

# The formation process of the Ameghino's archaeological collection presented in Paris in 1878: Composition, cataloging, and destination

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# THE FORMATION PROCESS OF THE AMEGHINO'S ARCHAEOLOGICAL COLLECTION PRESENTED IN PARIS IN 1878: COMPOSITION, CATALOGING, AND DESTINATION

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**Abstract.** In this study, we analyze the formation process of the collection that Florentino Ameghino presented to the occidental world at the Universal Exposition, which took place in Paris in 1878 and from which he materially supported his theory regarding the antiquity of "men" in the Río de La Plata Basin. We develop an analysis based on the same structure of the "*Catalogue spécial de la section Anthropologique et Paléontologique de la République Argentine a L'exposition universelle de Paris (1878)*" and we contrast it with the information provided in his previous works. In this Special Catalog, Ameghino provided information on human, faunal, and cultural remains, which contributed to the construction of his collection up until before the exhibition. The structuring of the Special Catalog connects us with the evolution of Ameghino's scientific thought through his classification regarding the natural or anthropic origin of the objects, the temporal order that he assigned to the findings, and the sedimentary deposits carrying the objects. We analyze the classificatory categories, their implications, and the curatorial destinations of the collection that Ameghino presented in Paris. The analysis of this collection, which nowadays constitutes one of the most important regarding the knowledge of the antiquity of the human population in South America and its relationship with the fossil mammals of the Pleistocene–Holocene, is limited by the dissociation of the cultural and biological evidence that was found in the same context and that is currently housed in different national and foreign institutions.

**Key words.** Natural object. Cultural object. Quaternary. Miocene. Buenos Aires.

**Resumen.** EL PROCESO DE FORMACIÓN DE LA COLECCIÓN ARQUEOLÓGICA DE AMEGHINO PRESENTADA EN PARIS EN 1878: SU COMPOSICIÓN, CATALOGACIÓN Y DESTINO. En este estudio analizamos el proceso de formación de la colección que Florentino Ameghino dio a conocer al mundo occidental en la Exposición Universal de París en 1878, a partir de la cual sustentó con materialidad, su teoría respecto a la antigüedad del "hombre" en la cuenca del Río de La Plata. El análisis lo desarrollamos a través de la estructuración que presenta el "*Catalogue spécial de la section Anthropologique et Paléontologique de la République Argentine a L'exposition universelle de Paris (1878)*" y lo contrastamos con la información volcada en sus obras precedentes. En este Catálogo Especial, Ameghino brindó información de restos humanos, faunísticos y culturales, entre otros, que conformaban su colección hasta antes de la exposición. La estructuración del Catálogo Especial nos conecta con la evolución del pensamiento científico de Ameghino a través de su clasificación respecto al origen natural o antrópico de los objetos y del orden temporal que le asignó a los hallazgos y a los depósitos sedimentarios portadores de los objetos. Nosotros analizamos las categorías clasificatorias, las implicancias de esta, y los destinos curatoriales de la colección que Ameghino presentó en París. El análisis de esta colección, que es una de las más importante respecto al conocimiento de la antigüedad del poblamiento humano de América del Sur y su relación con los mamíferos fósiles del Pleistoceno–Holoceno, tiene como limitante la disociación de las evidencias culturales y biológicas que fueron halladas en un mismo contexto y que están alojadas en diferentes instituciones nacionales y extranjeras.

**Palabras clave.** Objeto cultural. Objeto natural. Cuaternario. Mioceno. Buenos Aires.

THE SURVEY, classification, quantification, and education about a country's natural and cultural resources are foundational acts of the museological institutions of the 19th century in Argentina (Podgorny & Lopes, 2008). The first

three foundational acts have a documentary record in the catalogs that account for the characters that define "things" that constitute the collections that are preserved, studied, and exhibited in the museums. In the catalogs,

"things" become objects that identify evolutionary processes, availability, and variability of resources in the different inter and extra-planetary areas, as well as the acquisition and transmission of knowledge for the generation and reproduction of uses and customs in human societies. Another dimension of analysis includes the conformation of the catalogs as information records, where the classificatory paradigms and the scientific knowledge represented in the prominence of the objects in a determined temporal context are reflected.

In the development of archeology and paleontology of the Río de La Plata Basin, the "*Catalogue spécial de la section Anthropologique et Paléontologique de la République Argentine a L'exposition universelle de Paris (1878)*" (from now on cited as Special Catalog), written by Florentino Ameghino (1853–1911) based on his collection of bioanthropological remains, cultural materials, fossils from the Pampean region and geological samples, is the one that has had the greatest in-

ternational impact since the 19th century. This international impact originates from Ameghino's participation in the Universal Exposition in Paris, held from May 1<sup>st</sup> to November 10<sup>th</sup>, 1878. In this exhibition of science, art, and technology and at the stand of Argentina, various archaeological, paleontological, and geological objects from the Ameghino collection and other persons were exhibited (Fig. 1). Complementarily, albums of photographs and drawings of some of the objects from the collection of the Museo Antropológico y Arqueológico de Buenos Aires were also presented. Due to the absence of several owners of some objects and the poor conditions in which they arrived to France, Ameghino asked the Argentine authorities for permission to restore the affected objects and to create a catalog with all of them. The request was accepted and thus, the Special Catalog was created, which ended up accompanying the exhibition.

In the Special Catalog, each collection was identified in



**Figure 1.** Pavilion of the Argentine Republic, Universal Exhibition in Paris, 1878. General view of the collections of the Anthropology and Paleontology section. Museo de La Plata, Historical and Photographic Archive EUP-001-001-002.



independent sections, recording its owner's identity, the selected sample's origin, and the identifying number for each object or lot of objects. In this sense, the Special Catalog allows the composition of each collection to be independently analyzed.

A comprehensive analysis of Ameghino's work allows us to recognize the story behind the preparation of the Special Catalog. The collection of objects taken by him to France had been previously cataloged and included in his study "*El hombre cuaternario en la Pampa*" presented at the Sociedad Científica Argentina in 1876, which remained unpublished until 1914 when it was included in Volume 2 of the "*Obras Completas y Correspondencia Científica de Florentino Ameghino*" published by Alfredo Torcelli (1864–1936).

For this study, we will analyze the distribution and sequence with which Ameghino incorporated his private collection of archaeological and paleontological objects into the Special Catalog. The development of this analysis will allow us to evaluate diverse aspects concerning the formation process of its collection, the evolution of its temporal paradigm concerning the prehistory of the Río de La Plata Basin, its classificatory schemes, its position about the nature of things, and how its distinction between natural and cultural objects affected the life history of the evidence that was selected and that is still called for today by research referring to the antiquity and characteristics of the process of human settlement in southern South America (e.g., Bonomo, 2002; Politis & Bonomo, 2011; Toledo, 2011, 2016, 2021; Lanzellotti & Acuña, 2014; Politis, 2014; Bonomo & Scabuzzo, 2016; Politis *et al.*, 2019; Acosta *et al.*, 2020; Simón *et al.*, 2023).

## MATERIALS AND METHODS

In our study, we analyze the "*Catalogue spécial de la section Anhtropologique et Paléontologique de la République Argentine a L'exposition universelle de Paris (1878)*" reproduced in Volume 2 of the "*Obras completas y correspondencia científica de Florentino Ameghino*" (Ameghino, 1878 in Torcelli, 1914). In addition, we analyze the manuscripts presented at the Sociedad Científica Argentina in 1876 entitled "*El hombre cuaternario en la Pampa*" and "*Ensayos de un estudio de los terrenos de transporte cuaternarios de la provincia Buenos Aires*", which remained unpublished until 1914,

when it was included in the aforementioned Volume 2.

The taxonomic nomenclature used in this work is the same as cited in the original works and catalogs.

## THE CATALOG OF THE "*EL HOMBRE CUATERNARIO EN LA PAMPA*" FROM 1876

The main objective of the list or catalog of archaeological and paleontological pieces that Ameghino incorporated in his study "*El hombre cuaternario de la Pampa*" was to support his assertions about the coexistence of paleofauna and "men" in the Río de La Plata Basin. This catalog was constituted by 117 entries that accounted for the same number of objects that supported the evidence of his postulate (see Supplementary Information 1). Numbers 1 to 19 correspond to human skeletal remains found in the Arroyo Frías (Fig. 2), number 82 to an exoskeleton fragment assigned to *Glyptodon*, and the remaining numbers to lithic objects, burned earths ("*tierras cocidas*"), and fragments of bones and teeth that, according to Ameghino (1876a, p. 36–38 in Torcelli, 1914), presented evidence of anthropic activity. Except for human remains and the exoskeleton of *Glyptodon* that were recognized as coming from Arroyo Frías, the rest of the specimens present undetailed references such as "*cerca de* [nearby] Luján", "*Mercedes*" or "*San Antonio de Areco*" (Fig. 2) and in some cases did not present any geographical reference at all.

## CATALOGUE SPÉCIAL DE LA SECTION ANHTROPOLOGIQUE ET PALÉONTOLOGIQUE DE LA RÉPUBLIQUE ARGENTINE A L'EXPOSITION UNIVERSELLE DE PARIS DE 1878

The Special Catalog consists of around 8,000 pieces and is divided into two main sections entitled Anthropology and Paleontology. The first is subdivided into six subsections, of which the first is identified as the Paleolithic Period (Fig. 3). The list of this subsection is headed with the number 1031 (see Supplementary Information 1; see below) which is the number by which Ameghino identifies the human skeletal remains that he recovered on the left bank of the Arroyo Frías (Fig. 2) and that he assigned as coming from his identified "*Paradero humano Paleolítico número 1*" (Parad. h.p.n.1). Within the catalog, it is mentioned that these human remains were found associated with faunal remains, charcoal, carved lithic material, and fragments of burned

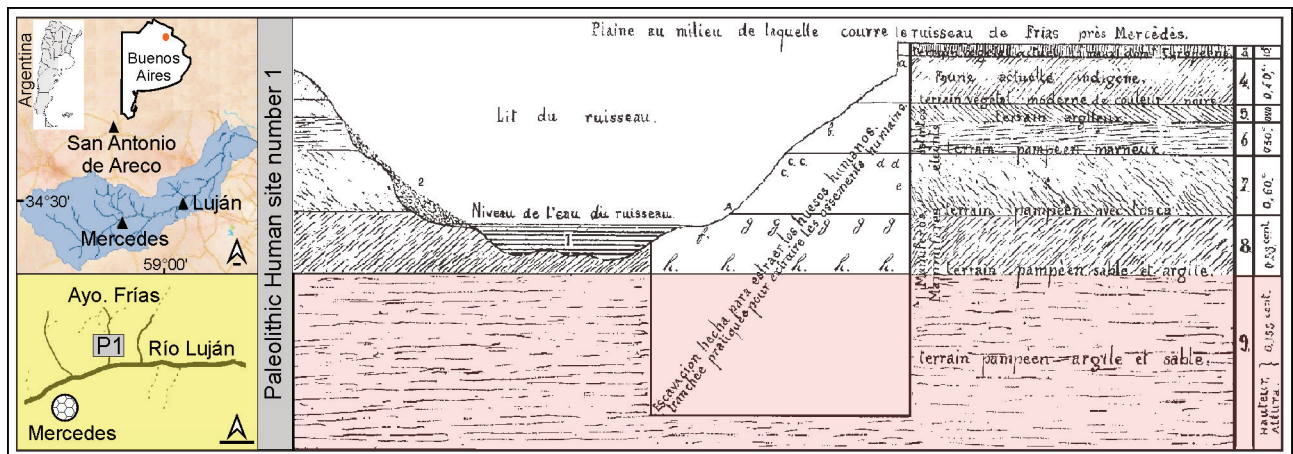


Figure 2. Paleolithic Human site number 1 ("Paradero" 1) of Ameghino (1878). Scale bar= 2 km.

earths. Among the faunal remains, he mentioned (*sic*) "*Hoplophorus ornatus* (Owen), *Hoplophorus Burmesteri* (Ameghino) un *Eutatus* (Gervais de especie nueva), *Logostomus angustidens* (Burmeister), *Paleolama Weddelli* (P. Gervais), *Mylodón, dos especies de Murini, una o dos sp. de Ctenomys* y "*avestruz*" [*Hoplophorus ornatus* (Owen), *Hoplophorus Burmesteri* (Ameghino) a *Eutatus* (Gervais of a new species), *Logostomus angustidens* (Burmeister), *Paleolama Weddelli* (P. Gervais), *Myloodon*, two species of *Murini*, one or two sp. from *Ctenomys* and an "ostrich"]. It is also mentioned that many of the faunal remains of Parad. h.p.n.1 were carbonized, splintered, and fluted, and this evidence showed anthropic intervention with the aim of marrow extraction.

Archaeological objects numbered consecutively from 52 to 272 are listed below. In no specific order, consecutive numbers from 52 to 62 were assigned to lithic materials such as arrowheads, scrapers, knapped stones, carvers, etc. Meanwhile, those numbered from 63 to 217 and 236 to 272

correspond to osteological materials with some traces of anthropic intervention. The numerical segment that goes from 218 to 235 comprises the following objects: from 218 to 220 to different carved lithic pieces and an arrowhead; from 230 to 233 to burned earths; and from 234 to 235 to fragments of burned bone and charcoal. To each of these objects, Ameghino (1878) assigned a reference site corresponding to the place from where they were collected. He named those sites "*Paradero humano Paleolitico*" followed by the numbers 1, 2, 3, 4, 5, 6, or 7. The objects from these sites are not ordered according to their places of origin; for example, objects from Site 1 are interspersed with objects from Site 5 (see Supplementary Information 1).

The second subsection, Mesolithic Period, includes the objects numbered consecutively from 301 to 846. These were mainly collected from the human site on the right bank of the Cañada de Rocha and referenced with numbers 301 to 841. A few anthropic lithic elements were recovered in the Frías (numbered from 842 to 843) and Marcos Diaz (844 to 846) streams. Among the objects referred to Cañada Rocha, those numbered 301 to 510 correspond to human-made lithic materials. In contrast, number 511 is associated with a stoneware instrument attributed to the polishing of bone materials and 512 to 747 to bone elements which, for the author, are evidence of anthropic intervention linked to the processing and consumption of fauna or the manufacture of tools. Among the objects numbered 748 to 760 and 761 to 841, diverse remains of coloring matter and elements of pottery manufacture are listed, respectively.

ÉPOQUES GÉOLOGIQUES.	PÉRIODES GÉOLOGIQUES.	ÉPOQUES ARCHÉOLOGIQUES.	SOUS-PÉRIODES.	ANIMALIA CARACTERÍSTICAS.
Post-terciaria.	Post-pampeño.	Neolítico.	Temps modernes.	Faune indigène actuelle de la Plata.
			Temps anciens.	Faune indigène actuelle de la Plata.
		Mésolithique.	Temps mésolithiques.	Faune presque identique à l'actuelle.
	Pampeño ou quaternaire.	Paléolithique.	Temps des granits lacs.	<i>Logostomus fossilis</i> , <i>Canis Acaror fossilis</i> , <i>Taxodon platensis</i> , <i>Leontodon myioides</i> , <i>Mustelion andium</i> .
			Temps pampeños modernes.	<i>Logostomus angustidens</i> , <i>Canis protolopex</i> , <i>Cervus baueri</i> , <i>Merchirodus</i> , <i>Macrauchenia</i> , <i>Panochthus</i> .
			Temps pampeños antiques.	<i>Tipotherium cristatum</i> , <i>Hoplophorus ornatus</i> .

Figure 3. Cenozoic classification of Ameghino (1878).

The Neolithic Age is divided into three subsections, of which III and IV correspond to the elements generated by ancient inhabitants of the north of the Pampas region, assigned by Ameghino to the Querandí culture (1101 to 1887) and V to the objects recovered in the surroundings of Montevideo, Uruguay assigned to the Charrúas (2801 to 3070).

Subsection III is entitled "*Objets en pierre des anciens indiens Querandis*" and contains a large lithic group numbered from 1101 to 1887; only two blank entries can be observed, 1239 and 1303. The lithic elements assigned from 1101 to 1238 correspond to carved fragments without any typological distinctions. The numbers 1250 to 1389 represent, in general terms, knives, while the elements included within the range 1394 and 1576 represent arrowheads of different characteristics; from 1577 to 1597, small axes; 1586 to 1594, carved flints that could be used as saws; from 1595 to 1597, axes once again; from 1598 to 1604, knives; from 1605 to 1676, scrapers; 1677, a small axe; 1678 to 1710, scrapers; and from 1711 to 1887, interspersed mortars, large stone fragments, ornamental lithic fragments, etc.

Subsection IV, "*Poteries des anciens indiens quérandis*", includes a set of elements (2101–2551) that correspond to products and subproducts of the Querandí pottery industry such as potsherds, fragments of earth with evidence of thermic alteration, fragments of handles, and ornate fragments numerically interspersed with each other.

Subsection V, "*Objets en pierre et poter 1es des anciens indiens Charrúas*", comprises lithic pieces (2801–3052) and ceramic objects (3053–3070). The anthropological collection culminates with subsection VI, in which fragments of an aerolite are described and numbered from 4501 to 4503.

The Paleontology section was subdivided into four subsections entitled as follows: "*Fossiles quaternaires des pampas*" (subsection VII, from 4145 to 8520), "*Végétaux quaternaires des pampas*" (subsection VIII, without numbers), "*Fossiles préhistoriques modernes*" (subsection IX, from 6000 to 7000), and "*Géologie*" (subsection X, without numbers). Specimens included in subsection VII comprised fishes (from 5015–5018 and 5039), mollusks (8520), birds (4478, 4725–4745 and 6726), reptiles (4808–4819, 4876–4877,

4910–4914, and 5012–5013) and terrestrial mammals (the remaining numbers from 4145–8520). Among the latter, the ordering was based mainly on generic assignments, followed by specific and, only in some cases, supra-generic assignments. For example, the Paleontology section is headed by different fossil elements attributed to the felid *Machairodus necator* (Gervais) found in several localities in Buenos Aires Province. Specifically, the record begins with a canine found near Luján (4572), continues with a large part of a skeleton also found in Luján (4145), a pelvis from Pilar (5146–5147), a mandible with deciduous teeth, a part of a skull, atlas, etc. found in the Arroyo Frías (4746–4761), a femur collected near Mercedes (4829), and foot bones from Moreno (8000–8010). The following are the faunal remains of Felidae, Canidae, Moustelidae, bears, cervids, *Paleolama weddelli* (Gervais), smaller species of *Paleolama*, *Auchenia*, *Mastodon*, *Macrauchenia*, horses, toxodonts, glyptodonts, and "armadillos". This taxonomic arrangement is interrupted by the intrusion of two new epigraphs that include "Indeterminate" and "Unknown" vertebrates, which list faunal elements whose biological affiliation was still unknown for the exhibition in Paris.

It continues with the subsection "*Végétaux quaternaires des pampas*", which refers to 40 molds of fossil plants without numbering. Following is the subsection "*Fossiles préhistoriques modernes*", which includes remains of skunks, *guanacos*, deer, rodents, birds, lizards, fish, and malacological objects numbered from 6000 to 7000 that do not exhibit any numerical identification.

This section ends with the subsection "*Géologie*", in which samples were not numbered, and "*Travaux scientifiques de l'exposant presents comme complement explicatif de ses collections*".

### LA ANTIGÜEDAD DEL HOMBRE DEL PLATA (1880–1881)

The iconic work "*La Antigüedad del Hombre del Plata*" (from now on: "*La Antigüedad*") published by Ameghino (1880a, 1881), reported and illustrated different objects that were exhumed and collected from his early youth until shortly before he traveled to France to participate in the Universal Exposition in Paris in 1878. The objects and the report of his findings are systematized and detailed to fully support his theory on the temporality of the settlement

process in the Río de la Plata Basin. This work provided more details on the location and geology of human whereabouts. It showed for the first time the archaeological objects recovered by Ameghino in his different excursions or fieldworks in the Río de La Plata Basin. Recently, Simón *et al.* (2023) pointed out the coexistence in some objects of the original catalog number they had in the Special Catalog and that which reflects the image number in "*La Antigüedad*". This allowed the authors to demonstrate that these materials, currently housed in the Museo de La Plata, were part of the archaeological collection that Ameghino presented at the Universal Exhibition in Paris in 1878.

## DISCUSSION

### Temporality of the Ameghino collection: From the Quaternary "man" to the Pliocene "man"

A considerable number of the objects included by Ameghino in the Anthropological and Paleontological sections were temporarily assigned to the Quaternary as can be seen from the subtitles of the subsections and the general information of the Special Catalog of 1878.

Indeed, the specimens included in his Paleolithic times were consigned as "*Objets qui prouvent la contemporanéité de l'homme avec les grands animaux éteints qu'on trouve dans le terrain quaternaire de la province de Buenos-Ayres*" (Objects that prove the contemporaneity of men with the large extinct animals found in the Quaternary terrain of Buenos Aires Province). In this subsection, Ameghino (1878 in Torcelli, 1914, p. 254) also mentioned that "*Tous les objets ci-dessus mentionnés ont été trouvés dans les couches de terrain quaternaire non remué mélangés à un très grand nombre d'ossements d'animaux éteints; ces faits prouvent jusqu'à l'évidence la contemporanéité de l'homme avec les grands mammifères quaternaires de l'Amérique du Sud. Une partie de ces spécimens ont été primés par la Société Scientifique Argentine à l'exposition et concours célèbre le 28 Juillet 1875. Tous ces matériaux feront l'objet d'un ouvrage spécial que paraîtra prochainement sous le titre de L'antiquité de l'homme dans les contrées de la Plata.*" (All objects mentioned above were found in the layers of undisturbed quaternary ground mixed with a very large number of bones of extinct animals; these facts clearly prove the contemporaneity of men with the large quaternary mammals of South America. Some of

these specimens were awarded prizes by the Argentinian Scientific Society at the famous exhibition and competition on July 28th, 1875. All these materials will be the subject of a special work to be published shortly under the title "*L'antiquité de l'homme dans les contrées de La Plata*").

The assigned Quaternary temporality has its first appearance in a memory entitled "*El Hombre Cuaternario en la Pampa*" presented by Ameghino at the Sociedad Científica Argentina in 1876 (Ameghino, 1876a in Torcelli, 1914). Therefore, the quaternary temporality of the objects that were included in that catalog and later accompanied Ameghino to France had been taken into consideration by the Argentinian scientific community in 1876. This temporary assignment received international recognition with Ameghino's presentation in August of 1878 at the "*Congrès International des Sciences Anthropologiques*" in Paris (Ameghino, 1880b). This event was developed as one of the Universal Exposition of 1878 activities. In this presentation, Ameghino included a table in which the temporal relationships of the evidence were described and in which he obviously ratified the Quaternary position of the association of specimens assigned to the Paleolithic "man", the products generated by him, and his accompanying fauna from the deposits of the Pampean Formation (Fig. 3). However, later, the Quaternary assignment was questioned by Ameghino himself, when doubting the real geological age of the Pampean Formation (Fig. 4) (Ameghino, 1879). In fact, while still in France, he told the world: "*Invité par la rédaction de la «Revue d'Anthropologie», à donner un aperçu de mon exposition préhistorique, j'ai cru que le mieux était de résumer en quelques pages mes études sur les époques préhistoriques de la Plata, qui paraîtront prochainement, en deux volumes, sous le titre de: L'Antiquité de l'homme dans la Plata*" (Invited by the editorial staff of the "*Revue d'Anthropologie*", in order to give an overview of my prehistoric exhibition, I thought it was best to summarize in a few pages my studies on the prehistoric periods of the Río de La Plata Basin, which will appear shortly in two volumes under the title: *L'Antiquité de l'homme dans La Plata*) (Ameghino 1879, p. 210). It is in this context that Ameghino (1879, p. 248) referred to the antiquity of the Pampean Formation in the following way: "*¿Quel est le véritable âge géologique de la formation pampéenne? Bravard, le premier qui l'ait étudiée sérieusement,*

la considère comme tertiaire... ..Burmeister... ..et presque tous les géologues contemporains disent au contraire qu'elle est quaternaire. Je partage l'opinion du premier. Dans mes précédentes Communications sur l'homme fossile argentin, faites, soit à la Société Scientifique Argentine, soit au dernier Congrès International des Sciences Anthropologiques ou à des journaux, j'ai toujours parlé de l'homme quaternaire dans la formation pampéenne; mais c'était seulement pour ne pas soulever deux questions en même temps. Du reste il y a déjà longtemps que dans un long mémoire sur la géologie des pampas, présenté à un concours public mais qui n'a pas été publié, j'ai cherché à démontrer que la formation pampéenne correspondait au pliocène d'Europe et du Nord-Amérique" (What is the true geological age of the Pampean Formation? Bravard, the first who studied it seriously, considers it as Tertiary... .. Burmeister... ..and almost all contemporary geologists say the opposite, that it is Quaternary. I support the first opinion. In my previous Communications on Argentinian fossil man, made either to the Argentinian Scientific Society, or to the last International Congress of Anthropological Sciences or newspapers, I always spoke of Quaternary man in the Pampean Formation, but that was only in order not to raise two questions at the same time. Moreover, it has been a long time since in a long memoir on the geology of the *Pampas*, presented to a public competition, but which has not been published yet, I have sought to demonstrate that the Pampean Formation corresponds to the Pliocene of Europe and North America).

This assignment to the Pliocene markedly contrasts with the table published in the same work by Ameghino (1879), in which the Pampean Formation, with its Paleolithic "man" and accompanying fauna, is positioned in a post-Tertiary time (Fig. 4). The only exclusion registered concerning the table of the previous work corresponds to the Quaternary term. The unpublished work to which Ameghino (1879) referred corresponds to the memory that he presented in 1876 to the Sociedad Científica Argentina under the title "*Ensayos de un estudio de los terrenos de transporte cuaternarios de la provincia Buenos Aires*" (Ameghino, 1876b in Torcelli, 1914). In this memoir, Ameghino provided a set of geological and paleontological arguments in favor of the older position of the Pampean Formation concerning the Quaternary of Europe and North America, strongly sug-

gesting that it could be assigned to the Pliocene. Although, at the same time, he recognized that this discussion was still a subject of study, depending on further data and research.

We must highlight that both works, "*El hombre cuaternario...*" and "*Ensayos...*", remained unpublished until 1914. However, both were simultaneously presented to the same scientific society in 1876 with self-exclusive temporal positions for the Pampean Formation: Quaternary vs. Pliocene. In this context, the argument offered by Ameghino, who avoided using the term Quaternary in his presentation, is weak because, from the beginning, he addressed both issues: the coexistence of men with megafauna and the Quaternary–Pliocene problem, which, although he carried it out in different presentations, were exhibited in the same society. On the other hand, what can be considered his first exhibitions with international projection such as his "Special Catalog" and the presentation of its contents at the "*Congrès International des Sciences Anthropologiques*", Ameghino positioned the Pampean Formation and its records within the Quaternary. This can be attributed to the fact that the assignment to the Pliocene was rejected by the vast majority of national and foreign naturalists who had dealt with the Pampas or, also, due to the doubts he expressed regarding certain paleontological aspects in his "*Ensayos de un estudio de los terrenos de transporte cuaternarios de la provincia Buenos Aires*" that, although it did not affect his decision to perceived it as Pliocene it did not allow him to discard the Quaternary. Then, it is highly probable that he took a conservative

Époques géologiques.	Périodes géologiques.	Époques archéologiques.	Sous-périodes.	Animaux caractéristiques.
Post tertiaire.	Post pampéen	Néolithique.	Temps modernes et anciens.	Faune indigène actuelle de la Plata.
		Mésolithique.	Temps mésolithiques.	Faune presque identique à l'actuelle.
	Pampéen	Paléolithique	Temps des grands lacs.	Lagostomus fossilis, Canis azarae, Toxodon Platensis, Lestodon-mylodites, Mastodon Andium.
			Temps pampéens modernes.	Lagostomus angustidens, Canis protalope, Ursus Bonariensis, Machairodus, Macrocheimia, Panocheilus.
			Temps pampéens antiques.	Typotherium cristatum, Hoplophorus ornatus.

Figure 4. Cenozoic classification of Ameghino (1879).



position in the first exhibitions for the international public, in which he also represented the Argentinian Republic. For Florentino Ameghino, this discussion would represent part of his interests and scientific daily life in Europe. Its results could position him as an undisputed reference in the national and international paleontological-archaeological naturalists list.

We consider that it was the interaction and agreement of his ideas in the international arena which encouraged him in his book *"La Antigüedad"* (Ameghino, 1880a, 1881), that the Paleolithic "man" of the Quaternary of his monograph became the Pliocene "man" of the Tertiary of the Río de La Plata (Fig. 5). It is in *"La Antigüedad"* where he published and mixed all the discussion that began in his two presentations in 1876. The course of the discussion is accompanied by considerations regarding his colleagues in Argentina and, in particular, the person who was the Director of the Museo Público de Buenos Aires, Karl Hermann Konrad Burmeister (1807–1892). Ameghino (1881, p. 344–345) mentioned that: *"Bravard fué en sus clasificaciones mas lógico y explícito... Considera la .... formación pampeana como terciario superior ó plioceno... Creo que Bravard es quien mas se ha acercado a la verdad. Por mi parte creo firmemente que la formación pampeana corresponde al terreno terciario superior de Europa... Pero Burmeister y casi todos los geólogos contemporáneos profesan ideas completamente opuestas. Consideran el terciario patagónico como plioceno, el pampeano como cuaternario y llaman aluviones modernos a todos los depósitos que se encuentran encima del terreno pampeano... Con todo, tengo la satisfacción de anunciar que todos los geólogos que hemos consultado personalmente y á quienes comunicamos las razones que nos inducen á creer que el terreno pampeano corresponde al plioceno de Europa, han concluido por darnos razón; omito aquí sus nombres, porque no quisiera que se creyera que con su autoridad busco á imponer mis opiniones"* (Bravard was logical and explicit in his classifications... He considers the... Pampean Formation as Upper Tertiary or Pliocene... I think that Bravard is the one who has come the closest to the truth. For my part, I firmly believe that the Pampean Formation corresponds to the upper Tertiary terrain of Europe... But Burmeister and almost all contemporary geologists profess completely opposite ideas. They consider the Patagonian Tertiary as Pliocene, the

*Pampas* as Quaternary, and all deposits that lie on top of the *Pampas* terrain as modern alluvium... Nevertheless, I am pleased to announce that all the geologists that I have personally consulted and to whom I have communicated the reasons that lead me to believe that the *Pampas* terrain corresponds to the Pliocene of Europe, have concluded that I am are right; I omit their names here, because I do not want you to believe that I am trying to impose my opinions through the use of their authority).

In the selected passages, in addition to accounting for the changes in the temporality conceived for the records, the importance of the exchange with his colleagues from the old world is highlighted. In the new scheme of *"La Antigüedad"*, Ameghino positioned men and the accompanying fauna in the novel Eolithic archaeological era. Such term was used for the first time in a book written by Gabriel de Mortillet (1821–1898) and his son Adrien de Mortillet

Épocas geológicas	Periodos geológicos	Épocas arqueológicas.	Sub-periodos.	Mamíferos característicos.
Reciente.	Aluviones contemporáneos	Histórica.	Tiempos históricos.	Animales domésticos y fauna actual indígena del Plata.
	Aluviones modernos	Neolítica.	Tiempos neolíticos.	Fauna actual indígena del Plata.
Cuaternaria.	Superior.	Mesolítica	Tiempos mesolíticos.	Paleolama mesolítica, Lagostomus diluvianus, Auchenia diluviana, Cervus diluvianus.
	Inferior.	Paleolítica	Tiempos paleolíticos.	Lagostomus fossilis, Canis azarce fossilis, Canis cultridens, Cervus pampæus, Toxodon platensis, Mastodon.
Terciaria	PAMPEANO Ó PLOCENO	EOLÍTICA	Tiempos de los grandes lagos ó ploceno superior.	Smilodon, Arctotherium, Lagostomus angustidens, Canis vulpino, Doedicurus, Macrauchenia.
			Tiempos pampeanos modernos ó ploceno medio.	Typotherium cristatum, Hoplophorus ornatus, Protophitecus bonariensis, Ctenomys latidens.
			Tiempos pampeanos antiguos ó ploceno inferior	Megamys, Toxodon platensis, Nesodon, Homalodontotherium, Anoplotherium, Paleotherium, Saurocetes.
Patagónico ó Mioceno.				

Figure 5. Cenozoic classification of Ameghino (1880a, 1881).

(1853–1931), “*Musée préhistorique*” (De Mortillet & De Mortillet, 1881). Gabriel de Mortillet was a French archaeologist and political radical from whom Ameghino took the concept of the Eolithic and the prospecting of various archaeological sites around Paris. According to Ameghino (1881, p. 540–541) “*La denominación de eolítica, ha sido dada por el señor de Mortillet á la industria del hombre mioceno de Francia. Pero la misma denominación corresponde admirablemente á la mas antigua de las fases de evolución industrial, ó mas bien dicho á la primera de las fases industriales del Plata, correspondiente á los tiempos pampeanos. Pero tampoco quiero que por esto que se crea que quiero remontar la antigüedad del terreno pampeano hasta la época miocena. Se me preguntará igualmente donde coloco la época paleolítica; esta, lo repito, no se halla representada en el Plata, ó hasta ahora no se han encontrado sus vestigios*” (The denomination of eolithic has been given to the industry of the Miocene man of France by the lord of Mortillet. However, the same denomination corresponds admirably to the first phase of industrial evolution or the first of the industrial phases of La Plata, corresponding to the pampean times. But I do not want to believe that is why I intend to trace the antiquity of the Pampean terrain to the Miocene epoch. We will also be asked where we place the Paleolithic age. This, I repeat, is not represented in La Plata or, until now, its vestiges have not been found yet).

Finally, the Eolithic would become not only a new era for Ameghino but also irrefutable proof that he was in the world vanguard regarding the antiquity of human settlement in America.

### The origin of ‘things’

The beginning of the cataloging of the pieces that were the protagonists of Ameghino's worldwide projection can be settled before April 18th, 1876, at which time Ameghino sent his study on the “*El hombre cuaternario en la Pampa*” to the Sociedad Científica Argentina (1876a, p. 32, in Torcelli, 1914). By March of 1876, the Arroyo Frías region (Fig. 2) was well prospected and repeatedly sampled, as Ameghino (1889, p. 46) stated: “*En 1869 empezaba mis primeras escursiones en busca de fósiles, y contan buena suerte, que al año siguiente (1870), descubría un cráneo y partes considerables de un esqueleto de hombre fósil que fué llevado á Europa por*

*un coleccionista y regalado al Museo Cívico de Milán, pieza que todavía no ha sido descripta. Tres años después, descubría en el mismo punto (Arroyo de Frías, cerca de Mercedes) nuevos fragmentos de huesos fósiles humanos, y sucesivamente aumentaba mis datos con numerosos objetos trabajados ó que llevaban impresa la acción de la mano del hombre, recogidos en el terreno pampeano de Mercedes y de Lujan, conjuntamente con los restos de grandes edentados extinguidos.*” (In 1869, I began my first excursions in search of fossils, and with such good luck, in the following year (1870) I discovered a skull and considerable parts of a fossil human skeleton that was taken to Europe by a collector and given to the Civic Museum of Milan, a piece that has not been described yet. Three years later, I discovered at the same point (Arroyo de Frías, near Mercedes) new fragments of human fossil bones and, successively, I increased my data with numerous worked objects or that had the action of the hand of man printed on them collected in the Pampas terrain from Mercedes and from Lujan together with the remains of large extinct edentates). Prospecting and collecting in the Arroyo Frías region continued at least until 1874, as can be inferred from the data included in “*La Antigüedad*” (Ameghino, 1880a, 1881).

The Paleolithic subsection of the Anthropology section of the Special Catalog contains numbered objects that Ameghino partially listed in the catalog that accompanied his presentation of “*El hombre cuaternario de la Pampa*” (Ameghino, 1876a, in Torcelli, 1914; see Supplementary Information 1). The numerical sequence 1 to 19 corresponded to the human skeletal remains recovered in Arroyo Frías, which also headed the Special Catalog but with the number 1031. When examining the number of pieces assigned to the human skeleton in both catalogs, it turns out that there are 50 bone elements. In effect, Ameghino in the 1876 catalog (Ameghino, 1876a, in Torcelli, 1914, p. 36) recognized that the specimen was constituted by “*...Un diente incisivo inferior, cuatro vértebras, cinco pedazos de costillas, siete huesos del metacarpo y metatarso y dos falanges. Quedan aún en mi poder parte de la cadera y unos treinta huesos diferentes*” (...A lower incisor, four vertebrae, five pieces of ribs, seven metacarpal and metatarsal bones, and two phalanges. Part of the hip and about thirty different bones are still in my possession). This sum of 50 bone elements coincides with

the detail that Ameghino recorded in the Special Catalog of osteological elements grouped under the number 1031. The Special Catalog (Ameghino, 1878 in Torcelli, 1914, p. 243–244) states: "1031. Une dent incisive inférieure, partie du bassin, quatre vertèbres et 44 os et fragments d'os divers appartenant à l'homme fossile, trouvés sur la rive gauche du petit ruisseau de Frías, près de Mercedes, province de Buenos-Ayres, dans un terrain quaternaire non remué et à une profondeur de 3 à 4 mètres" (1031. A lower incisor, part of the pelvis, four vertebrae, 44 bones, and various bone fragments belonging to the fossil man were found on the left bank of the small stream of Frías, near Mercedes, Buenos Aires Province, in an undisturbed quaternary soil at a depth of 3 to 4 meters). Gathering the data from both catalogs we suggest that number 1031 of the Special Catalog corresponds to the elements of series 1 to 51 of the 1876 catalog. Ameghino usually resorted to numerical grouping to assign a set of objects of the same genesis or morphology and such is the case, for example, of the set of objects consigned with the numbers from 63 to 72 in the Special Catalog (see Supplementary Information 1). Therefore, our hypothesis would gain strength, although the sequence used in 1876 is lower than that of 1878. However, it must be considered that Ameghino acknowledged he did not include all the bone elements of the human specimen in the 1876 catalog (Ameghino, 1876a, p. 36 in Torcelli, 1914).

Both catalogs, the one from 1876 and the Special Catalog, aim to publicize the findings from the Arroyo Frías (bio-anthropological remains, lithic, sedimentary, and bone elements that evidenced anthropic activity and accompanying fossil mammals). In the Special Catalog, the author advanced in the temporal and spatial contextualization. On the other hand, the 1876 catalog does not specify the geographic provenance of the specimens, including the reference only as: "near Luján", "Mercedes", or "San Antonio de Areco" and, in some cases, this general information was absent; whereas in the Special Catalog, this information is very detailed throughout the entire work. He assigned the provenance of the objects included in the 1876 catalog as Paleolithic human sites number 1, 2, 3, and 4 (see Supplementary Information 1). This detailed control of the origin of the evidence became vital in the

construction of its temporary repositioning concerning the antiquity of the geological deposits from which it was extracted and, therefore, of the antiquity of the human presence in the La Plata Basin.

Finally, although the Special Catalog represents an advance in the knowledge of the temporal and spatial context of the objects in the collection that traveled to Paris and were materialized in the "*La Antigüedad*", the structuring of the Special Catalog disarticulated much of the evidence that accounted for the coexistence of men with paleofauna. In this regard, in the 1876 catalog, we can see that the exoskeleton of a glyptodont specimen assigned to *Hoplophorus* is mentioned among the anthropic evidence (see number 82 in Supplementary Information 1). In contrast, in the Special Catalog this specimen is listed in the Paleontology section under the number 4850. This change responds to the fact that Ameghino's Special Catalog was dichotomously structured, classifying its collection into Cultural Materials vs. Natural Materials. Ameghino (1878) dissociated the contexts of findings by his determination to place the objects in one of the sections (Anthropology/Paleontology). Thus, although coming from the same location or archaeological site and even from the same sedimentary deposit of the archaeological site, the fossils came to constitute different collections and had divergent destinations. An emblematic case is the material and biological evidence exhumed from layer 9 of Paleolithic human site number 1. The cultural objects assigned to lithic manufacture, the bone remains intervened anthropically, and even the human bone remains from layer 9 are listed in the Anthropology section of the Special Catalog. Meanwhile, the remains of *Machairodus nector* (Fig. 6), *Eutatus* n. sp. (Fig. 7), and *Hoplophorus burmeisteri* are part of the Paleontology



Figure 6. Mandible assigned to *Machairodus nector* by Ameghino (1878). Special Catalog 4746. AMNH 11102. Scale bar= 10 mm.



**Figure 7.** Skull in ventral view assigned to *Eutatus* n. sp. (Ameghino, 1878). Special Catalog 4836. AMNH 11231. Scale bar= 25 mm.

section with numbers 4746–4761, 4836, and 4850, respectively. As for the divergent destinations, these remains exhibited in Paris as evidence of the coexistence of “man” with extinct fauna were sold to Edward Drinker Cope in 1879, transported to the Philadelphia Museum, and are currently housed in the American Museum of Natural History (AMNH) in New York (Osborn, 1903).

### Post-formation: Separate destination

The Ameghino Collection that traveled to Paris was fragmented as a result of commercialization, donations, and exchanges (Podgorny, 2000) and as Casinos (2012, p. 75) mentioned: “... *el material que había transportado iría a enriquecer diversos museos, entre ellos los de París y Nueva York*” (... the material that was transported would go on to enrich various museums, including those in Paris and New York). The issue of the commercialization of a part of the private collection that Ameghino exhibited in Paris was controversial in the scientific community at that time (Podgorny, 2000; Toledo, 2016) and continues today (Toledo, 2016). Podgorny (2000) placed this issue in context. In the 19<sup>th</sup> century Argentina, the commodification of archaeological pieces, ethnographic objects, fossil remains, and exotic organic and inorganic objects was a common practice. Ameghino counted for commercial transactions and/or donations and exchanges with the approval of the Argentinian Commission. According to Podgorny (2000, p. 32), the argument of the criticism of the behavior adopted by Ameghino “...*no recurría a la argentinidad de los restos sino a la necesidad para los científicos radicados en la Argentina de contar con colecciones valiosas para poder realizar su trabajo*” (...did not turn to the Argentinian nature of the remains,

but rather to the need for scientists in Argentina to have valuable collections in order to carry out their research). The current controversy lies in the assessments regarding whether the sale only concerned paleontological objects or archaeological objects. For Podgorny (2000), the sale of archaeological objects would have been possible, while Toledo (2016, p. 174) maintained that: “*Ameghino no vende su colección de objetos relativos al hombre ya que era la base material que testimoniaba su hipótesis más preciada, la coexistencia del mismo con la megafauna*” (Ameghino did not sell his collection of objects related to men because it was the basic material that supported his most precious hypothesis, its coexistence with the megafauna). Although we have not found evidence to support that Ameghino sold objects cataloged in the Anthropology section of the Special Catalog, we consider that Ameghino did sell archaeological evidence related to the emblematic location of human antiquity in the Río de La Plata. This statement is based on the sale of the pieces under numbers: 4836 for the specimen *Eutatus* n. sp., remains 4850 of *Hoplophorus burmeisteri*, and the pieces numbered as 4746–4761 of the specimen *Machairodus necator* from the Paleolithic Human site number 1. These remains, associated with anthropogenic materials and bioarchaeological remains, conformed to an archaeological context. It is not necessary to appeal, then, to an actualistic analogy for the concept of archaeological site (e.g., Deetz, 1967; Shiffer, 1972; Butzer, 1982). It is Ameghino himself who gives the entity of human whereabouts to the locus of discovery. The evidence that today would constitute the archaeofaunistic record or also named as zooarchaeological record gave his sites one of the fundamental topics of archeology: temporality.

### CONCLUSION AND FINAL THOUGHTS

From the hand of Florentino Ameghino, the collection of objects that build up the Anthropology section of the Special Catalog exhibited in Paris positioned the Río de La Plata basin in the world debate regarding the characteristics and antiquity of the settlement process and its sociocultural development (e.g., Lehmann-Nitsche, 1907, 1910; Mochi, 1910; Hrdlička, 1912; Podgorny, 2009; Politis, 2014). According to the structure and information presented in the Special Catalog, it is reasonable to think that it formed



a fundamental pillar in the conception and execution of the most important work of archaeological literature on the Río de La Plata Basin. Nowadays, the scientific community returns again and again with new techniques and approaches to the objects of the Ameghino collection, for the recognition and discussion of the biological and cultural characteristics of the social actors who carried out the settlement process of South America (e.g., Bonomo, 2002; Toledo, 2005, 2011, 2016, 2021; Politis & Bonomo, 2011; Bonomo & Scabuzzo, 2016; Chichkoyan, 2019; Politis *et al.*, 2019; Acosta *et al.*, 2020). The new investigations have promoted the sites' geolocation, provided accurate radiometric dating, and reviewed the genesis and characteristics of the sedimentary deposits that bore the evidence and the proposed associations. Nevertheless, there is an aspect that, up to now, has not been fully discussed yet. That is the incidence that the primary distinction between natural and cultural objects had in the curatorial destinations of the evidence and interpretation of the contexts of findings. The differentiation proposed by Ameghino in his catalog influenced the final destination of the objects he recovered, having sold a significant number of pieces considered by him of a paleontological origin and by us as archaeofaunistic, since those were recovered from human sites.

The findings that at the time materialized the antiquity and continuity of the human settlement in the Rio de La Plata Basin are today institutionally divorced under different curatorships. On the one hand, those objects that were sold are currently housed in foreign collections, while those that returned from Paris are housed in the Museo de La Plata. At this institution, some are part of the Vertebrate Paleontology collection. Meanwhile, what was cataloged in the Anthropology section of the Special Catalog constitutes one of the foundational collections of the Archeology Division of the same institution.

The study of the conformation, classification, and recreation of the life history of the Ameghino collection highlights the limitations of the dichotomous conception that separates cultural history from natural history in curatorial policies and, in some cases, in the scientific policies of museological institutions. These limits have affected the deconstruction of records that were associated with one of

the most important collections of the world heritage since it houses a large part of the South American Cenozoic fossil mammals and one of the oldest bioanthropological records in the history of human population from South America (e.g., Politis, 2014; Borrero, 2015). We consider that the contextual dissociation and logistical divorce of the Ameghino collection exhibited in Paris has consequences which, as sequels, invade the resolution characterizing the natural and/or cultural processes involved in the conformation of the record. In this sense, a question arises: Can we generate new results for interpreting the Parad. h.p.n.1, if we give the faunal record from layer N° 9 an archaeofaunistic entity? We do not have a definitive answer but we do suspect that it is possible to offer interpretive variants if the associations of the bone assemblages that made up the Paleontology section of the Special Catalog are reanalyzed with the evidence that went on to make up the Anthropology section of the same catalog.

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