. Darwin's materials increased the list by a total of 8 new genera. A small figure, but a big promise for European anatomists in search of new animals for a discipline that, in 1840, Owen still called orictology.

Two years later, when Alcide d'Orbigny published the geopaleontological results of his own South American voyage (Boulinier, 1995), the search for fossil animals received an extraordinary push and the expression "paléontologie" –invented by Henri de Blainville in 1822– was adopted. D'Orbigny's report included the Brazilian provinces and the Bolivian plateau and lowlands (Orbigny, 1842). In particular, he reported on Peter Claussen's work in Minas Gerais, which had been instigated by William Buckland, curator of the Ashmolean Museum and Oxford reader in Geology, who advocated teleological design and Cuvierian

principles (Claussen, 1834, pp. 19–20; Lopes, 2010; Podgorny, 2013). Claussen's excavations accounted for more than 100 new mammal species, representing remarkable growth in both absolute and proportional terms.

The increase in fossil mammal species and the presence of Darwin and d'Orbigny in South America were a sequel to the competition among brokers from the several commercial powers who arrived in the new countries after the collapse of the Spanish dominion in the Americas. French, British and American institutions sent missions and commissioned locals to collect natural samples, colonial manuscripts, and antiquities, creating the infrastructure that Darwin used for finding the bones he would eventually present to British collections (Camerini, 1997; Podgorny, 2001, 2013). European demands shaped new objects of inquiry, professions, and skills. Although a Public Museum had been established in Buenos Aires in 1823, private natural-history collections continued to be more important than state-run institutions. In the case of fossils, this situation persisted through the late nineteenth century, a situation similar to the US, where museum collections of fossils dominated only later in the century.

In the Río de la Plata, fossil collecting became a free-lance economic activity. Fossil providers –such as Pedro de Angelis in Argentina, Peter Claussen in Brazil, and Teodoro Vilardebó in Uruguay– exploited sites, organized fieldwork, bought and resold collections, and became expert in the field (Podgorny & Lopes, 2008; Podgorny, 2001, 2007, 2010, 2011). Darwin was first read in South America in the context of these commercial transactions. While dealing with London, the Neapolitan polymath and secretary to the Governor of Buenos Aires, Pedro de Angelis (1784–1859), purchased what he perceived to be indispensable references for developing his fossil business: some parts of *The zoology of the voyage of H.M.S. Beagle* edited by Charles Darwin, including Owen's *Fossil Mammalia* (1840). He also acquired Owen's first descriptions of *Glyptodon clavipes*. De Angelis compared the plates published in these works with the bones he was amassing in Buenos Aires. An expert editor and antiquarian, de Angelis learned how to produce new species and to offer pre-classified objects. In his letters to William Clift, curator of the London Royal College of Surgeons and Owen's father-in-law, he quoted Darwin's observations:

Up to the present time, the *Glyptodon* with Rosettes like the specimens published in the Geological Transactions, 2nd Series, Vol. III, plate 46, is alone known: the specimen which I send to you belong to a new species, the armour of which is all tuberculated (bourgeonné), like that of the Armadillo. When the remains are more closely inspected and compared with existing Species which have most analogy with the ancient, one is struck with the justice of a remark by Mr Darwin 'That existing animals have a close relation in form with extinct animals'. Nature works on the same Models; for the form and ornaments of the buckler of the Armadillo are like those of the *Glyptodon* which I send you; just as the configuration and sculpturing of the Mataco represent, in small, those of the *Glyptodon* with Rosettes; with this sole difference, that the dorsal hinges (annuli or bands) which are present in the living animals are not found in the fossils, although much larger and consequently having more need of being supple in their movements.³

In this letter, de Angelis referred to the relationship between the extinct and extant South American species, as expressed in

³ "Translation of a letter from M. Pierre de Angelis to W. Clift, respecting the *Glyptodon* and *Mylodon* by R. Owen", August 12 1841. Natural History Museum (London) Archives.

¹ A survey of Darwin's works in South American libraries is still lacking. In the Argentine National Library, the oldest English version of *The Origin of Species* is the one from New York (Appleton, 1860). The National as well as the most important research libraries primarily hold first translations into other European languages, including the first Spanish translations of *Viaje de un naturalista alrededor del mundo* (Barcelona, 1899), *El Origen del Hombre: la selección natural y la sexual* (Barcelona, 1876), and the *Geological Observations on South America* translated in Chile in 1909 (*Jeología de la América Meridional*). The first, incomplete Spanish translation of *The Origin of Species* was made in 1872. *The Descent of Man* (1871) was published in Spanish in 1876 in an abridged and anonymous version available at Buenos Aires' National Library. The complete, authorized Spanish version of the *Origin* was translated in 1877 in Madrid (Cf. Paoletti, 2005).

² See http://darwin-online.org.uk/EditorialIntroductions/Freeman_ZoologyOfBeagle.html, accessed on July 3 2017.

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