Unbundled: European Collecting of Andean Mummies 1850-1930

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Chapter 3

Methodological Framework

"Everything has its history as every person has his own biography."
Briggs, 1988: 27

"The biography of an object should not be restricted to an historical reconstruction of its birth, life and death. Biography is relational and an object biography is comprised of the sum of the relationships that constitute it."
Joy, 2009: 552

The previous chapter emphasized the importance of looking at documents and objects as complementary sources of information for the study of museum collections. Following that line, the methodologies for this thesis come from two areas: history of museums and bio-archaeology.

Even though the information obtained from both sources, documentary and material, are complementary, the methodologies used to obtain that information are diverse and specific. For this research, each mummy included in a museum collection is interrogated in terms of its biography, both documentary and as an object. In other words, the data collected is found by looking at the objects themselves – their archaeological and biological properties – and at what has been said and written about those objects.

The information gathered concentrates on two areas, Western Europe and the Andean region, the former as a place where the collections are stored and have been exhibited and the latter as a place of collecting and comparison. In consequence, the aims and type of research in each area are different. Whereas in the European museums, detailed accounts of each mummy and its collecting history are described, in the second region, connections and comparisons between extant collections, as a whole, are important. This joint approach to Andean mummies, both in their source region and at their current locations, provides a complete panorama of the collections and allows an answer to the hypothesis created for this research. This is relevant as one of the aims of this research is to draw a line of comparison and discussion in terms of the political importance of archaeological remains, in particular archaeological human remains, through history and within current political debates in the region.

It has been argued that when looking at specific holdings in museum collections, it is important to start by considering the biographies of each individual "object," from its point of origin to its integration in the collections, to then proceed to understand its history. However, not all individuals can be traced with the same level of detail given their state of preservation or the documentation available. Similarly, because this research attempts to present an overview of the mummy trade in the nineteenth century and the history of the collections formed from them, in certain instances the focus has been on collections as a whole and not on individual cases. In that respect, except for some specific mummies, who are particularly important examples for the arguments presented, the

biographical approach has been applied to collections or sub-collections as a whole.

When looking at Western European museum collections, the focus is on the recorded origin of the collection and the history of its acquisition by the museum. This information is reviewed and compared with the evidence of material culture. It is important here to clarify that the association between mummies, documents and artifacts has been implicitly assumed to be authentic – since that is how the museums received them after the purchase. However, there is no guarantee that any or all of the objects were actually part of the mortuary context of the mummies, and were not added at a later time by sellers. The same consideration should be extended to those textiles or ornaments that accompany the remains that could be easily placed or removed.

This chapter offers practical explanations and examples of the methods followed to obtain the information. Consequently the description of the information collected can be divided into sections according to the materials on to which they pertain. The chapter's organization obeys distinctions in methodologies, and presents an overall look at the data set. The methodologies that will be described here follow this logic: once the collections had been identified, by means of online catalogs, direct contact through museum professionals, and following particular temporary exhibitions, research visits to the collections were planned and agreed upon with the museum curators in charge of the mummies.

On every research appointment, two types of information were gathered: documentary information and visual examination of the remains. The documentary information includes data in regards to their provenience (geographic and cultural), the process of collecting (where, by who, when) and the administration once in the museum collection (introduction to a museum, history of storage and use, current location) as well as information on associated artifacts of the remains. The visual examination of the mummies allowed contextualization of the remains and the construction of biological profiles – aided in some collections by paleo-imaging.

The first section is dedicated to the description of the museum's selections that comprise the research, including the dates visited and the number of mummies seen in each of the available collections. The second section, which is based on methodologies used for the study of museum history, uses the documentary information obtained from museum archives and from museum catalogs – both online and physically. This section builds upon literature on museum studies and museum anthropology and presents an introductory overview of the foundation and formation of the featured collections .[17]

The third section details archaeological and bio-archaeological methods used to describe the individuals in each of the collections, as well the associated artifacts preserved with them. The bio-archaeological subsection presents methods that aim to create biological profiles when possible, and an overview of their preservation, conservation and

17 A nuanced and more complete history of each collection is presented in the following chapter and further discussed in chapter 5.

storage conditions. Other materials like textiles, metals, ceramics and wood objects are inspected and described only when necessary –directly linked to mummies and helping with their contextualization.

The fourth section delineates the agreements reached with the institutions that allowed this research to take place. These agreements include the reports sent to each institution after visits, the disclosure of information and photographs taken of storage facilities and human remains, etc.

A final section is dedicated to the limitations found with the methodologies used. These limitations have to do with the practical application of the methodologies.[18]

3.1 The Collections at a Glance

As has been stated in previous chapters, the creation of the concept of science as it was established in the nineteenth century, gives way to a series of knowledge production pursuits, divided by their objects of study (e.g. archaeology, ethnology, art), and to new ways to exhibit what has been collected (Bennett, 2013). The areas and timeframe in which this research is situated were explained in the previous chapter. Of the total countries of Western Europe, those that existed by the second half of the nineteenth century, and had a relationship with the young nations in the Andes are included in this research. It is through nation-sponsored enterprises – be they of collecting or to create the physical repositories for those objects collected – that the most important collections are established. In time, those collections become national museums, the main focus of this research.

There are a number of types of national museums that are formed during this period. Some have remained stable, others have had their collections dismembered and reassembled in line with the separation of knowledge that is developed during the Illustration. Natural sciences, art, ethnography, history and archaeology are separated into specialized museums.

In some cases, like that of the old Trocadéro museum of Paris whose collections were formed at the beginning of the nineteenth century, this reorganization has taken the collections to two modern versions of anthropology and ethnographic museums at the Musee de l'homme and the Museee du Quai Branly, respectively. Founding ethnographic collections such as those in Leiden and Vienna are now transformed into the collections of World Museums, which seem to announce a new way to handle and think about this type of heritage. While other collections remain largely unchanged, with mummies still on their nineteenth-century display cases, such as in the Museu do Carmo in Lisbon. There are many more that have been widely studied, like those at the Ethnographic Museum in Berlin, or the Museo de America in Madrid, while others remain unseen and sometimes

18 Other issues that have risen from the data collected in terms of this research's limitations are addressed in the discussion chapters 5 and 7, when appropriate, and in detail during the conclusions and recommendations in chapter 8.

hard to access like those at the British Museum and Museo Luigi Pigorinni.

At least one national museum per country has been selected, in an effort to get a representative universe to understand the issues of collection, classification, and exhibition of Andean mummies during the time period this research encompasses. Interestingly, while looking for and finding these museums, it became evident that mummy collections relevant to the narrative of the period are not only concentrated on national museums, though these institutions do have the larger number of mummies. This indicates that although state-sponsored research and collecting expeditions were common, private initiatives to collect are also an important universe to take into account. Academic collections, especially, have an overlap in terms of collectors and areas collected by national institutions and therefore should not be discounted. This could originate from the closeness of academic life and national sciences, as well as in the importance of social circles where antiquities collecting –and the antiquities market– were held in high regard (Reitlinger, 1970).

Collecting motivations in academic and private circles are in some regards different from those of national-oriented initiatives. Aesthetics and taste are important considerations,[19] as well as opportunities to collect, for example, in the case of private collectors dictated by their positions as military or diplomatic personnel.[20] In consequence, the present museum sample includes two university collections – Pitt Rivers Museum in Oxford, and the University of Coimbra – in order to differentiate and document these different notions (motivations) in collecting.

Three other museums outside of traditional National museums have been considered. The first is the nineteenth-century skull and mummy collection of Mr. Quatrefagues, formerly at the Garden of Sciences in Paris, later part of the Musee Gimme in Lyon and currently held at the fantastically modern Musee des Confluences in Lyon. The second is the collection of the Archaeological Museum in Mannheim. These mummies have been traveling for the last three years as part of the "Mummies of the World" exhibit, developed and curated in Mannheim and exported to several countries in the EU. The third is the collection of the Museo Reverte Comma of Forensic Anthropology, that was displayed as part of a special "Mummies and Death" exhibition at the Parque de la Ciencia in Granada, Spain. These collections have been chosen to showcase two very different approaches in the use of Andean mummies collections in current exhibits, be they temporary or permanent, as well as to exemplify the importance of the exchange/donation of mummies within national institutions during the late nineteenth Century and the beginning of the twentieth in France, Spain and Germany, respectively.

19 For considerations on taste and the importance of its role in private and public collecting see the previous chapter.

20 For more information on that topic, see chapters 5 and 7.

Table 1: Museums and Collections Visited.

Museum	Country	# Mummies	Last date visited
Weltmuseum Wien	Austria	17	Jul-15
Royal Museum of Arts and History	Belgium	7	Mrt-16
Nápstrek Museum	Czech Republic	5	Jun-16
Nationaalmuseet Denmark	Denmark	7	Okt-16
Quai Branly	France	22	Okt-15
Museum of Confluences	France	13	Jul-15
Ethnologische Museum. Staatliche Museen zu Berlin, Dahlmen	Germany	69	Nov-15
Reiss-Engelhorn Museen (Mannheim)	Germany	10	Mrt-16
Rijksmuseum Volkenkunde	Netherlands	8	Aug-15
Museu Universidade do Coimbra	Portugal	2	Jun-16
Museu Arqueológico do Carmo	Portugal	2	Jun-16
Museo de America	Spain	9	Mei-16
Museo Universitario de Antropología Forense, Paleopatología y Criminalística de la Escuela de Medicina Legal de la Universidad Complutense de Madrid, Prof. Reverte Coma. (On exhibit at the Parque de las Ciencias-Granada)	Spain	15	Jul-15
Museo de Arqueologia y Etnologia de América, Universidad Complutense de Madrid	Spain	1	Jul-15
Musée d'ethnographie de Genève	Switzerland	11	Mei-16
Pitt Rivers Museum. Anthropology and World Archaeology	U.K.	14	Mrt-15
British Museum	U.K.	22	Mrt-15
Total Number of Museums Visited	**Countries**	**# Mummies**	**Years**
17	11	237	2

Seventeen is the final number of museums and collections visited. A detailed list of where and when these collections were seen is presented on the table above.

Three further collections were identified but could not be visited. Those held at the Five Continents Museum in Munich and the World Museum in Gothenburg, discussed at length in other publications, and in the first case repatriated fully by the time of this dissertation (Gustafsson, 2001; Rosendahl, 2007; Rosendahl et al., 2007). Though they will be mentioned briefly, they have not been taken into the detailed accounts. The collections used by the Swiss Mummy Project, which collaborated with the MEG museum and with universities in Bern and Zurich has not been taken into account either given that their historical context is not clear enough to be introduced into the time period that this thesis explores.

Of the unvisited museums, only the remains of the Gothenburg collection are taken into account in this dissertation.

In all of these museums, mummies, or more broadly, human remains, have been classified as "objects" that belong to the ethnographic, historical, archaeological and natural science worlds, and so can be found in museums that concentrate on those subjects.[21]

A total count of mummies present in the collections described above is 237 individuals. This number is gleaned from all entries in the inventories of the museums.[22] Of the 237 remains listed in this dissertation, 215 were available for inspection. The reasons vary in regards to why the remains could not be seen. One is the case when remains are included in the inventory, though the object itself is absent and only drawings of the original remain. Another is when though the database shows the presence of these remains, they have not been photographed and therefore could not be linked to actual remains seen in storage. Similarly, some remains had been photographed and CT scanned, so there was no need to inspect them individually. Other remains simply could not be located at the time of visit to the storage facilities.[23]

The remaining 215 elements are divided into remains that could be seen personally, and those that had to be seen through catalog entries and inventory descriptions with photographs. In the case of the Berlin collection, the remains were seen as a whole and inspected in terms of their general characteristics during the museum visit, but not individually. However, because there was a large body of information on the remains already published and available from databases, all inferences for individual descriptions are based on a combination of the inventory pages provided by the curator, as well as existing publications about the collection.

Table 2: Total number of mummies included in research.

Type of inspection	**# remains**
Remains individually inspected	151
Remains seen but not individually inspected	74
Remains not found	10
Remains not seen but included from literature	2
Total number of remains	**237**

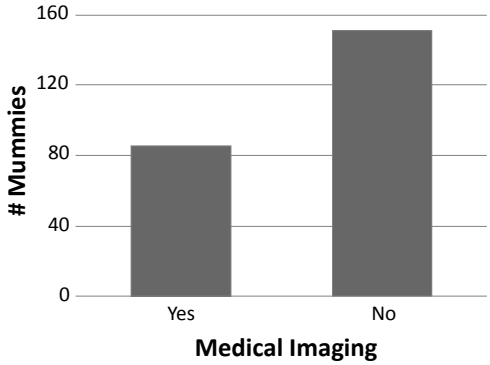
21 A national art museum that has a mummy collection has not been found, but then again there is a fine line in the classification of "primitive art" and archaeological objects (especially those of the classical cultures of Greece and Rome), so its existence may be possible. Similarly, artistic representations of mummies are common in the temporary exhibition rooms of national museums and certainly make up a large selection of gift-shop merchandise and publications.

22 For further description of the 237 remains, refer to chapters 6 and 7, as well as to the database presented in Annex 1.

23 Further description of the total remains, the work conducted and the state of preservation is found in chapter 6.

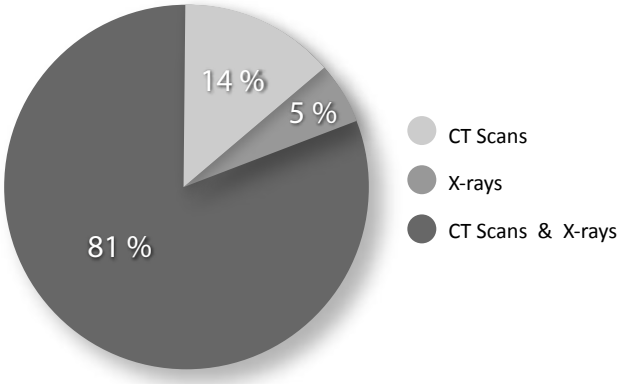
Of these 237 remains, a number of mummies had been X-rayed or CT scanned before or during the writing of this thesis. The introduction of medical digital imaging to the interrogation of human remains is further discussed in the following section on non-destructive research. Nevertheless, the total number of remains subject to medical imaging accounts for 86 individuals. The total remains can be seen in the graph below.

Graph 1: Number of Remains subject to medical imaging vs. not imaged.



Of those, complementary Computed Tomography (CT) scanners and both digital and film X-rays are the most common methods used.

Graph 2: Percentage of Medical Images Conducted by Type.



The presence of these studies has allowed for more detailed collecting of demographic data, bundle construction data, and even conservation data (Beckett, 2014; Herrmann & Meyer, 1993). Concerns regarding the impact of these types of studies on the long-term preservation of the remains, because of radiation exposure that could degrade DNA data, as well as the demands on the mummies that transportation can imply, are further discussed in the limitations section of this chapter, as well as in the conclusions. It is important to note, however, that these concerns are not exclusive to mummified human remains but to most human, animal, and natural remains in the archaeological record.

3.2 Agreements with Museum Collections

After information was gathered from the mummies and associated objects, the catalog/inventory entries were analyzed regarding each individual's background from the moment of their accession into the museum. Though most museums visited have digitalized their catalogs and part of that information is today readily available online, some information has not been included in the digital formats or is only available through museum inventory databases.

As mentioned earlier, a full report of initial finds is given to each museum after a visit. Some photography is included in the main text of the reports, to highlight special diagnostic traits of the remains, but the bulk of the images have been given separately to the museums and will only be used here when a specific trait of the remains needs to be highlighted. In order to be able to document the collections in detail, photography was taken of the objects, storage facilities and the process of packaging/unpacking of the remains. Museums have different ways to handle photographic requests and they limit the types of photos that can be taken (for example, both the Dahlem museum and the Nápstrek museum do not allow pictures of their storage facilities to be used in any publication, at the Nápstrek museum, in particular, no storage photos or photos of the packaging of the mummies were allowed). In order to facilitate the interaction with the museums, the author created a document on the "Agreement Regarding the Use of Photographic Material" (see annex section). Because of the constraints of the use of photographic material from museum collections due to copyright, but mainly because of the considerations when showing sensitive images of human remains, this dissertation will use photographic evidence only when necessary to support arguments of contextualization and storage, but not within the annex section as additional documentary material. This is a personal decision of the author, both because of personal views on presenting images of human remains in literature and to adhere and respect the decisions of curators from the different museums who have allowed work with the collections under their charge.

Extensive debates on the ethical use of human remains images have taken place over the past decade (Graf et al., 2007). The author personally believes that mummified human remains should not be shown/exhibited out of respect, not only for their descendants (however removed they may be), but also out of consideration for the individual himself/herself who cannot decide. Photographs of mummified remains should only be presented when there is a need to show a biological or cultural feature that aids in their contextualization and recognition as an individual. Medical images, much as with modern subjects are less contentious and could/should be used more frequently when addressing archaeological human remains. Similar considerations stand in regards to skeletonized human remains: whether to show the individuals or their photographs should be assessed on a case-by-case basis.

3.3 Collections Research - Documentary Information

Documentary information on the remains was found in two major sources. The first related exclusively to the inventory of the collection, with tools such as accession books and intra-museum digital catalogs such as TMS or MERLIN. The second source was documents associated to the remains or the collections.

The use of digital databases and inventories for museum collections has been discussed at length (Wanning, 1991). In most cases, the information registered is beneficial in terms of the condition of the remains, photographic information, seller names and links to biographical information, as well as ascribed cultural proveniences. However, the data available is not standardized, neither in relation to keywords nor the available information on each object, a fact that has also been discussed in the literature (Dannélls, Damova, Enache, & Chechev, 2011; Dyson & Moran, 2000).

The second group of documents is far less standardized and in that sense can either offer more or less information than a regular catalog entry, depending on the collection, or rather, on the activity related to the collection's past and present functions. In that category, details about the storage facilities and state of the remains that were gathered through conversations with the museum personnel currently in charge of the collection are included.

These interactions include the correspondence of previous museum curators or directors regarding the collections or a portion of them; the letters sent with the objects as donations or as a prelude to those donations; curator and conservator briefs on the handling of the remains to be used within the museum; or other published materials on parts of the collections –for example previous X-ray examination of the remains, books written on particular collectors, etc.

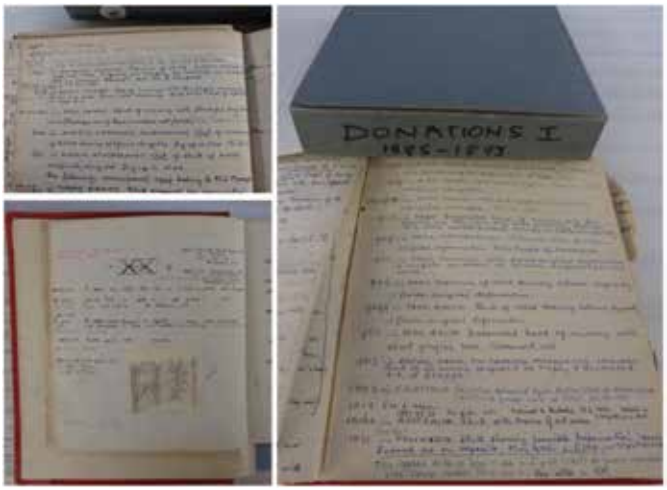
Not all museums use all the available alternatives for information databases. Of the seventeen museums visited, seven had freely accessible public online catalogs . Similarly, ten museums have digitized all the information on their inventories and previous catalogs into online databases that can be accessed on site with the aid of curators or archival specialists in the museum libraries. Ten museums have accession books available for consultation in their facilities. These books have original annotations from the moment the remains were introduced to the collection, as well as added notes from curators who succeeded the moment of collecting. Finally, seven museums have published materials on their mummy collections, ranging from catalogs, visitor booklets, academic research studies, journal-published papers, as well as books.

In most cases, museums use various types of databases at the same time. While online repositories are in use to make collections more accessible to the public, other digital repositories serve as tools within the museum. Digital software has been used to keep the collections up to date for searches within the collection, to include material de-

scriptions, as well as to maintain communication between various areas of the museum.[24] At the same time, accession books keep a historical account of the moment of collection. Seven museums use all three types of databases: online catalogs, digital inventories, and accession books.

Different museums have different ways to manage their databases. Here are some examples of the type of data found on each type of document.

Image 1: Examples of acession book entries. Pitt Rivers Museum.



Accession books and museum archives were consulted in their original language. Translations were made by the author when dealing with Spanish, English, and French; by the curator and collections personnel in the case of Danish documents; and by Jose Fernando Ramirez (Siegen Universität) and Marie Kolbenstetter (Universiteit Leiden) in the case of documents written in German.

Except for the archival research conducted in Denmark, photographs of the archival documents were taken and it was on the basis of those copies that the translators worked. It is in this second group of documents that some of the intentionality behind donations or apparent handling of the remains are made visible, as is further discussed in chapter 5.

Biographical information on the collectors listed in the archival research has also been an important source to consider. Many of the personalities linked to the collections were recognized in scientific, diplomatic, and even artistic communities. This allows a condensation of collecting moments before the integration of the collections to a museum (which would be the date registered for the remains on the accession books), or to pinpoint specific regions or even sites visited by the collectors during their lifetime and where

24 For example, to make notes of when pieces have been moved from storage to exhibit, when a specific treatment was applied or when the conservation department has noted a need to intervene on a piece.

they would have likely collected these mummies. Even if the collector has not visited a certain area, their relationships with institutions whose focus is on the Americas may lead to inferences regarding the possible proveniences of the human remains later donated by those individuals to museum collections. Examples include diplomats who receive gifts from American national museums or military envoys that became recipients of antiquities and mummies as spoils of war. This is particularly interesting in the case of British naval officers who were on the Chilean side during the War of the Pacific, and who subsequently brought home several mummies from the Peruvian desert, originally located in the area of Arequipa to Lima. Further details on those cases will be presented in the following chapter.

3.3.1 Determination of Geographical and Cultural Provenience

Several diagnostic traits were considered within the methodology of this dissertation in order to re-contextualize the mummified remains; document information was the first step. Roughly 82% of the total remains that had been assigned a provenience in archival data had inaccurate information, either because it was insufficient, or because it had changed through time. A contextualization outside of the probable country of collection was not possible in a majority of remains. Of those, a small number of previously unclassified remains could actually be assigned a cultural affiliation merely on the basis of their associated artifacts.[25]

One of the first searches in the documents had to do with the provenience cited in the documents. Most of the mummies, more than half of the total, have been classified as Peruvian, followed by Chilean Argentinean, Bolivian and Colombian. Physical maps, as well as current online maps of the Andes, were explored to identify changes in borders, as well as to try to locate the sites and regions mentioned in the documents.

In some cases, the sites are no longer archaeologically recognized, or their names have been changed, so they could not be found. In other cases, the mentioned site name has been taken from a larger region, with no precise necropolis or archaeological feature mentioned. This is particularly true for the remains that come from Lima, very often noted as originating from the Rimac valley, the Lima region, or the surrounding area of Callao and Lima.

Nevertheless, a list of names in order of Country, Province, City and Site was made to try and locate the most likely origin of the remains. Once that information was introduced into a database, the next step was to introduce information regarding the remains' cultural affiliation supposed by the collector.

Notably, very few archaeological cultures are mentioned in archival information. As seen in the table below, a lot of them are no longer recognized today. That is the case, as mentioned earlier, of those such as *Ancon* and *Atacameña*, which referred to a area and not a culture. Another classification that was not taken into account was that of *Pachacamac,*

25 This information is presented in detail in chapters 6 and 7.

Table 3: Cultures documented vs. Cultures recognized archaeologically today.

Culture annotated in document	Recognized archaeologically today
Ancon	No
Arica	No
Atacameña	No
Chinchorro	Yes
Chancay	Yes
Inca	Yes
Chimu	Yes
Chiu-Chiu	No
Ichma	Yes
Pachacamac	No
Paracas	Yes
Tihuanaco	Yes
Wari	Yes

which refers to the archaeological site, and not to a cultural affiliation.

As with proveniences, cultural filiations have been listed and included in a database. An initial assessment of the correspondence between location and culture was made. If there was no match, then a note was made to recheck it after the visual inspection of the remains.

3.3.2 Collector Information

Most inventories and databases record the sellers and collectors of the remains. In some cases, this is done to link a collection to a specific scientific enterprise, government funds, or to note the amount of money spent on each collecting expedition.

In several instances, the list made with the collectors shows names of illustrious scientists of the time, as well as travelers and renowned benefactors. All the collectors and sellers have been noted, and in turn classified in terms of their line of work at the time of collecting (if known), as well as the comments made by curators at the time of integrating donations into a collection.

Three groups were identified: scientific sources, private sources, and military or diplomatic service sources. The first group includes collectors paid by or hired by the museum, as well as scientific researchers, ethnologists, archaeologists and the like, who had collected remains during their lifetime and donated them to a museum before or after

their death. The second is made up of private individuals, of whom little is known, and who are noted as being "benefactors" of a museum or a collector. The last group includes servicemen in active duty during the border wars that took place in the Andes during the mid-to-late nineteenth century, the majority with British links, as well as diplomats stationed in Chile, Peru, Colombia and Argentina, who had donated remains collected during their civil service.

Some of the biographical information regarding the collectors was already available as part of museum inventory and databases. However, in other cases, online searches had to be made for information on their travels, the dates when they visited the Americas, as well as their official titles when in the Andes.

Few collectors had published during their lifetimes or had had their life's work researched, but some notable examples are: Wilhelm Gretzer (1847–1926), Arthur Baessler (1857- 1907), Thomas Hutchinson (1820-1885), Adolf Bastian (1826- 1905), Max Uhle (1856- 1944), Alphons Stübel (1835- 1904) and Willhem Reiss (1838-1908).

When no information was available on a collector or seller, they were assumed to be private donors. Unsurprisingly then, some sellers of antiquities may be present in more than one collection. Examples of these cases are further explored in chapter 5.

It is also worth noting that at least three naval scientific expeditions are recorded as collectors. Those are the *Expedición Malaspina* (1789–1794), the *Expedición del Pacífico* (1862- 1866), and the *Fragata Novara* Expedition (1857- 1859). In those cases, they were listed as scientific collectors and their biography was taken as that of the expedition.

3.4 Collections Research - Object Examination Information

3.4.1 Osteo-archaeological Examination of Remains

The total number of mummies has been divided into three groups according to their type: closed bundles, unbundled individuals, and disarticulated remains; and from there into further subgroups in relation to their state of preservation (good, medium, bad) and diagnostic traits (presence or absence). An individual report for each collection was created, precisely dividing the information presented into the previously mentioned categories, starting with the fully closed bundles, then surveying those mummies that had been somewhat unbundled, and finishing with heads and hands which can be difficult to contextualize given their lack of associated materials. Documentation starts with the largest bundle and moves onward to the smallest, and similarly from fully bundled to fragmentary.

These tools are used as a means to ascertain age at death, sex and any noticeable pathologies present in the individuals that would also provide a general demographic look

at the collections.[26] The instruments used were simple straight calipers, measuring tape and rulers. No samples were taken and no destructive examinations were carried out.

3.4.2 Methods for Ancestry Determination

As is standard when considering archaeological remains from the Andes, this research considered that American Indian ancestry would be dominant in cranium traits.

The estimation of ancestry in forensic anthropology is extremely complex, first because the markers on which it is based are exclusively found in the skull and have some variability, and second because the determination of an individual's ancestry is also dependent on cultural variants that cannot be seen on the skeleton. With the advent of DNA testing, skeletal estimation of ancestry has been losing ground, especially to ancestry informative markers (AIMS), which can point out not only the most likely ancestry but also the amount of miscegenation in an individual. Nevertheless, in this case, the remains researched come from areas assumed to be largely indigenous and pre-Columbian.

3.4.3 Methods Used for Estimation of Age at Death

The age of an individual in social archaeology is made up of a person's biological age, as well as cultural age. The latter refers to moments in life when a person is considered very young or very old, and the activities and treatment they receive in consequence. In this research, only the biological age of the individuals in the collections is taken into account.

There are several techniques to estimate age at death consistently and reliably. However, these techniques depend on the condition and preservation of the remains, as well as accessibility for measurements.

Age was assessed through dental development patterns and, when possible, through suture closure and epiphyseal fusion. For the former, both the sequence of formation and eruption of teeth among American Indians (after Ubelaker 1989a as found in Buikstra and Ubelaker 1994) and the Scott system for scoring surface wear in molars (after Scott 1979: 214, as found in Buikstra and Ubelaker 1994) were used.

For cranial suture closure, the criteria stated by Meindl and Lovejoy 1985 was used (as found in Buikstra and Ubelaker 1994). For epiphyseal fusion, the methods detailed in the Juvenile Osteology Field Manual edited by Cunningham, Scheuer and Black (Cunningham, Scheuer, & Black, 2016) and in the Osteology of Infants and Children by Baker et al. 2005 (Baker, Dupras, & Tocheri, 2005) were used.

26 More in-depth analysis of biological traits has been performed by the use of medical digital imaging. Consideration for those types of analysis and recommendations have been proposed to the individual museums according to their necessities, in some cases specific mummies have been imaged already and those images and reports are taken into consideration in this research. In others the author conducted paleo-imaging as separate projects. The information provided to the museum as part of that particular project is also integrated in this research.

The estimated ages were plotted within a range to account for variability. The older the individual, the less accurate the age estimations, and therefore, ranges are used to express variability. Concise age at death estimations are possible during skeletal growth until the last stages of development (Albert & Maples, 1995). In time, once the skeleton is no longer growing, age ranges must be expanded to compensate for inaccuracy. Adult age estimation, once all elements are fused, relies on degenerative changes. These changes are highly influenced by activity, sex, genetic and cultural variation (Algee-Hewitt, 2013).

Because life expectancy in pre-Columbian contexts is assumed to be shorter than modern standards, these degenerative changes also vary in ranges within what has been described in forensic and medical literature today. In turn, in archaeological samples, estimates of skeletal or dental age at death of adults have resulted in underestimation of adult ages and underestimation of young adult ages (Aykroyd, Lucy, Pollard, & Roberts, 1999).

In consequence, for this research three very broad age categories have been used: infant, juvenile and adult. The added impediment for age scoring implied by the presence of tissue and cloth, and that it was not always possible to get paleo-imaging records, is the reason why these categories are so broad.

Particularly crucial is the need to refine methods for accurately estimating age in older adults and to standardize aging techniques across observers.

Here all individuals under two years of age are considered infants. Given their overall size, incomplete teeth eruption and no epiphyseal fusion or suture closure, they are harder to age visually. Individuals from two to seventeen years of age have been classified as juveniles. All other individuals, from twenty onwards have been classified as adults.

Setting the physical adult threshold at twenty years of age allows for third molar eruption, and root completeness to be an easy observable marker. On the same line, most long bone epiphyses have fused and could be used to define the end of the young adult category.

Some extra information has been noted for the museum reports, such as ranges within the adult categories of young adult and older adult. However, that information is not particularly relevant for our interpretations and is not explored further here.

3.4.4 Methods Used for the Estimation of Sex

Sex was determined specifically through the scoring system for sexually dimorphic cranial features (after Acsadi and Nemeskeri 1970, as found in Buikstra and Ubelaker 1994), assessing numeric values from 1- 5 for the available features (Acsádi & Nemeskéri, 1970).

Sexually dimorphic characteristics in the pelvis were scored following the directives of Buikstra and Ubelaker (Ubelaker & Buikstra, 1994). Most of the time, the position and articulation of the remains only allowed for scoring of greater sciatic notch, and pelvic angle and aperture.

Other sex-related features such as long bone measurements and vertebral measurements, among others, were not taken into account because of the articulated status of most remains, as well as the covered condition of a majority of the areas, which made scoring difficult.

3.4.5 Step by Step Protocol for Mummy Examination

As described earlier, a protocol or a series of actions to be followed, was created each time a new collection needed to be described. The actions ranged from simple observation in terms of measurements to the application of the ageing and sexing methods described above.

The first steps have to do with the overall condition of the remains and how they are stored. This is followed by the assessment of changes made to the original mummies, associated artifacts, biological profiles, and finally light inspection.

There are six steps to the protocol:

1. The first step is to photograph the mummy in its current storage position and to take a picture each time the object is moved from its original storage condition. For example, a photo of the closed container of the mummy, the paper and ribbon wrapping of the mummy, and finally the mummy itself. At this point, if any other associated materials are kept with the mummy, they are also noted.
2. The second step consists of observation and measurement of the mummified human remains. General length, breadth and height of the remains are noted. All textiles and original supporting structures (like cradles and rope) are measured, taking the bundle as a whole into account.
3. A third step is to note if the current state of preservation is close to the original. Probable removal or addition of layers, dislocation of limbs, removal of decoration artifacts, sampling, etc. are noted. A ranking between mummified (mostly covered by tissue), partly mummified (some areas of the body contain tissue) and skeletonized (no visible tissue) is also made. Individuals within a closed bundle context are considered mummified unless tactile or visual examination implies some degree of skeletonization, in which case they are noted as partly-mummified.
4. The fourth step consists of describing and taking notes of any associated artifacts within the same storage unit as the mummified remains.
5. As a fifth step, a description of the visible traits for a biological profile of each of the individuals is attempted, depending on the need of a particular collection –some of them have already been researched in terms of bio-anthropological data.
6. Finally, a light examination is conducted, in order to record the presence or absence of possible resins or other covering substances. A flashlight was used when looking under or inside mummies, as well as to highlight some conditions of their preservation. The general smell of the bundle, as well as any insect or fungal activity, is also noted in detail at this stage.

Recent research conducted on mummies held in European collections is focusing on possible varnishes applied to these human remains as part of their introduction/preparation for the European market. The varnishes are found on mummies prepared for an exhibit, as well as those that were collected as part of scientific expeditions that also collected naturalist specimens. The reasons behind the process, so far explored, are the prevention of further deterioration (to preclude insect or fungal activity, for example), both before and after their arrival in museum collections; and for aesthetic purposes, adding a special "shine" to the objects that would be on exhibit. The exact composition of the varnishes/resins applied to the remains varies through time and are not uniform; two separate studies in different mummies collected in the same period (second half of the nineteenth century) have identified varieties of pine resin as the most common (Carminati, Begerok, & Gill-Frerking, 2014). The use of gas chromatography – mass spectrometry (GC-MS) testing – has been the only method used to identify these resins and that in itself may constitute a limitation for further research given the destructive sampling method that could be needed. The author is working to develop a method and database for comparison on these resins, both to enhance what is known of the process, and to help solve the issues of decomposition and odor that could be associated with its occurrence on some collections and some individuals.

3.4.6 Non-destructive Methods in Bio-archaeological Research

One of the first decisions taken on the course of this research had to do with the type of analysis to be conducted on the remains. The discussion in archaeological sampling has been dominated between the advantages and disadvantages of destructive versus non-destructive sampling.

The former includes any procedure that will damage or permanently change a specimen. These include sectioning, scrapping, or drilling human remains for isotope, carbon or collagen testing. It also includes the dismounting or disarticulation of mounted remains that have been glued together.

In turn, non-destructive refers to techniques of analysis that do not damage macroscopic physical attributes of materials (be they from their external morphology or internal structure). Similarly, beam techniques and neutron activation analysis are considered non-destructive. In broad terms, a non-destructive technique is one that, including sample preparation, allows further analysis without impacting any future results or use.

For the case of human remains, DNA testing, as well as isotopic sampling can be attempted in order to contextualize them. However, both techniques require the extraction of sections of bone or other tissues, and that would damage the original mummy as it is at the moment. Though the information is certainly valuable, for this thesis' goals, no destructive technique was justifiable. Therefore, only non-destructive techniques were used, in particular what has come to be known as paleo-imaging or paleo-radiology.

Paleo-imaging is the use of X-rays and advanced medical imaging instruments, such as computer tomography and endoscopy, for the evaluation of ancient human and animal remains. Diagnostic radiology is applied to the interpretation of these images in order to detect ancient diseases or to describe mortuary practices not visible through other methods. In recent times, the use of not one but several of these techniques to complement each other has allowed for exciting finds in terms of mummification and ancient pathologies.

A study reports that from 1985 to the present, at least one mummy CT publication has come out yearly, and each year they become more numerous (Cox, 2015). These publications range from descriptive case studies to publications that specifically address facial reconstructions, pathologies, and new approaches and applications of the technology. Interestingly, pathological reports are the least common, though CT technology is used primarily for pathology diagnosis on living subjects. The CT scan recognized to be the first pathology diagnosis performed on a mummy is that of Ötzi the Iceman (Holden, 2001). However, the most famous is that conducted on the remains of the mummy of King Tutankhamun to attempt to determine the cause of death of the boy king (Timmann & Meyer, 2010).

As will be emphasized in later chapters, the resources used to both exhibit and look into the mummified remains have changed dramatically over time. The introduction of video and touchscreens allows the public to interact with objects in a different dimension than the traditional exhibition. In that regard, the advances in medical imaging technology have proven immensely useful for museums that want to exhibit mummies. Similarly, the number of interdisciplinary researchers that use medical images to interrogate pre-Columbian human remains has risen significantly in recent years (Cox, 2015).[27] Furthermore, these researchers have concentrated their efforts in museums that have questions regarding the authenticity and originality of the remains in their collections.

3.5 Collections Research - Associated Artifacts

As mentioned above, the diagnostic traits considered within the methodology of this dissertation to be able to re-contextualize the mummified remains were various. Textile and artifact examination are the second factor considered.

Following the steps above, artifacts are described in relation to the body, as well as in relation to its current storage. When stored with the remains, or when directly linked to the mummies by catalog entries, each artifact is noted separately but linked in a general database to the human remains.

27 The creation of specific venues for the presentation of mumwmy research such as the International Congress on Mummy Studies, as well as national efforts like the German Mummy Project or the Swiss Mummy Project, are clear indicators of this research enthusiasm.

The artifacts have been described following typological indicators used for their original classification in the museum, starting with their material to diagnostic features. [28]Though these classifications have been performed differently by each museum according to their protocols, four general groupings were identified: ceramics, textiles, metals, and all other materials. Evidently, the last group contains objects that vary from wood to stone, to seashells and seeds, etc. Given that they are fewer, they are grouped together in order to separate them from the other three categories, and these three overarching classifications are kept in the analysis. Once the collection has been divided into these types, the remains are taken one-by-one to an examination table (when possible) to be described.[29]

3.5.1 Textiles' Descriptions and Methods for Possible Provenience Identification

In the great majority of cases, the diagnostic trait used was the type of textiles associated to, or directly in contact, with the mummified remains. That is not particularly surprising when considering that out of the 237 individuals in the collection, a total of 132 (or 59%) of individuals either included, or were associated to, textiles. Furthermore, another 8% included textile imprints, which implies that the textiles of the bundles were removed from the remains during or right after collection.

There are multiple sources in Andean archaeology dedicated to the description of textiles in funerary and non-funerary contexts (Brommer eds, 1988; Dauelsberg 1972; Hora, 2000; Reid, 2005; Millones and Schaedel, 1980). The same can be said for the metal artifacts of the region (González, 2003; Guaman Poma de Ayala, 1980; Mignone, 2010; Reinhard & Ceruti, 2005). The available literature has been used when considering the aspects of the mummy's bundles and artifacts that needed detailed descriptions.

Once the mummy is measured, textile patterns, types of weave and associated textile materials, as well as the construction of the bundles, are all taken into consider-

28 The discussion on what are types, how archaeologists use typologies and the usefulness of classification in archaeology is quite extensive. It is as much a philosophical issue as is it is one of practice. As Adams and Adams have tried to point out "Properly understood, typological concepts have no fixed or inherent meaning apart from their use, which varies from typology to typology and from person to person. It is therefore impossible to talk about types and typologies except in subjective terms. We cannot speak of the concepts; we can only speak of our concepts." (Adams and Adams, 1991: 3). In that sense, what the author has tried to do by referring to the classification of the objects set by a museum's separation of objects, guided mainly by storage necessities, is to use a preexisting classification that allows the information collected to be compartmentalized in order to later interpret it. Again, as Adams and Adams put it, "Spatial and temporal ordering of data is not, is not intended to be, and should not be mistaken for, explanation […]. It is wholly pre-theoretical. It is the necessary preliminary step which brings the archaeologist to the point where the ethnologist, the sociologist, and the political scientist all begin" (Adams and Adams 1991:3).

29 Some mummies are too big and heavy to be moved to the examination table, so they have been described in their original packaging. Other are in closed display cases (some from the nineteenth century) and therefore cannot be moved. Regardless, light examination and description to the greatest possible extent was conducted.

ation. A rough sketch is made when necessary to highlight bundle construction and textile overlay.

Several studies on textile weaving and dyeing have been conducted and published with Andean material, both within museum collections and from site material (Brommer eds, 1988; De la valle & Gonzalez Garcia, n.d.; Reid, 2005). From those, perhaps the most detailed and relevant for contextualization has been the work conducted by Ann Peters with Peruvian and Chilean textiles. Peters looks at the textile tradition from the perspective of the *longue durée*, and therefore is extremely useful to contextualize materials that lack specific points of origin. When looking at textiles, Peters is also "looking at diversity or standardization in form as an indicator of whether garment types reference particular, local identities or equivalent social roles within a larger political system" (Peters, 2014).

Image 2: Example of field notes. Included sketch and notes are taken from each mummy.

After establishing the annotated and cultural provenance, textiles covering bundles were compared to those in the existing literature for the same region and cultures. If found to agree, the provenance was ratified. If the textiles did not match, then a suitable new probable or cultural[30] provenance was suggested.

Cases of positive identification of textile patterns and reclassification of remains in this research have to do with examples such as the ones presented below. In these cases, either design, materials or the shape given to the textile – like the first case of the "shields" found with remains at the Weltmuseum Vienna – help to place a mummy in a specific region or culture.

In this first example, Image 2., the shields are placed intentionally next to the head of an unbundled mummy. The remains in of themselves are kept in storage inside a wooden case from the early twentieth century, with other artifacts around them.

30 In the cases where no agreement between document and artifacts was found, the closest match was used, be that of mummies found in a location such as Lima, or for a culture like Wari, Nazca, or Paracas, even when It was not possible to determine a specific geographic location.

Image 3: Chancay mummy with diagnostic textiles. Weltmuseum Vienna.

These textile shields are very diagnostic of Chancay, as are the double-headed zoomorphic representations in the headband across the forehead of the remains. Though the shields could have been placed in a non-authentic association on the case where they now stand, they still match with other textiles on the remains.

Image 4: Separated mummy head with Chancay textile turban. Quai Branly collection, Paris.

A similar case is seen with fragments of mummies such as heads, where headbands and turbans have been kept in place. Above, Image 3, shows one such example in remains from the Quai Branly collection. Below, another of the diagnostic examples in the collections is related to the type of textile used to construct the mummies. In the picture below, an example of a mummy bundle created with a reed basket, sewn around the remains.

Image 5: Tiahuanaco style mummy bundle. Reed basket constructed around remains. Quai Branly collection, Paris.

3.5.2 Metallic Objects' Descriptions and Methods for Possible Provenience Identification

Metallic objects, in general, were not useful for identification because the majority of remains did not have associated metal elements directly available for inspection.

The only case where they were useful was in the Rijksmuseum Volkenkunde collection. These findings are described at length in the work conducted for the RMV in 2014 (Ordoñez Alvarez, 2014).

In most cases, the metal objects that could be directly associated with the remains were copper rings and copper bracelets, both of which are very common and hard to identify.

Image 6: Hand and head detail with metal objects. The hand on the left belongs to a known Chancay mummy from the Quai Branly collection. On the right, the detail of the copper mask on a bundle from the central coast of Peru, probably form the middle horizon. Weltmuseum collection.

3.5.3 Descriptions and Methods for Possible Provenience Identification of Earthenwares and Other Associated Objects

Few collections have associated earthenwares that could be seen at the same time as the inspection of the remains. Those that could be observed were all cataloged for very specific cultures and therefore helped to confirm a specific cultural determination for mummies. Nevertheless, it is useful to emphasize here the importance of determining an authentic relationship between artifacts that can be sold as associated with the collection although they do not come from the same context.

Other useful associated objects are those made of wood, like bows, gourds, seashell necklaces, and the like. Of these, the majority was not diagnostic.

Image 7: Assortment of textile, ceramic and wooden objects associated with mummified remains. Andean central coast. Quai Branly collection, Paris.

A notable exception is found with the gourds integrated to remains that indicated a possible provenance of central coastal Peru. Those remains, coupled with textile evidence, have been tentatively re-contextualized to the Lima region, as similar attributes have been seen on previous research papers (Ordóñez, Beckett, Nelson, & Conlogue, 2015).

Image 8: Mummified child remains with gourd positioned near the midsection of the body, probably from the Lima region. Weltmuseum collection, Vienna.

For others, such as the Chancay and Wari mummies, associated wooden or metal face masks have also been used as diagnostic.

Image 9: Mummies with face masks. The left side is part of the permanent exhibit at the Museo de America, Madrid. The right side is at the storage facilities of the Ethnology Museum in Berlin.

3.6 Research Limitations

Having explained the process of data collecting and the theoretical premises that guide that process, it is helpful here to annotate the limitations that have become apparent during the course of this work.

3.6.1 Methodology Limitations

The main difficulties found with the application of the methodologies described earlier have to do with the diagnostic markers available with the remains. More than half of the remains examined lacked a trait that could be considered sufficient to contextualize them. That includes textiles that were plain, bundling or burial techniques that were not specific to a area or culture, and lack of associated artifacts.

Remains without associated artifacts, naked or unbundled, are almost impossible to contextualize. Mainly because, visually, there is no trait that can help classify them within a certain region or period, much less culture. Since mummification in the Andes is mainly unintentional or semi-artificial, there are very few studies on mummification techniques, except in regards to *Chinchorro* mummies (which are artificial) and the *Chachapoya* case studies, reported by Sonia Guillen, which presented antiseptic smells (Guillén, 2004). More recently, with the advancement of paleo-imaging, studies have been conducted regarding the existence of evisceration indicators, organ removal, and pathological indicators. However, none of those studies has yet pointed to a way in which remains whose provenience is not reported could be identified.

In consequence, only remains that had specific markers could have their provenience researched or double-checked. That implied that a large number of mummies remain unidentified.

Moreover, the issue of the authenticity of the link between mummies and associated artifacts remains problematic. In some cases, the association seemed implicit, while in other cases it may be contested. As is argued in detail in chapter 7, many of the mummies have undergone significant changes since integration into the collections. Therefore, the degree of suspicion with which each mummy was approached for its contextualization varied, depending on how evident those changes were upon inspection.

In both instances, the unbundling of remains and the possibility of inauthentic object-mummy association have introduced a skew in what is reported. Firstly because only highly recognizable and studied diagnostic traits (textile patterns, ceramic styles, etc.) were used for contextualization, and those are more common for Peru than they are for Chile, Bolivia and Argentina.

Secondly, only remains which have stayed mostly complete can be adequately contextualized and are described, compared, and discussed in detail. There is a significant number of individuals in the museum collections that are not complete, and this research has not found an accurate, reliable way to take them into account for important calcu-

lations of size, region of collecting and culture from which they were collected. In doing so, the possibility that the "naked" mummies stored in collections today may have been part of highly elaborate bundles, which were opened and separated precisely because of their textiles and associated artifacts is not taken into account. It may be very important to discuss issues that concern this research: transportation of remains from the Americas, unbundling reasons, and the formation of collections.

3.6.2 Limitations of Osteological Methods

One of the aims of this research was to carry out an osteological examination of the remains in order to construct biological profiles and attempt a demographic analysis of the mummies in the collections. Taking into account that mummified tissue would be covering many of the areas needed for osteological descriptions of age at death, sex and stature, the protocol described earlier was used only for remains that had visible traits. In most cases, the visibility of traits was directly linked with skeletonization of the remains. In turn, this implies that the remains have been unbundled, and some of the mummified tissue has been lost.

The good preservation of remains is, in this case, a problem for osteological observations, while conversely it is a useful tool for contextualization. In most cases where osteological-biological profile descriptions were possible, it was not possible to establish the provenience of those remains. This is an interesting paradox that will be addressed in the last chapter of this dissertation.

Likewise, when remains are covered with mummified tissue, there is an inherent limitation for describing and estimating pathological conditions, especially degenerative diseases such as osteoporosis, commonly observed conditions like osteoarthritis, or indicators of disease like cribra orbitalia, periostitis, bone porosity, etc. Because of these differences in reporting possibilities, when pathological conditions could be observed, the decision was made to annotate them for museum reports but not for quantitative comparison between collections.

A similar situation arose when considering the paleo-imaging available. An uneven number of remains had published and available CT scans and X-rays. Though this was very valuable for gathering information from collections that could not be individually or personally examined, they provided a great deal of information in terms of pathology and mummification that was not comparable to the totality of the remains. Furthermore, in almost all cases where medical images were available, there were no specifications for the equipment, protocols or exposure used. These technical factors can help at the moment of correlating images, and were another factor to consider when discussing if extra information (outside of age at death and sex of individuals), should be integrated to the analysis. In the end, pathological information, as well as stature estimations that could be gathered from CT scans and X-rays, was omitted from this thesis, though included on museum reports.

It is of interest here to mention other important analyses that can be conducted with human remains, but that, because of their destructive nature, have not been used frequently. Oxygen, Nitrogen and Strontium isotopes enter such a category. Though they may be incredibly useful in terms of provenience, because of the associated costs, as well as the fact that destructive sampling of the remains (such as pieces of bone or teeth) needs to be used, they are not regularly considered for museum collections. Similarly, the lack of a homogenous Isoscape map that can help position information available from isotope testing in the Andes has hindered the use of such analytical methods. This has been changing in the last couple of years especially for Peru and Chile, but the problem remains for Ecuador, Colombia and Bolivia.

3.6.3 Limitations of Archival Methods

Just as visual examination presented limitations, documentary research presented specific challenges for this research. Those challenges have to do with the language of the records, the lack of availability of documentation, and the difficulty of tracing actors who have not been encountered in collections before and whose lives were not led as publicly as others.

• Translations

As has been mentioned earlier, the information collected is written 6 in different languages: Spanish, English, French, German, Dutch and Danish. Though native translators have helped elucidate the majority of the complicated data written in nineteenth-century versions of the languages, it is recognized that some of the meanings could have been mistranslated or ignored. This is due to both changes in languages, as well as words used to describe contexts that today no longer are in use. For example, referring to areas of southern Ecuador as Peru, areas in Bolivia as Peruvian, etc. or by referring to towns that no longer exist, have been relocated within the landscape, or have been renamed.

Nevertheless, these are challenges faced when translating any historical document. The author has minimized the impact such mistranslation would have on the research by checking historical literature on the areas mentioned, as well as generalizing regions and not focusing on particular sites if their continuity to a currently known archaeological site with the same name is unclear.

• Availability of materials

Not all individuals had records associated with them. In many cases, the accession book barely contained a single line signaling their presence in the collection, without a known donor or collector. In others, though collectors were noted, their names had been misspelled, or solely initials or titles of nobility had been listed. All instances greatly complicated the comparison of collections and the reconstruction of collecting histories.
most museums had very good records of their collections, even if some individuals were

not listed or if there was little information on them. Nevertheless, in a few cases, there were issues with locating materials or with correctly identifying remains within a collection. Those issues may well have to do with storage room reorganizations, moves or just with the passing of time.

3.7 Chapter Summary

This chapter has explained the methodologies followed for this dissertation's research. The two fields that inform the analysis of the mummified remains in the selected collections are complementary, as has been emphasized above and throughout this work.

There were inherent challenges to each type of material considered documents and mummified remains, but efforts were made to minimize the impact of these issues on the overall outcome of this dissertation. Recognizing the limitations of this type of research is the first step, and in some manner helps to delineate future endeavors.