Archaeogenetic Research and Greek Heritage:

Constructing bloodlines to the past

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1. Chapter 1: Introduction

"*The past is as much an extension of ourselves here as it is down there.*

And we are digging down not just to the past but to ourselves.

We find ourselves in that deep otherness."

In his chapter on archaeology, excavation and genealogy, Michael Shanks uses this insightful metaphor about the essence of digging deep in archaeological deposits in order to find authentic meaning and truth (Shanks 1992, 63). His words are reminiscent of what Stuart Hall calls the "narrativization of the self", a process through which identities arise (Du Gay and Hall 2011, 4). Our cultural identities are neither inherent in us nor essential (Shanks 1992, 115). Rather they are perpetually constructed on the identification of a common origin or shared characteristics with other people and groups, but above all, through relations to the Other (Du Gay and Hall, 2011). Archaeology has proven critical in shaping the notion of belonging in a community, in constructing national and ethnic identities (Hamilakis 2009; Kane 2003; Kohl and Fawcett 1995; Kohl *et al.* 2007). The strategic construction of common experiences, histories and myths of social groups, is actualized through the archaeological process itself, through the manipulation and encryption of archaeological data.

1.1 Thesis topic: Research question and sub -questions

Not surprisingly, there is a plethora of writings on heritage and identity about Greece. The country's ancient and later history, has placed it in the center of scholarly attention regarding the ideological uses of its past (Damaskos and Plantzos 2008), the ways in which archaeology and antiquities contributed to the production of the modern Greek nation (Voutsaki 2003) and how national imagination itself has determined the path of archaeological practice and heritage (Hamilakis 2007), to name but a few approaches.

Scholarly literature mainly focuses on the material representations of the Greek past and their appropriation by the state (Varouhakis 2015; Voutsaki 2002) or different interest groups and individuals (Yannis Hamilakis and Yalouri 1996; Lowenthal 1988; Damaskos and Plantzos 2008). When it comes to contemporary perceptions of the relationship between antiquity and Greek national identity, a common starting-place for the majority of the authors is the notion of established inextricable links to the ancient past and the strong sense of continuity in modern Greek cultural life (Alexandri 2002; Plantzos 2012; Voutsaki 2003). As archaeologist Dimitris Plantzos insightfully observes, Greek art, as the embodiment of Greek archaeology and heritage in its entirety, has become in modern times 'the charming representation of an imaginary ancestry'.

Inspired by archaeology's intersection with identity politics, and drawing upon the case of Greece, this thesis is an investigation into the discipline's role in present-day societies, but shedding a somewhat different light on the subject. The focus will be upon the interdisciplinary field of archaeogenetics. My research will solely focus on palaeopopulation genomic studies, which explore population origins and movements. Thus any reference to archaeogenetic research from now on, concerns this particular subfield. Standing at the intersection of archaeology and molecular biology, I consider archaeogentics to be much more than an innovative method to retrieve information about the past. I propose that it can be viewed as a scientific platform where identity and heritage are interlaced with myths of blood, race and fatherland (Shanks 1992, 115).

The interdisciplinary field of archaeogenetics, studies the human past through information deriving from DNA. When concerned with human population origins, conclusions are drawn based on biological characteristics, and more precisely on the genetic affinity between past and present population groups. At the same time the notion of sharing common identities is in many cases understood through common ancestry and bloodlines (Anderson 1991). National identity in particular, is perceived by many as a blood-based relationship (McCrone and Bechhofer 2015, 30).

Drawing upon the background presented above, the research question of this thesis can be summarized as follows:

1. What role can archaeogenetic research play in the determination of Greek national identity nowadays?

   In order to answer this question, I first had to address the following sub-questions:

2. Since the results of archaeogenetic research can be considered as part of the archaeological record, can they be looked upon with the same terms as heritage?
3. What information can we retrieve from archaeogenetic research about our origin and identity?
4. What is the epistemological nature of archaeogenetics and how does that upcoming interdisciplinary field balance between the biological and cultural factor when dealing with concepts of identity and origin?
5. What are the main axes of Greek nationalist narratives and how can archaeogenetic research reaffirm or invalidate them?

I will approach these questions within a theoretical setting that brings together two key concepts: The ceaseless construction of cultural identities is closely linked to the idea of common origin (Du Gay and Hall 2011), and the archaeological record is the only material evidence that can elucidate questions of cultural origin. The interdisciplinary field of archaeogenetics was chosen owing to the fact that it introduces to the archaeological concept of cultural origin, the one of biological ancestry.

The thesis flows as follows. Based on archaeogenetics' dual constitution, the literature review in Chapter 2 introduces and develops the theoretical framework of this thesis on two basic axes. First, the relationship between archaeology and identity-building in present-day societies is discussed. Second, human population genetics is analyzed as to its impact on people's self-definition. Finally, I propose a theoretical scheme under which archaeogenetic results can be viewed as part of archaeological heritage, thus playing a fundamental role in present-day identity construction.

For the main part of this thesis I follow an approach, which can be schematized as an outwards course. Beginning with an "inner", epistemological discussion about the nature of the field of archaeogenetics itself, this thesis culminates in the point where the products of academic research are finally "released" into the public sphere and consumed by the lay public. In addition to this, after building a concrete background narrative on archaeogenetic research's nature and interlacement with present-day identities, my arguments are tested in the last chapter, where the theories proposed in the thesis are applied on a specific case study.

More precisely, Chapter 3 is an introduction to the history of archaeogenetic research. The field's methodological developments are presented, along with an account of the ways genetics and anthropology have dealt with culture, origin and ancestry from the 19th century on.

In Chapter 4, the reader is introduced to one of the key concepts of this thesis. Seen through its interdisciplinary nature, the epistemological foundations of archaeogenetics are thoroughly discussed in order to reach an answer to the chapter's central question: Is there such a thing as archaeogenetic theory?

By the end of the first part of this thesis, the nature of archaeogenetic research along with the potentialities and pitfalls of archaeogenetic evidence have been reviewed. The second part of the thesis is devoted to the particularities of the Greek case, and the case study analysis.

In Chapter 5 the basic axes of the Greek national narrative and their development through the years are discussed through a historical retrospective starting from the 18th century on. The formation of Greek national identity is analyzed historically and conceptually. Additionally, the role of genetic determination in Greek contexts is presented, within the spectrum of both academic research and as it appears to have affected Greek public opinion.

Last but not least, in Chapter 6 I attempt to apply the theories deduced from the research that I have conducted so far, to a particular case study. I refer to a recently-published archaeogenetic research (Hughey *et al.* 2013) concerning the origins of the "Minoan" civilization, an Aegean Bronze Age civilization that arose mainly on the island of Crete. The case study is not deployed in my thesis as a general example, representative of all archaeogenetic studies. Both the way this research was conducted from methodological and epistemological points of view, and its subsequent resonance with Greek media and political groups, offers fertile ground for answering this thesis' research questions based on actual data.

The specific research was chosen for a plethora of reasons. First of all, it was published quite recently and in the *Nature Communications* journal, which renders it both scientifically up-to-date, and accurate. Second, it concerns a civilization that has been thoroughly studied, not merely from an archaeological perspective, but also in terms of its *echoes* to the formation of modern-day identities, especially that of Europe (Varouhakis 2015). Therefore, the last chapter, by way of summary, follows the particular research from the laboratory, discussing the choices that the researchers made, to its release to Greek media, with a focus on the way its results were communicated to the lay public.

1.2 Methodology and work plan

My research is purely bibliographical. Needless to say, the approaches presented here go far beyond archaeological research and heritage management studies. Modern history, sociology and anthropology are some of the methodological tools also encompassed by this thesis. Over and above these, an in-depth knowledge of epistemological issues and an acquaintance with genetic theory and methodology, proved necessary for accomplishing a coherent theoretical framework. Hence, one of the prominent methodological issues that came up while conducting my research was the integration of all the aforementioned disciplinary theories and approaches. Yet, it is of vital importance to underline here, that the author's background should not be overlooked. My approach on genetics remains that of an archaeologist and a social scientist.

One of the initial claims of this thesis is that it would answer up-to-date questions of identity and self-determination, as approached by archaeological inquiry, but concern a plethora of stakeholders apart from scientists of any kind. In other words, my research aims to enter the sphere of public discourse rather than confine itself within the narrow limits of scientific inquiry. For that reason a handful of newspaper articles and recent political and cultural events are cited and analyzed, as I consider them to be representative of the lay public's opinion and perception of the subject under study.

Interestingly, a new Ancient DNA Laboratory was inaugurated on May the 20th 2016, in the Institute of Molecular Biology and Biotechnology (IMBB) – FORTH in Crete. It is the first to be founded in Greece, a country rich in biological and archaeological finds of great interest as regards to populations' origins, as the Laboratory Director, Dimitris Kafetzopoulos, highlighted in his interview for the newspaper *Efimerida ton Syntakton* (www.efsyn.gr). Few days later, an international research team led by paleogeneticists from Johannes Gutenberg University Mainz (JGU) published a study in the journal *Proceedings of the National Academy of Sciences of the United States of America*, demonstrating that early farmers from across Europe were directly descended from Neolithic Aegeans (Hofmanová *et al.* 2016), bringing once again archaeogenetics to the forefront of Greek media attention (www.kathimerini.gr). These events motivated me to engage with the central research question of this thesis, which seems to be more topical than ever. I began to consider the implications that these late developments deriving from the world of science could have in our understanding and definition of the notion of "Greekness" (Voutsaki 2002) and wonder about archaeogenetic research being capable of promoting the notion that cultural and biological affiliation to past populations are interlinked, whether it can construct blood links to the past after all.

2. Chapter 2: Literature Review

2.1 On the construction of national identities

In reference to the construction of national identities, my thesis is framed by the definition of the nation as collective imagination, based on Benedict Anderson's writings (Anderson 1991). He describes the nation *"as an imagined political community – and imagined as both inherently limited and sovereign… imagined because the members of even the smallest nations will never know most of their fellow-members, meet them, or even hear of them, yet in the minds of each lives an image of their community"* (Anderson 1991, 5–6). His argument that national memory and synchronicity is a time and space hypothesis, where "Old" and "New" coexist (Anderson 1991, 187), is of strategic importance to this thesis' theoretical framework building. Last but not least, Anderson underlined the importance of "remembering" and "forgetting", of the trained memory, were he identifies the roots of patriotism (Anderson 1991, 201). The concept of selectively constructing a nation's memory will be further analyzed with regards to the Greek nation in Chapter 5. This thesis is founded upon the idea that our cultural identities are neither inherent in us nor essential (Shanks 1992, 115). We should think of them as "constituting a discursive device which represents difference as unity or identity" (Hall 1996, 617), thus their construction is a dynamic process emerging through the identification of a common origin or shared characteristics with other people and groups, but also through the relation to the Other, in short, through difference (Du Gay and Hall, 2011). Naturally the past, seen both as a personal and collective affair, emerges as a major factor in this construction process. The past emerges as a testimony through constant 'negotiation' with memory, the deliberate act of 'forgetting' and 'remembering', as Ernest Renan insightfully described it in his work (Renan 1996).

In the same vain lies Paul Ricoeur's theory on collective memory and historical representations (Ricœur 2004). He approaches the past as a construction taking place within the sphere of both 'forgetting' and commemorating, underlying the abuses of memory by history. According to his hypothesis this abuse occurs as a necessity, owing to the insistent presence of traces of the past (Ricœur 2004, xv). This last part of his theory can be applied to archaeological inquiry itself. Archaeologists and heritage specialists, as modern-day 'treasure keepers', are expected to guard, conserve, interpret and present to the rest of the world, nothing less than the material traits of the past itself. At this point, the profoundly political nature of archaeology becomes apparent, as proposed by Benedict Anderson. He particularly comments upon the

way the discipline is assigned to the empowerment of the state, through the constant reproduction of its regalia (Anderson 1991, 182).

2.2 On archaeology and identity politics

It was only in the 1980s that the political implications of archaeology were brought to greater scholarly attention (Shanks and Tilley 1987; Shanks and Tilley 1988; Trigger 1984), with the occurrence of post-processual archaeology. What follows is a product of this important shift in archaeological thought, and an attempt to contribute further to the increasing concern with the socio-politics of archaeology.

The role of archaeology in the construction and validation of collective cultural identities has emerged as one of the most important issues in archaeological theory. The development of the discipline itself can be viewed as a historical necessity promoted by peoples' desire to link themselves to some primordial imagined ancestors, to trace back their origins (Jones 1997, 1).

Focusing on national identities, the most prominent example of archaeology's correlation with nationalism in history, is probably the manipulation of the past in Nazi Germany and Gustaf Kossina's paradigm of nationalistic archaeology. The German archaeological paradigm continued to be quite influential in the rest of Europe and the world up until the 1980s, mainly in the form of culture-historical archaeology (Jones 1997, 5). The emergence of 'new archaeology' in the 1960s and 1970s offered an 'objective escape' from the empiricism of culture-history (Binford *et al.* 1983), while ethnicity was no longer considered a subject to be touched upon by archaeological enquiry (Olsen and Kobylinski 1991, 10).

The relationship between archaeology and nationalism first appears as a prominent subject in academic literature in the 1990s (Atkinson *et al.* 1996; Díaz-Andreu García and Champion 1996; Dietler 1994; Kohl and Fawcett 1995), partly owing to the contemporaneous rise of nationalist movements and the surge of ethnic conflicts (Kohl 1998), but also because of the overall shift in archaeological thought. As Michael Shanks and Christopher Tilley were disclaiming at the time, the 1990s were the threshold after which archaeology should be fully realized as a "strategic intervention in the present" (Shanks and Tilley 1989, 7). With the establishment of heritage management as a well-respected field of studies, the discipline's bond to the politics of identity has been invigorated with a proliferation of studies and publications dealing with the subject on a local and global scale, by way of critical introspective and exploration of archaeology's consequences and active role in contemporary cultural contexts.

The most commonly accepted perception of heritage nowadays is that it constitutes the collective memory of an entire nation. As heritage is everywhere around us, it asserts our sameness and identity, constructing our national collective consciousness (Tilley 1989, 279). Among the foundational studies on archaeology and nation building, lie those which approach the subject on a European or, more recently, global scale, with an emphasis on each geographical area's particularities. In order to do so, authors participating in Susan Kane's edited volume (Kane 2003) trace back the intervention of archaeology in contemporary historical events in every country represented in each chapter. Hence, the book manages to highlight the effects that different concepts of ethnicity, cultural identity, nationalism, and politics have, in the way we study the past. The book presents a plethora of cultural histories that archaeological interpretations can lead to, within different political and cultural realities, demonstrating the importance of contemporary intellectual, social, and political developments in the understanding of one's past and origins. In the introduction, ethnicity is defined as a "subjective and fluid category of identity formed by ongoing social discourse both among the claimants of this identity and with and among those outside the group" (Kane 2003, 5). Archaeology appears in this case to be the holder of the indicia, by which one's membership in a group is communicated.

The above argument shall be leveraged for this thesis' theoretical framework, yet seen under a slightly different light. Ancient DNA is rarely discussed at the same terms as the rest of the archaeological record when it comes to archaeology's intersection with contemporary identity politics. It is neither in this edited volume, nor commonly associated with the term "archaeological remains". But it still is produced, studied and interpreted within the archaeological procedure. Therefore, this thesis aims to introduce archaeogenetics and its results concerning bloodlines of ancient and modern populations, as part of the archaeological record and thus indicia of one's identity.

In another edited set of nation-state case studies entitled *Nationalism and Archaeology in Europe* (1996) fifteen archaeologists examine the interrelations of nationalism and archaeology in various European contexts. Diaz-Andreu and Champion have assembled a dozen of essays dealing with the professionalization of archaeology during the late 19th and early 20th centuries in Europe, and the ways in which this development promoted the manipulation of the past for political ends. In "Nationalism and Archaeology in Europe: An Introduction", the editors begin with a profound remark. If it were not for nationalism, archaeology might have never evolved into a scientific discipline (Díaz-Andreu García and Champion 1996, 3), framing the type of interdependency linking archaeology to the ideology of nationalism.

Moving on with foundational scholarly literature on the subject, Philip Kohl offers an insightful review of how archaeological data can end up serving nationalistic purposes (Kohl 1998). His work focuses on 19th and early 20th centuries' nation-building in Europe and the role that archaeological developments played in this process. He emphasizes the reinvention of the past that took place with the emergence of European nation-states, through the "active forgetting or misremembering" of certain historical periods and archaeological evidence related to them. The author uncloaks the discipline's alleged objectivity and showcases the significance that archaeological remains attain with reference to political and national events in the present day (Kohl 1998, 224).

On the general discussion about the politics of archaeological enquiry, Lynn Meskell's edited volume (Meskell 1998) discusses the political foundations of the discipline. The book includes a number of chapters introducing the reader to some of the histories and issues that led to the invention of archaeologies around the world. The deconstruction of the academic discourse is the central argument here too. Of great interest for this thesis is Chapter 2, authored by Greek archaeologist Kostas Kotsakis, discussing how archaeological remains have diachronically been appropriated to construct a homogenous Greek national identity. The author successfully follows the strains connecting archaeology and nationalistic discourse, and despite the fact that the chapter focuses geographically on Greek Macedonia in particular, he portrays sufficiently how Greek culture is perceived as an unalienable, homogenized unit, the traits of which can be traced in time and space.

In one of her articles, Lynn Meskell has also discussed archaeology's hesitation to incorporate theories of identity, both when studying past societies, and when it is concerned with the discipline's impact on contemporary ones (Meskell 2002), which is of interest here. She sees self-definition today occurring through the coalescence of genealogy, heritage, citizenship, and sameness, though featuring the importance of difference (Meskell 2002, 280), referencing Benedict Anderson's theory on nationalism (Anderson 1991). I support her point that as archaeology investigates past societies, it ends up answering contemporary questions about origins, legitimacy, ownership and rights (Meskell 2002, 287).

2.3 On genetic signatures as markers of identity

Modern academic research into genetics has become part of a revitalized debate among various stakeholders about the congruity of evolutionary theory and the relationship of genetic data to behavior, culture, identity, race and ethnicity (Pluciennik 1996, 13). Perhaps owing to the rising trend of individual

ancestry testing in the United States and Britain mainly, the past few years saw a certain proliferation of scholarly literature concerning the political implications of genetics (Gannett 2001; Morning 2014; Nelson 2008), especially the hazardous nature of genetically-based claims of identity and rightful belonging (Brodwin 2002; Caspari 2014; Gibbon and Novas 2008). People's impulse to accept such methods of individual ancestry testing, can be explained through the popular fascination with past historical groups and in particular powerful, often male, historical figures (Jobling *et al.* 2016, 142). Although the majority of this literature derives from the disciplines of medical anthropology and the social sciences, some geneticists (Jobling *et al.* 2016) have also defended this line of argument, which can be summarized as follows: "although simplistic biological interpretations of race and ethnicity have been discredited for decades, studies in clinical and population genetics continue to associate biological findings with the social identities of research participants" (Foster 2002).

This association takes place in a dual manner. On the one hand, social identities are used as prerequisites for the assembling of genetic data into gene pools, and on the other, biological classifications are subsequently considered of substantive significance, with a certain influence on people's self-determination (Foster 2002). Thus, the problem lies in the fact that statistically inferred genetic clusters are themselves socially constructed (Morning 2014, 1676).

I also align my approach with anthropologist Paul Brodwin, who believes that the techniques using genetic markers, especially Y chromosome and mitochondrial DNA mutations, generate knowledge of ancestry, and link people in the present to their biological progenitors. "They announce a long-term generational connection. But people always use knowledge of ancestry to illuminate social connections in the present" (Brodwin 2002, 325).

Consequently, two basic concepts emerge from this discussion. First, there is a certain ambiguity when it comes to dealing with social concepts from a genetic viewpoint. This is an inner, epistemological, issue concerning population genetics as a discipline. An indicative example is the everlasting debate, occurring among geneticists, who are divided into race pragmatists, claiming that race has no biological substance but is a social construct that reflects power relationships, and the race naturalists, who support the concept of biological race (Jobling *et al.* 2016, 144–147).

The second basic parameter is the power of essentialism, expressed mainly outside the academic world. Scientists should be more cautious when it comes to emerging genetic knowledge, since the latter seems to have quite an impact in transforming contemporary notions of group identity (Brodwin 2002,

323). In other words, the values that the lay public attributes to genetic research, seems to be powerful enough to alter or at least re-affirm existing ideas of cultural and national belonging.

Based on Anderson's *Imagined communities: reflections on the origin and spread of nationalism* (1991), social anthropologist Bob Simpson discusses a possible consequence of genetic research crossing over into popular ideas about cultural and ethnic identities. He sees the power of modern genetics as capable of "reworking ethnic identities as imagined genetic communities" (Simpson 2000, 6), in which case one's identity is reduced to a genetic one. Despite the exaggeration of the argument, which refers to a rather dystopian future, Simpson's article aptly underlines the value that the lay public attributes to scientific research in general, and genetic research in particular, and the consequences of this observed tendency in people's perception of their identity and heritage.

Since the interdisciplinary field of archaeogenetics stands on the intersection of archaeology and population genetics, issues of genealogy, heritage and self-definition obtain both an archaeological and a biological dimension. Therefore, it is of great importance to understand the influence of archaeogenetic research in contemporary cultural contexts.

2.4 Archaeogenetics as heritage

Having Hugo R. Oliveira's position that "as with any piece of information about the past, the data generated by archaeogenetics is relevant for forming the identity of living individuals" (Oliveira 2008, 114), as a starting point for this research, I consider archaeogenetic evidence to be mediating our understanding of present-day cultural identities, evenly to the rest of the archaeological record. Consequently, it follows a parallel path to cultural heritage, linking the past with the present, and thus is equally prone to manipulation, a wide variety of interpretation approaches and perhaps misuse.

The effects that genetic histories have on group identity formation in present-day European states have already been studied by other scholars (Oppenheimer 2007; Sykes 2006). In the same vein, when it comes to archaeogenetics, a critical stance is adopted in the majority of archaeological literature. Scholars express their concerns about the ethical implications of archaeogenetic research (Mirza and Dungworth 1995; Pluciennik 1996) and the fear that genetics' incursion into the field of archaeology might revive the cultural-historical paradigm (Brown and Pluciennik 2001; Pluciennik 1996; Pluciennik 2006). More precisely, the criticism targets the potential ascendance of biological determinism, as the archaeological

spectrum of human interaction, kinship, movement and social change might be reduced to blood relations (Voutsaki 2008, 23).

There is hardly any reference though to the political implications of archaeogenetic research. Mirza and Dungworth, for instance, discussing the case of England, have underlined the feared possibility that archaeogenetic evidence could be used by the "New Right" as a criterion for rightful belonging in the European family, as part of their ambition to construct "Fortress Europe", a closed, exclusive Europe, where non-Europeans are simply not welcome (Mirza and Dungworth 1995, 352). Nevertheless, apart from drawing attention to the potential misuse of research results, there has not been a responsible analysis on how existing archaeogenetic research has already been appropriated by non-academic factors, to serve propagandistic purposes. While new breakthrough technology is being developed, and genetics becomes an all the more scientifically prosperous field, scientists seem to pay less attention to the ever-growing exploitation of their work by parascientific actors and "Far Right" political groups and parties.

Therefore, in the last part of this thesis, data deriving from a specific case study, shall be analyzed in order to explore the social and political implications of archaeogenetics in the present. The chosen example demonstrates aptly, how existing archaeogenetic evidence is prone to misinterpretation and can serve as means of misleading propaganda. My case study analysis, proves that the predicted fearful consequences expressed by other scholars in the past, are verified in the present. Greece became the key focus of my research because during the last decade, in the midst of a fierce European economic and political crisis, the country has often been the bone of contention. That being the starting point, I decided to focus to the ways Greek history, archaeology and heritage have mingled with ideas about genealogy, origin and blood relations in order to serve topical political interests, as either trustees or disputants of the country's rightful to belonging to the European family, for instance.

Despite the fact that this discussion attracts a great deal of public interest, scientific research keeps neglecting it to an alarming extent. It occurred to me though, that although scientific research and public opinion are supposed to follow individual paths, the two are mutually interdependent. As a consequence, in my point of view, the responsibility lies initially with researchers to ascertain both the non-abuse of their work by dexterous stakeholders, but above all to conduct informed, uncommitted research.

Within the context of raising awareness of the consequences of scientific inquiry that does not align with the foregoing, I propose that the contribution of archaeogenetics to archaeology, should be reviewed. New light should be shed on this interdisciplinary endeavor, focusing entirely on its public

consequences. Thus I suggest that, as with the rest of the archaeological record, analyzing archaeogenetic results under the theories of heritage studies might contribute greatly to our understanding of the field's potentialities and pitfalls.

For example, Philip Kohl's theory, mentioned above, focuses on how archaeological evidence reinforces the continuous construction of national identities through the process of their constant commemoration in the present (Kohl 1998, 240). Of course he does not seem to refer to archaeogenetic material. But the latter could indeed fit the paradigm perfectly. Archaeogenetic evidence occurs through the same process as the rest of the archaeological record, by scientists. The difference lies in the fact that in contrast to monuments and artifacts, which prevail in people's consciousness through their visibility, ancient DNA cannot be displayed in a museum's showcase. Nevertheless, archaeogenetic evidence enters the public spectrum nowadays in a relatively automated way. That is, through the media. The press, television and several individual bloggers are eager to spread the word about the latest scientific developments, especially when they offer fertile ground for popular generalizations around current affairs.

3. Chapter 3: Defining Archaeogenetics

3.1 Discovering the human genome

Humans seem to have been concerned with the notion of heredity ever since antiquity. The Greek philosopher Aristotle (circa 384–322 B. C.) was the first to attribute heredity and the transmission of information from parent to child to blood relations (Balme 1980). Thenceforth, the complex procedures behind inheritance have been approached in various ways, from Gregor Mendel's statistical studies (Mendel 1865) to the revolutionary decoding of the molecular structure of the DNA by James Watson and Francis Crick. Their one-page publication in *Nature* (Watson and Crick 1953) led them to win the Nobel Prize in the category of "Physiology or Medicine" in 1962, "for their discoveries concerning the molecular structure of nucleic acids and its significance for information transfer in living material" (www.nobelprize.org).

With this discovery, came the realization that all organisms use deoxyribonucleic acid (DNA) for the development and functioning of any cell in their body. DNA can be imagined as two polynucleotide strands, spiraling in a double helix. The nucleotides belong to one of four varieties of bases: adenine (A), guanine (G), cytosine (C) and thymine (T). The strands' nitrogenous bases are always paired in a predetermined manner: A to T and C to G.

Owing to the transcription process, the DNA double helix unreels and each polynucleotide strand functions as a mold for the biosynthesis of a new, complementary strand, same as the one it has been separated from. This process is responsible for DNA being passed from one generation to another. DNA fragments carrying genetic information are called genes. Other parts of the DNA chain contain no genetic information and have structural functions. These non-coding regions are very important for population genetics, since they demonstrate great variation. One of these noncoding parts includes the hypervariable segment or region (HVS or HVR) of the mitochondrial DNA, through which the maternal lineage can be traced back in time (Bramanti 2013).

3.2 Defining Archaeogenetics: research history, methodological developments and applications

Archaeogenetics can be defined as the study of the human past using the techniques of molecular genetics (Renfrew and Bahn 2005). It basically refers to any type of genetic analysis performed on archaeological or historical material. The first complete study of ancient DNA (aDNA) ever to be published, about 30 years ago (Higuchi *et al.* 1984), was an innovative application of genetic testing methodologies on a 170-year-old quagga (*Equus quagga*), an extinct zebra-like equid. A year later, geneticist Svante Pääbo managed to isolate DNA, extracted from human remains this time, and publish a partial mitochondrial DNA (mtDNA) sequence from a 2430-year-old Egyptian mummy (S Pääbo 1985), signaling the beginning of a fecund collaboration between genetics and archaeology.

First, archaeogenetics employed classical genetic markers, which means that these first studies relied upon the method of bacterial cloning. This allowed the amplification of small DNA sequences retrieved from skin fragments of specimens. At a second phase, DNA-based methods were employed, which allowed the distinction between female and male lineages, relying on the study of mitochondrial DNA genetic markers and Y-chromosome genetic markers respectively (Renfrew and Boyle 2000). The development of the polymerase chain reaction (PCR) in the mid-1980s (Mullis and Faloona 1987), enabled the amplification of surviving ancient DNA molecules of a single region of the genome (Pääbo 1989; Pääbo *et al.* 1989; Thomas 1989). This technological innovation, along with the realization that DNA survives in osseous materials (Hagelberg *et al.* 1989), acted as an impetus for the enrichment and diversification of aDNA research in the early 1990s, which saw the proliferation of studies on DNA, surviving even millions of years, in plants (Golenberg 1990; Soltis 1992), dinosaur bones (Woodward *et al.* 1994) and insects in amber (Cano *et al.* 1993; DeSalle *et al.* 1992).

Genetic research uses surviving tissues, usually bones and teeth, but also hair, feathers, hoofs, nails, skin, seeds, pollen, frozen or mummified tissue (Daskalaki 2014, 11). The post-mortem process of diagenesis, the decay of the organic part of an organism including its DNA, can often result to alterations in the genetic structure (Hofreiter *et al.* 2001) or complete disruption and loss of the genetic information. Therefore environmental conditions can determine to a great extent the level of preservation of aDNA (Bramanti 2013).

Despite the enthusiasm that these first successful attempts induced, the results were soon questioned and ultimately discarded, as scientists became confronted with the lurking risks of modern DNA contamination (Austin *et al.* 1997; Hebsgaard *et al.* 2005; Penney *et al.* 2013; Rizzi *et al.* 2012). Even the original publication of the DNA sequence of the Neanderthal type specimen was subsequently rejected for being exposed to modern human contamination (Krings *et al.* 1997). It was soon realized that each individual involved in the study constitutes a possible source of contamination for human specimens (Mulligan 2009, 366). Also considering the PCR's great power to produce billions of copies of a specific genomic region from only a few molecules (ibid, 367), a demand for meticulous authentication procedures and criteria became apparent.

Although a variety of challenges have yet to be faced, from fragmentation, postmortem DNA damage and the risk of contamination, to access to specimens (Daskalaki 2014, 29), today, the field has evolved greatly to ensure the authenticity of results. The establishment of laboratories exclusively dedicated to the analysis of aDNA has minimized the risk of contamination from external resources (Kelman and Kelman 1999; Pääbo *et al.* 2004). At the same time, new methods and applications have proven critical in (re-)addressing historical, archaeological, linguistic and evolutionary questions.

The development of high through-put sequencing platforms, widely known as next generation sequencing (NGS) has made possible the analysis of large parts of the genome, even from tiny amounts of extracted material (Daskalaki 2014, 27). NGS allowed genetic studies to grow from focusing to single genetic loci, such as mtDNA, to the accomplishment of complete genome sequences from extinct species and populations (Stoneking and Krause 2011, 603). Genome-wide analysis of aDNA has thus emerged as a transformative technology, making use of markers such as single nucleotide polymorphisms (SNPs), to investigate the demographic history of populations and individuals, their origin, relationships and movements in time (ibid). The increasing enrichment of the genome-wide SNP database and the decreasing costs for acquiring the necessary data (ibid), is very promising for the future of population genetics, the field upon which the majority of published aDNA research focuses (Mulligan 2009, 366).

Other applications of genetics in archaeology include the determination of the sex of human remains (Cunha 2000; Faerman *et al.* 1998; Schultes *et al.* 1999; Stone and Stoneking 1999), the reconstruction of diet through the analysis of coprolites (Hofreiter *et al.* 2000; Poinar *et al.* 1998; Poinar *et al.* 2001) and studies on domestication and agriculture through genetic analysis applied on faunal and botanical remains (Barnes *et al.* 2002; Jaenicke-Després *et al.* 2003; Leonard *et al.* 2002; Newman *et al.*

2002; Yang *et al.* 2005). Finally, DNA analysis is applied to artifacts to identify organic residues and reveal unknown aspects of their function (Mawk *et al.* 2002; Reese 1996; Shanks *et al.* 2005).

In Greek archaeological contexts, genetic research has been applied for sex determination (Kovatsi *et al.* 2009), the investigation of diseases (Papagrigorakis *et al.* 2006) and kin relations (Chilvers *et al.* 2008; Bouwman *et al.* 2009), as well as palaeopopulation genomics on the origin and movements of human populations (Nafplioti 2007; Hughey *et al.* 2013), especially on the Neolithic transmission in the southern Balkan Peninsula and the Aegean region. Dietary habits of past populations have also been investigated (Triantaphyllou *et al.* 2008; Vika 2011).

Genetic analysis of non-human specimens, such as artifacts and botanical remains, can offer great insight into the life ways of past populations, but will not be further discussed in this thesis, since the nature of the material under study renders this type of research less problematic, in contrast to the cases when the object of study is the human being itself.

3.3 Scientific discourse on biology and culture: a historical approach

My purpose here is to approach population genetics and its intersection with archaeology from an alternative vantage point. Leaving aside the technological accomplishments that established genetics as a major interdisciplinary pursuit for archaeology, I shall here examine the ways science has characterized population groups based on their biological determination. In the history of scientific bridging of sociocultural and biological characteristics of people, one can trace the history of archaeogenetics, even before its establishment as an official interdisciplinary field. To offer a complete idea on the subject, one needs to approach the formation and evolution of science within its social and historical context. Therefore, the following paragraphs constitute a short account of the way historical and political circumstances shaped the paths that biology, archaeology and anthropology followed from the 19th century on, concerning the identification and characterization of cultures and populations according to their biological characteristics.

The first studies concerning Europe's biological variation emerged in the 19th century. Drawn in the historical circumstances of the time, biology, anthropology and archaeology hastened to offer scientific explanations for the observed diversity between what was to be called "racial" groups. In the midst of

colonial expansion and in the name of nationalism and imperialism, the identification of races was necessary (Rex and Mason 1986) to justify the oppression imposed on those ranking low in racial taxonomy (Evison 2014, 302).

In a period when widely-accepted beliefs saw intelligence, morality, aesthetics and physical characteristics as biologically determined (Banton 1998), the first representatives of empirical biological studies in Europe, indulged in measuring "average" types of people (Quetelet 1835; Ripley 1899).

Furthermore, Darwin's theory of natural selection (Darwin 1968 in Welch 2011, 23), only fostered the biological justification of racial taxonomy. The paradigm was actually never questioned, until the advent of the 20th century, with Karl Landsteiner's classification of blood types (Landsteiner 1900 in Eibl and Mayr 2002) into the well-known A, B, AB, and O groups. These blood types, commonly shared between human beings, were irrelevant to "racial" diversity.

From an anthropological perspective as well, physical and cultural aspects of human societies were dealt with as being homogenous. In fact, the division of the discipline into physical and cultural anthropology did not occur until the early 20th century (Chapman 1993). Archaeology at the same period, was going through its culture-historical phase. Within this paradigm, ancient social groups, known as

"cultures" (Childe 1929), were identified through the contextual, geographical and chronological determination of artefacts assigned to distinct peoples (Shennan 2008).

In the beginning of the 20th century, the newly-introduced proof of heredity and kinship, the human gene, was meant to alter scientific approaches on human diversity and the concept of race. Previously popular scientific criteria, such as cranial capacity (Morton and Combe 1839), receded in the advent of the geneticized race, which was best portrayed within the context of the eugenics movement (Allen 2001). Although there was some early objection to the concept of biological race (Du Bois 1945), it was not until the 1930s and the emergence of population genetics and evolutionary biology, that scientists would detach themselves from the concept of fixed genetic differentiation.

The calamitous consequences of the Second World War would also cause a certain scientific alienation from racial typology (Marks 1995). Still, with the emergence of sociobiology in the 1970s, the question about the relationship between social behavior and biology was re-addressed (Wilson 1978). The field's scientific hypothesis was soon criticized for promoting genetic determinism, to wit, assuming indissoluble links between genes, culture and behavior (Gould 1977, 251–59). An analogous archaeological approach can be traced in Richard Dawkin's concept of the meme (Dawkins 1976), which drew parallels

between cultural and genetic transmission. More recent studies on European genetic history, which also deployed archaeological data (Cavalli-Sforza *et al.* 1993; Sokal *et al.* 1993) were definitely dismissive of the biological support of racial categories, but have nevertheless been viewed with scrutiny for reanimating the cultural historical-paradigm (Pluciennik 1996, 13).

3.4 Genetic terminology: reading behind the lines

It becomes evident that scientific thought developed, from an early stage, a language to measure the meaning of human difference in the form of "race". Despite the fact that using race as a classificatory tool for human diversity led to some of the darkest consequences of the 20th century, genetic research has not yet fully eluded the ghosts of its past.

Indicatively, despite the fact that by the 1970s, thanks to researchers such as Richard Lewontin (Lewontin 1972) and Cavalli-Sforza (Cavalli-Sforza *et al.* 1993), studies of allele frequencies had already proved deficient in supporting the "race" concept in genetics (Barbujani *et al.* 1997, 4516; Rothstein and Epps 2001), late developments in the field have not been able to revoke it either (Mirza and Dungworth 1995, 347). Therefore, a plethora of publications still wade into the concept of biological race, some supporting (Marks 1995) and others opposing it (Armelagos and Brown 2001; Barbujani 2005; Bolnick 2008).

At this point I shall explore the extent to which biology has progressed in terms of manipulating socially-charged concepts, as manifested in the selection of scientific terminology. It has become clear by now, that race is not considered to be a neutral term (Mirza and Dungworth 1995, 347). Since its introduction to science by the French naturalist Louis Le Clerc in 1749, the term has always entailed the concept of European superiority (Yudell and Hammonds 2011, 2). Therefore, it was ultimately discarded.

Emphasizing on the importance of genealogy, the term "ethnicity" was soon adopted in order to approach human genetic diversity. The change in designation though, did not denote a change in the scientific paradigm, which continued to equate social identities with biological categories (Oppenheimer 2001). Finally, the term "ancestry" was, and still is, promoted as an objective, scientific alternative to the aforementioned (Bamshad and Olson 2003). It can be defined geographically, geopolitically and culturally (Race, Ethnicity, and Genetics Working Group 2005). Despite the fact that the term is decidedly less tainted than its predecessors, it still does reproduce the idea that, through genetics, identities that are being

negotiated and determined in the present are part of a continuum that can be traced back into the distant past.

Overall, what seems to be problematic, is not the selection of words itself, but rather the obsolete association of biological findings with social identities. Population genetic research articles hardly ever include definitions of concepts such as race, “ethnicity” and “ancestry” in context, while the socio-ethical aspects of the research is also hardly ever discussed (Ali-Khan *et al.* 2011, 54). Ambiguous terminology is thereafter conceived as self-evident, leaving space for individual interpretation, which is often infused with untested stereotypes (Sankar *et al.* 2007, 961). When it comes to archaeology, this becomes even more hazardous, as genetic evidence can ratify relations between past and present populations. The extent to which such knowledge of blood affiliation to past populations can affect people’s perception of their national and social identities, outside academia, remains to be answered in the following pages, in Chapter 6 in particular.

4. Chapter 4: Aspects of Interdisciplinarity: conflicting scientific cultures

4.1 Interdisciplinary approaches in Archaeology

Despite the fact that the emergence of the concept of "interdisciplinarity" goes back to First World War educational reforms in the U.S.A., which intended to achieve unity of knowledge and thus, unity among the different disciplines (Salter and Hearn 1997, 26), its pivotal rise and establishment in the scientific world has only taken place during the last few decades. The cognitive conception of this unity has always been the principal inquiry of interdisciplinary thought, and although we cannot still clearly demarcate its epistemological identity (Welch 2009), interdisciplinarity can be overall perceived as an expression of an intellectual effort to segue from analysis to synthesis and it can be conceptually defined by the urge to overpass disciplinary borders, increase the complexity of scientific inquiry and achieve the aforementioned unity (Klein 2014; Welch 2011).

Archaeology constitutes a major example within the wide field of the humanities and social sciences which has incorporated interdisciplinarity in the whole array of its practices, from fieldwork to laboratory analysis, interpretation and reconstruction of data. The close links between archaeology and a variety of other disciplines have nowadays evolved into indissoluble ones. Furthermore, archaeological research is nowadays scientifically mediated by a significantly more complex and qualitatively different methodology from the one it was initially built upon. At the same time, the case of archaeology becomes even more intriguing, as it allows us to examine interdisciplinarity, beyond a merely positivist point of view.

Even though the term "interdisciplinarity" in archaeology might allude for the majority, to the "hard sciences", physics, chemistry, biology and so forth, the discipline has also long-established inextricable epistemological links with ethnography, history, philosophy, social anthropology, political theory and sociology. The catalytic point of interdisciplinary synthesis in archaeology is thus constructed through the leverage of elements from a variety of fields in the humanities and the social sciences, while maintaining a concurrent dialogue with the natural sciences.

Nevertheless, as interdisciplinarity is becoming a reality for archaeological research, the epistemological issues that occur with it are not yet sufficiently discussed. The latent positivism in every discipline – if not the latent positivism of the "common mind" – raises crucial questions about attempts of collaboration between archaeology and the natural sciences in particular. Dehistoricization of the questions posed by archaeology is a frequently-occurring issue, as the processing of archaeological

material can lead to a variety of answers, alien to archaeological theory and the initial archaeological questions. Perhaps one of the most representative such cases in archaeology is archaeogenetic research, especially when applied in order to explore palaeodemography and ancient population movements and origins.

As archaeogenetics seems to be all the more popular among archaeologists, and draws an impressive amount of attention by the media and the lay public, the discussion around the field's methodological problems and potential data misuse (Bandelt and Richards 2002; Mirza and Dungworth 1995; Pluciennik 1996; Zvelebil 2000) appears to be more topical than ever, rather than an ephemeral trend of the mid 1990s (Evison 2014, 313). What makes the field so controversial though? To begin with, the lack of a cohesive theory of archaeogenetics (Oliveira 2008) that would efface what Mark Pluciennik aptly described as *clash of cultures* (Pluciennik 2006) between two inherently different disciplinary traditions. Moreover, the exponential popularity of archaeogenetics, along with the ever-growing reinforcement of essentialist identities outside the academic world (Brodwin 2002), necessitates careful consideration of the ethical issues and socio-political consequences of such research.

4.2 The epistemological position of palaeopopulation genomics

Palaeopopulation genomics should not be seen as a sub-field of population genetics, but rather as a distinct interdisciplinary field. It refers in essence to the human past, therefore involvement in archaeogenetic research requires sufficient knowledge of archaeology and history (Oliveira 2008). Nevertheless it still constitutes a conjugation point among two disciplines with different histories, goals, theories and approaches. Archaeology on the one hand, studies past human societies and their environments through the systematic recovery and analysis of material or physical remains (Darvill 2003). Genetics on the other hand aims at the understanding of the rules of hereditary transmission in living organisms. This is achieved through the deduction of the characters of the progeny, by knowing the characters of the progenitors (Oliveira 2008, 110). Archaeogenetics follows an inverse path. It infers the characters of the progenitors, by leveraging information about the characters of the descendants (Amorim 1999).

Archaeology has long relied on the statistical analysis of environmental data to deduce information about the human past, hence archaeogenetic data sets are not alien to the discipline (Pluciennik 2006, 40). Nevertheless, the methodology that yields these data, has been formerly criticized by archaeologists. The

fact that the data derive in their majority from modern populations, gives the impression that the archaeological record is after all confined into historical hypotheses, shaped by present genetic patterns (Pinhasi *et al.* 2000). Natural scientists, in turn, not only find it hard to deal with the non-quantitative methods that archaeology often opts (Oliveira 2008, 112), but also tend to ignore the fact that the biological characterization of past populations cannot in its own right elucidate cultural processes or social change (Oliveira 2008, 113). This mutual mistrust between the two disciplines is thus not only rooted in the occurring methodological issues, but also in fundamental differences of scientific philosophical conceptions (Jones 2002).

Although the history of the philosophical stances that formed both natural and social sciences could not be covered in detail here, one can trace the manifestation of their differences in the contradictory approaches, questions asked and divergent interpretation of results by geneticists and archaeologists. More precisely, describing past societies in biological terms can on the one hand provide useful insight in the spatial distribution of past populations and their migration patterns, but on the other hand still come with the risk of reanimating a culture-historical approach on migration and a reductionist identification of homogenous, spatially and temporally defined ancient "cultures". In an informed approach in archaeogenetics, concepts such as population, identity, agency and culture that the social sciences have long dealt with, should be considered along with the tendency of the natural sciences to generate generalized views and laws about certain phenomena (Oliveira 2008, 122).

A theory of archaeogenetics needs to consider current epistemological trends within the two disciplines and manage to amalgamate, among other things, the different epistemological views of scientific realism and social constructivism (Oliveira 2008, 122). The establishment of a coherent theory, distinctive from archaeological theory, would not only offer a rigorous approach to data interpretation, but also establish criteria on testing the validity of the knowledge that it generates.

5. Chapter 5: Archaeology and Greek national narrative

Archaeology distanced itself from the amateur pursuits of antiquarianism and acquired the prestige of scientific professionalism, during the 19th century, the zenith of nation-building in Europe (Kohl and Fawcett 1995, 227). It is thus a priori linked to the construction of European national identities through the rediscovery and reinvention of the national past based on archaeological evidence, found within the state's borders (Kohl and Fawcett 1995a, 228). Therefore, national identities are not conceived or constructed in an instant, but rather are the result of protracted processes and continuous alterations. Thus, Greek national identity should not be perceived as unaffected by time. The construction of this identity, as with all national identities, is a dynamic process, closely linked to historically-changing perceptions of the past. This chapter is a short account of the historical circumstances that brought about modern conceptions of "Greekness". The role of Greek archaeology is thoroughly discussed, along with the basic concepts that formed the Greek national narrative.

5.1 Defining "Greekness": A historical perspective

There is a plethora of writings on Greek nationalism, deriving from disciplines such as Literature and Political Science (Petmezas 1999; Kitromilides 2004; Beaton and Ricks 2009). Although there is no need to elaborate in detail on an already well-studied historical subject, it is necessary to understand Greek self-definition from an emic point of view, in a historical context. The beginning of the filament can be traced back to the Ottoman Empire era, when Greek-speaking Orthodox populations were first re-introduced to the Classical past. This revival of interest towards Greek antiquity was a result of the interconnections between merchants of the Greek diaspora in Western Europe (Voutsaki 2003, 232). During the 18th and 19th centuries, the Hellenic Ideal was seen by the European intelligentsia as a timeless concept, a symbol of universality amalgamated with the ideas of rationalism and liberalism, which eventually served as ideological framework for various sociopolitical developments of the period (ibid). The European conception of the Hellenic Ideal was consequently appropriated and introduced to the Greek context, through the ideological phenomenon of the "Greek Enlightenment" (c. 1750-1820) (Dimaras 1977). The latter promoted education and ethnic awareness among the Greek populations, which would eventually lead to the Greek revolution against the Turks in 1821, and their final liberation (ibid).

Considering the case of the "Greek Enlightenment", one can easily notice that the Greek national ideal was from its conception past-oriented (Voutsaki 2003, 232). This past was already "defined and idealized" in European thought and one could dare to say, merely adopted by Greeks themselves (Liakos 1994, 177). At the same time, European identity was already constructed upon the notion of Europe being heir to the Classical ideal. Thus, for the period under study, the Greeks' perception of their own past was basically mediated by three prevailing notions: 1. the complex relationship between Greece and Europe, 2. the liberal state and 3. the Classical past on its own right (Voutsaki 2003, 233). That being so, the 18th and 19th centuries, saw the dawn of one of the basic concepts that formed Greek identity, namely, an entangled relationship with Europe.

All in all, the main body of the Greek national narrative is related to the appropriation of the ancient Greek past by Western interests, and its subsequent manipulation by local elites (Gourgouris 1996, 54). Referring to the period of the "Greek Enlightenment", archaeologist Sofia Voutsaki summarizes aptly the conception of Greek national pride:

> It should be stressed that the Greek self-awareness revolved mainly around the double relationship with Europe and the Classical past and was less concerned with differentiation from its immediate neighbors. The Classical past detached the Greek populations from their Balkan background, gave them the illusion of a privileged relationship with Europe and became the cornerstone of what could already be termed 'national' pride. (Voutsaki 2003, 233)

Likewise, anthropologist Michael Herzfeld underlines modern Greeks' ambivalence about their European identity, rooted in the glories of the ancient past on the one hand, and their political, economic and cultural affiliation to the Third World, on the other (Herzfeld 1987). This duality of modern Greek identity, the vacillation between the European and the Other (Herzfeld 1987), the concurrent representation of the birthplace of the European ideals and the mysterious East, is central to my research, and will be further analyzed based on actual data, in Chapter 6. My approach is heavily based on the idea that postcolonial studies can be directly applied to Greece, that this country can be studied within the postcolonial frame, yet under the special schemes of crypto-colonialism as proposed by several scholars (Gourgouris 1996; Herzfeld 2002). The core idea of this hypothesis refers to certain countries, including Greece, which despite never having been actually colonized by European powers, were nonetheless attained their political independence at the expense of massive economic dependence, while their national culture was formulated in ways that would conform with foreign, in that case Western European, standards (Herzfeld 2002, 901).

A certain obsession with the past becomes apparent at an early stage of the formation of the Greek national identity. Nevertheless, this past should not be considered as a unified, homogenous entity. Different periods of the Greek past received individual attention and treatment through modern history.

"Greek Enlightenment" for instance, placed the Classical past at the epicenter of what it means to be Greek. (Voutsaki 2002, 105; Voutsaki 2003, 233). By the end of the 18th century, the links between Greece and Byzantium were first introduced by Dimitris Katartzis (1730-1807), a Phanariot intellectual, but his research and writings remained in obscurity at that time (Dimaras 1977, 63). At the turn of the 19th century, when the process of nation-making in southeastern Europe was still incomplete, the origins of Classical thought and civilization were traced to the discovery of the pre-Hellenic, prehistoric past (Voutsaki 2002, 105).

Schliemann's discoveries in Mycenae were perceived at the time to connect the Mycenaean civilization, the Homeric epics and the Classical period into a line of continuity (Voutsaki 2002, 110). Gradually, the Mycenaeans were designated as Greeks, often based on arguments of Aryan racial origins and racial purity (Voutsaki 2002, 112).

In the second half of the 19th century, it was Cretan prehistory's turn to stand in the forefront of global archaeological imagination (Varouhakis 2015, 89). In this case though the threads of linearity were interestingly related to religion. Parallels were drawn between "Minoan", ancient Greek and Christian religion (Varouhakis 2015, 107). Cretan heterotopia (Hamilakis 2009, 85–99; Leontis 1995, 43) which portrayed the island as prosperous for archaeological research, provided the raw materials for the construction of a prestigious local identity (Varouhakis 2015, 111). This narrative was founded upon the ideas of continuity and evolution. The Minoan and Mycenaean pasts were seen as the early predecessors of "mature" Classical Greece (ibid). Adding to the foregoing tripartite scheme for Greek history, of antiquity-Byzantium-modern Hellenism, as proposed by Greek historian Konstantinos Paparrigopoulos (1815-1891) (Damaskos and Plantzos 2008, 253), one can have a clear idea about the other key concept of the Greek national narrative. That is the supposed historical and cultural continuity of the Hellenic nation, which actuated and settled on Greek archaeology's developments during the 20th century (ibid).

The notion of continuity was strongly disputed in the theory of Tyrolean journalist and historian Jakob Philipp Fallmerayer (1790-1861), who emphasized Modern Greek racial origins. He not only rejected the idea that modern Greeks could be considered the heirs of ancient Greek culture, which could not have survived the continuous Slavic and Albanian invasions of the Byzantine period, but also thought that their claims on ancient Greek identity had mislead the naïve intelligentsia of the 'real' Europe (Fallmerayer 1845, II: 261). Although his proposition was mainly based on historical and cultural evidence, rather than genetic

ones, he did not seem to make a clear distinction between the two aspects (Herzfeld 1986, 140). In 2015, in the midst of the latest Greek economic crisis, Fallmerayer's hypothesis was revived in an article of the conservative German newspaper *Welt*, to question modern Greeks' European identity and the EU's decision to allow 'clammy Greece on the European boat in 1980' in the first place (www.welt.de).

In sum, in Anderson's terms (Anderson 1991) the Greek nation has been imagined both by external factors, in this case Europe, and as a collective experience from within (Damaskos and Plantzos 2008, 265). Archaeology played, and still plays, a prominent role in producing Greek national subjects, offering both the necessary tangible evidence and the much-needed interpretations, to confirm identities and strengthen national ties (ibid).

5.2 Greek archaeology in the 18th, 19th and early 20th centuries

Ever since the 1980s, with the rising awareness about the social and political factors that determine the nature, and often the answers, of scientific questions, an exponential number of archaeologists started doubting about their research's objective foundation (Trigger 1984, 1). Taking this argument to the extreme, one could claim that archaeological interpretation is nothing more than a reflection of values belonging to their own contemporary societies (Trigger 1985, 16). In the same vein, Bruce Trigger has insightfully commented that since certain difficulties still lead to the resurgence of nationalist ideas, archaeology in countries such as Greece, Poland and to a lesser extent Italy, continues to serve as a record of past glories and thus a source of hope for the future (Trigger 1989, 185).

A direct consequence emerges by accepting the subjectivity of any interpretation regarding the human past. That is the necessity to record the extent and quality of the influence that external factors, especially politics, have in archaeological research and thought. The history of Greek archaeology and the political manipulations of the Greek past are well-studied subjects, from archaeological (Hamilakis 2002; Hamilakis *et al.* 2006; Hamilakis 2007; Hamilakis 2009; Hokwerda 2003; Damaskos and Plantzos 2008; Voutsaki 2002; Voutsaki 2003), historical (Liakos 1994) and anthropological (Herzfeld, 1986, 1987) perspectives. To apprehend the political implications of Greek archaeology in the present, one needs to go back in time, and trace its origins, early developments and particularities.

To begin with, Greeks' interest in antiquities in a concrete way derived from a certain influence of the ideals of the Enlightenment (Voutsaki 2003, 244). From a rather early stage, even before the 1830s, property issues generated by the discovery of antiquities came to the forefront of political dissent and

public discourse (Kalpaxis 1993, 11–22). At that time looting and destruction of ancient remains were quite commonplace, a situation which would gradually change after Greek archaeology's administrative framework was bestowed during Otto's reign in Greece (1832-1862). The University of Athens for instance was founded in 1837 by the Bavarian administration, and was thus heavily influenced by the German educational philosophy. Moreover, in 1834 the first law for the protection of antiquities was compiled, rendering the state as the one and only bearer of this great responsibility (Kalpaxis 1996, 49).

Soon after, in 1837, the Archaeological Service and the Archaeological Society were founded, the latter by private initiative. The Archaeological Society in Athens would determine the trends of archaeology and heritage management in the 1830s and 1840s. These trends can be summarized as an exclusive interest in the Classical past on the one hand and an elitist attitude towards the privilege of practicing archaeology on the other (ibid). The obsession with Classical antiquity comes as no surprise, since archaeology at that time was called upon to serve the construction of a bipolar scheme, directly connecting Classical and modern Greece. Indicatively, according to the Society's founders, their principal quest in this recently liberated land was to "*reveal and protect the evidence of the great, noble origin of its citizens, and thanks to their glorious history, allow them to be placed among civilized nations"* (Petrakos 1987, 25). Moreover, when the Archaeological Society took over the rearrangement of Athens' historical center, aiming to preserve and showcase the city's ancient remains, Ottoman, Frankish and Byzantine monuments were systematically destroyed (Voutsaki 2003, 247).

In fact, it was not until the advent of the 20th century that Byzantine heritage would be taken seriously in Greece, as marked by the foundation of the Byzantine Museum in 1914 (ibid, 250). The rising interest in Byzantium coincided with the emergence of Greek prehistoric studies. Finally, Paparrigopoulos' scheme supporting Greek continuity from antiquity onwards, had found indispensable support in archaeological research (ibid). Of course the scheme was conveniently extended in time, with the addition of a mythical Homeric past which was assigned to Mycenaean prehistory. The latter would anyway gradually be assigned as Greek (Voutsaki 2002) as mentioned before.

The foundation of several foreign schools of archaeology in Athens[1] brought about new developments in the research priorities of the newly-established discipline (Alexandri 1997 in Voutsaki 2003, 251). The institutionalization of the foreign archaeological presence in Greece should not be overlooked with naiveté, as merely serving scientific interests. Besides, "*any state in pursuit of a prominent*

[1] French School in 1843, Deutsches Archäologisches Institut in 1874, American School of Classical Studies in 1882, British School at Athens in 1886, Austrian Institute in 1898

role in international politics, strengthens its position and prestige through scientific initiative abroad […]: almost all the great scientific expeditions undertaken by western states are linked to political agendas" (La Rosa 1986, 232). Foreign archaeological expeditions in the Mediterranean have often occurred as a result of political intentions. The intense German archaeological presence in Asia Minor for instance, seems to have served political, military and economic claims in the area (Sartiaux 1918, 39). In this respect, the foreign institute's competition for the rights to excavate prominent Classical sites such as Olympia or Delphi (Kalpaxis 1996, 48) actually reflects their rivalry for further interference and prevalence in Greek affairs (Voutsaki 2003, 250).

Perhaps the most distinctive example of foreign interference in Greek archaeology is the excavation of the Athenian Agora by the American School of Classical Studies at Athens (ASCSA) in the 1930s, encompassing a number of stakeholders and portraying aptly the political economy of archaeology in Greece. The Greek state had longed for the realization of this particular excavation ever since its foundation in 1830, while the Archaeological Society as well had similar interests (Hamilakis 2013, 156). The delegation of the project to the ASCSA came at a moment when American influence in Greece was in its heyday, but led to opposition from local residents whose houses were to be expropriated at the expense of the projection of the Classical past (Hamilakis 2013). The chronicles of this conflict shall not be presented here, but some basic emerging concepts will. Entangled with loans, political influence and diplomacy, the negotiations and subsequent delegation of the project to the ASCSA can be interpreted within the spectrum of colonial/imperialist archaeology (Hamilakis 2013, 173). Second, the logic of purification and cleansing becomes apparent when it comes to the demolition of the local neighborhood at the expense of both the Classical past and the modernization of the city (ibid). Last but not least, interestingly, the excavation of the Agora was a source of national pride, not only for the Greek side, but also for the American one (ibid).

In sum, archaeology in Greece eagerly promoted the idea of the historical and cultural continuity of the Hellenic nation and served the state's strategies from its very early days, providing the necessary ideological background and thus defining Greek identity (Damaskos and Plantzos 2008, 253). As national Helladic archaeology gradually replaced the "Greek" or "Classical" one, prehistory, classical antiquity, Byzantium and "post Byzantine" Greece became a grand continuity, to be studied especially through a linear art-historical narrative (ibid, 254). Hellenic art, representing Greek heritage in its entirety, became both the main research focus and the basic symbol of this cultural continuity, from the glory that was prehistoric Greece to the future triumphs of this promising nation (ibid, 253).

All of the above was clearly based on the sense that there are two kinds of images of the past. First are the ones reformed by the objective archaeologist, and second, those which the lay public constructs in its own interests. On the basis of this division, Arnold Tonybee notes: "*like the Chinese and the Jews, the Greeks have constructed images of their past, which do not correspond to the image as seen by the emotionally uninvolved archaeologists and historians.*" (Toynbee 1981, 5).

Supposedly detached from any subjectivity, archaeology in Greece was also called upon to offer the fundamental evidence to support Greece's cultural links to the West. Adopting a role reminiscent of the West's cultural womb, it attempted to define culture "*away from the West/East divide, even if their rhetoric and praxis are both colonialist and Orientalist*" (Damaskos and Plantzos 2008, 267).

5.3 The particularities of "Minoan" archaeology

Crete's archaeological wealth had placed the island in the forefront of international archaeological interest and imagination by the second half of the 19th century. As a result, Westerners visiting the island saw in the contemporary population, the heirs to this significant heritage. Samuel Gridley Howe, for instance, an American physician visiting Crete on a humanitarian expedition during Cretan Revolt of 1866– 1869, referred to local populations as direct descendants of the ancient Greeks and strongly opposed Fallmerayer's theory (Howe 1868, 8–9). His compatriot William James Stillman, also identified the Christian residents of the island as "*probably the purest remnant of the antique race which resulted from the mixture of Pelasgian, Dorian, Achaian, Ionian, and the best representative of the antique intellect*". (Stillman 1901, 640–41 in Varouhakis 2015, 89).

From a local viewpoint, *Syllogoi*, societies founded by emerging local intellectual elites, promoting education within a clearly nationalist framework, served as mediators for Western actors' aspirations on Cretan antiquities (Varouhakis 2015, 90). The visible remnants of Knossos, drew the attention of prominent archaeologists such as Heinrich Schliemann, who corresponded with the head of the *Syllogos* Joseph Hatzidakis with the purpose to buy the land, and conduct archaeological research in the area (ibid). British archaeologist Arthur Evans was next in addressing his interest in Knossos to Hatzidakis. Their friendship led the latter to act as mediator of Evans' interests in the area (ibid, 91).

In 1898 the semi-autonomous Cretan State was created, under Ottoman rule but run by the Great Powers, and the island was soon split in administrative zones[2], in a manner strongly reminiscent of a colonial regime (ibid, 93). Soon, the island was divided in archaeological zones as well, where Western actors were competing over precious archaeological sites and trophies (Brown 1993, 17). Thanks to Evans' interference, Hatzidakis was elected as the Cretan Ephor of Antiquities, and the excavation of Knossos was finally appointed to the British School (Varouhakis 2015, 99).

Evans' discovery of the "palace of Minos" at Knossos in 1900, was at once incorporated to the pre-existing national narrative, only this time European identity would also play a direct, major role, with Minoan inscriptions seen as having a "*free, upright European character*" (Evans 1900, 92). Biology was also soon conscripted to provide the necessary evidence for the newly-discovered culture's "Europeanness". Anthropometric investigation of burial finds in Crete certified both the purity of the race (Hogarth 1906, 557) and local population's affiliation to these past populations (Hogarth 1906, 553).

It should be clear by now, that the Cretan past was appropriated and constructed in an outspokenly colonial manner. The urge to fit the "Minoan" past into contemporary European standards even led the excavator of Knossos to draw parallels between the "Minoan" Mother Goddess and the Virgin Mary (Evans 1903, 86). The results of such comparisons were twofold. On the one hand, this prehistoric civilization appeared in the eyes of the European audience to be hyper-civilized, and on the other, this narrative suited perfectly the contemporary orthodox-Greek expectations (Varouhakis 2015, 109). In addition to this, the identification of the "palace" discovered in Knossos as that of "King Minos", placed Minoan Crete in the mythical origins of the Greek national imagination (ibid, 110).

5.4 Antiquity as symbolic capital in present day Greece

Returning to the present day, one wonders if those previously-discussed concepts which formed Greek national narrative in the 18th and 19th centuries, are nowadays considered outdated. How do Greeks perceive their identity today and how is antiquity deployed nowadays to re-affirm or nullify this identity? The facilitation of the Olympic Games in Athens in 2004, offers an excellent recent example of the contemporary appropriation of the Greek past by the state and the leverage of past glories so as to create certain ideas about the nations present and future.

[2] The region of Candia was run by the British, Rethymnon by the Russians, Lasithi by the French and Chania by the Italians

On the 13th of August 2004 the opening ceremony of the 28th Olympic Games was taking place in the Olympic Stadium in Athens. Under the directorship of choreographer Dimitris Papaioannou, a Cycladic head slowly emerged from the water, while the anchorman was narrating: "*The Greeks, although restless travelers, they always carry with them their past, to which they are inextricably linked".* The head cracked wide open and a kouros statue appeared, only to be subsequently replaced by a Classical torso. During the following 20 minutes, dancers dressed as Minoans, Mycenaean warriors with references to Homer, archaic statues and symbols of Classical antiquity, the Hellenistic period and the Byzantine era, figures reminiscent of the Greek Revolt of 1821, all paraded in perfect linear order, promoting a certain "historical accuracy", or at least reproducing the established Greek historical narrative.

Thus, the two basic pillars of the Greek national narrative seem to be still alive and flourishing. The privileged relationship with Europe and the notion of causal linearity were both present in this manifestation of Greek national pride. The message was clear, and it was addressed to the international audience, as much as to contemporary Greeks themselves, by way of a lesson of national history and pride (Plantzos 2012, 163). Of course great parts of Greek history were glaringly absent, reaffirming what Edward Said noticed with regard to classical Greek tradition: "*the extraordinary influence of today's anxieties and agendas on the pure (even purged) images we construct of a privileged, genealogically useful past, a past in which we exclude unwanted elements, vestiges, narratives*" (Said 1993, 15).

The matter of genealogy, though, was to be taken a step further in this ceremony. As the joyful parade reaches an end, a pregnant woman appears walking towards what seems to be the representation of a DNA helix (fig 1). The anchorman describes how the DNA symbolizes both the differences between us, our distinction from the *other*, but at the same time stands for panhuman unity. The strategically-chosen point when the helix appears though, might insinuate a bit more than that. The former parade, portraying Hellenic identity as one, unified entity, acquires now further support and one could say, a certain biological dimension. Greek genealogy, linear and continuous from the prehistoric past to the present day, becomes not only a matter of successive triumphant cultural periods, but also a matter of biological, genetic diachronic homogeneity.

Figure 1 Athens 2004 Olympic games opening ceremony: the DNA helix.

6. Chapter 6: A European population in Bronze Age Crete: Identifying the "Minoan" genome

6.1 Genetic research and Greek origins

As I have already noted in the previous chapter, the first reference to Greek biological ancestry, came from the orientalist Jakob Philipp Fallmerayer, who supported the idea that his contemporary Greeks were nothing more than Hellenized Slavs and Albanians, without "*a single drop of original and clean Greek blood"* (Fallmerayer 1830, iv). The problem with such a belief, is not the fact that it questions the genetic continuity of a certain population group on its own right, but that it equates two distinct and dissimilar categories: the genetic and the cultural. Apparently, J. P. Fallmerayer apprehended ancient Greek culture with racial terms. Therefore his argument reflects not only a certain methodological confusion, but also a racist interpretative approach to cultural evolution. One could think at this point that these histories belong back to the 19th century and these concepts and ideas are scientifically discarded and lost in oblivion. Sadly though, the tendency to confuse the racial and the cultural still survives in our times, and evidence deriving from molecular biology might be selectively used in order to contradict Fallmerayer's hypothesis and support the idea of Greek genetic continuity.

According to recent mitochondrial DNA research, Greek samples seem to have greater affinity to Italian ones rather than to those of Slavic populations (Achilli 2007). Results deriving from Y-chromosomal DNA research are similar, portraying that Greek samples were greatly dissimilar to Slavic and Albanian samples despite the fact that they group with the rest of the Balkan ones (Roewer 2005). These results could be used to reconstruct Fallmerayer's argument. That would require of course a certain neglect of genetic research's methodological ambiguity and scientific uncertainty, as thoroughly discussed in Chapter 4, but also a persistence of dreaded anachronistic scientific mindsets. Thus, any scientific approach to "Greek origins" should be treated with caution, for it might succumb to "methodological surrealism" (Giannopoulos 2012, 470), putting together distinct classificatory tools for human population groups (genetic, linguistic and national) in an arbitrary manner, or even worse, serve certain ideologically-charged expediencies.

The criticism expressed in this thesis, though, by no means invalidates genetics' contribution to archaeology in general. Certainly, several studies combining genetics, linguistics and archaeology, have offered reliable results concerning the history and origins of past and present populations. One such

example is Colin Renfrew's interdisciplinary attempt to bridge linguistics, prehistoric archaeology and genetics (Renfrew *et al.* 1991), which has enriched our understanding of prehistoric migration events. Relevant research revealed that such events dating back to the Early Upper Paleolithic period (50,000-40,000 BCE) contributed greatly to the contemporary European genetic identity, through the distinct U5 haplogroup. As regards Greece, the U5 haplogroup has been found in 4,8% of modern samples (Achilli 2007), and was also traced in ancient DNA samples from the Mycenaean Grave Circle B (Bouwman *et al.* 2008). Thus, 60% of modern-day genetic variation has its origins in the Paleolithic era, while the Neolithic J haplogroup, is represented in only 8,3% of Greek samples (Giannopoulos 2012, 484). In Crete, the Neolithic subsector J2a-M410, manifests close affinity to Anatolia, the central and Mediterranean parts in particular, in contrast to the "Helladic" subsector, which appears to be more similar to southeastern Anatolian samples (King 2008). These results indicate direct contact between Cretan and Anatolian populations during the Early Neolithic, also confirmed by archaeobotanical evidence from the Early Neolithic settlement in Knossos c. 6500 BCE (Giannopoulos 2012, 489).

6.2 A European population in Bronze Age Crete: An introduction to the case study

Based on the hypothesis that the first Neolithic populations arrived on the island of Crete from the Peloponnese or south-western Anatolia (Renfrew 1996), a group of eminent geneticists and computer scientists conducted research to address the question of the origin of the people residing in Crete during the Bronze Age (Hughey *et al.* 2013). Through the years several studies concerning the origin of the "Minoans" have supported migrations from the Cycladic islands (Hutchinson 1962), Anatolia (Caskey 1964), Syria or Palestine (Hood 1971) during the Early Bronze Age, while others sided with an autochthonous development of the "Minoan" civilization (Branigan 1970). Early in the piece, Knossos' excavator Sir Arthur Evans, had suggested that refugees from the Delta region of Egypt had founded the "Minoan" civilization, around 5,000 BP (Evans 1925).

From an archaeogenetic perspective, several studies using Y-chromosomal or mitochondrial DNA have yielded contradictory results, supporting Balkan (Martinez 2007), Anatolian (King 2008) or Middle Easter (Martinez 2008) origins. In this thesis' case study, palaeopopulation research aimed to identify "Minoan" genetic ancestry, with the central research question focusing on exploring the validity of Arthur Evan's North African immigration hypothesis.

"Minoan" mtDNA polymorphisms detected on osseous remains from a cave ossuary in the Lassithi plateau of Crete, were compared with those of 135 modern and ancient populations. Strict authentication criteria were applied, and more than half of the samples were discarded, leaving the remains of 37 skeletons to be used for the comparison (Hughey *et al.* 2013, 2). Taking into consideration all the parameters discussed in previous chapters, this particular archaeogenetic research shall be examined in order to reach a conclusion regarding its value in archaeological and social terms.

6.3 An epistemological approach

The question posed by the aforementioned research is strictly archaeological. Nevertheless, the fact that none of the participants is an archaeologist might affect its results' archaeological value. At first glance, the research appears to have certain methodological gaps. The osseous material used for the research comes from an ossuary, the Ayios Charalambos cave in the Lassithi plateau, which according to the researchers was in use from the late Neolithic to the Middle Minoan IIB period (ibid). Despite the handful of archaeological references concerning the cave's (Betancourt *et al.* 2008) and the plateau's use (Watrous 1982) during the Bronze Age, the exact dating of the human remains that were used for the research is not clarified. If those skeletons have not undergone osteoarchaeological analysis, no safe deductions regarding the dating of the burials can be drawn. Thus, research claiming to answer the question of the origin of a certain population seems to be using undated material, which may or may not belong to the period under study. From an archaeological vantage point this uncertainty in the research's methodology, renders the whole endeavor deceptive.

It is not merely a matter of methodology though. Developing a coherent theoretical framework is an absolute necessity of sound research. Where does the particular research stand in terms of archaeological theory? What is the authors' vantage point regarding ancient civilization and culture? In the article's abstract, some fundamental theoretical starting points become apparent. "Minoan" civilization is introduced as "the first advanced Bronze Age civilization of Europe" (Hughey *et al.* 2013). The selection of words is crucial at that point, and the term "advanced" points to ideas about culture and civilization prevailing during the 19th century. More precisely, this terminology is reminiscent of Tylor's and Lubbock's early cultural-evolutionary theories, influential both in anthropology and archaeology, which classified human civilizations progressively from primitive to civilized and advanced (Bowler 1992). Thus, it seems that research conducted during the last five years, aligns, at least in means of the terminology used, with 19th century theories about human culture, generated within the racist framework of that time.

The adoption of outdated, conservative notions about culture and civilization is not confined to the article's introduction, but rather runs through the research's main body, where "Minoan" civilization in delineated as an integral whole. Cultural processes, social change and differences in material culture from the one side of the island to the other, and from the Early Bronze Age up to the Late Minoan period, characterized by the Mycenaean presence on the island (Driessen 2002), are concealed. The "Minoans" appear to have one homogenous identity, their genetic one. According to this particular archaeogenetic perspective, the emergence of a civilization is part of a broader unifying narrative that can be traced through the exchange of genetic material. Posing the question of origin of the "founders of the Minoan civilization", reflects an approach aligned with the cultural-historical paradigm, which obscures any kind of variation within the so-called "culture" (Isaakidou and Tomkins 2008, 56).

What's more, the key question posed in the introduction refers to a hypothesis expressed in the early 20th century, by Sir Arthur Evans. Ever since then, there has been great development in our understanding of the "Minoan" context and a plethora of studies have dealt with the subject, some of those proposing migration events related to the transition between the Neolithic and the beginning of the Bronze Age (Nowicki 2014). If the particular archaeogenetic research had addressed questions related to those recent pursuits of "Minoan" archaeology, the results would probably be much more valuable from an archaeological perspective.

6.4 A sociological approach

Given the symbolism attached to "Minoan" archaeology, as thoroughly discussed in the previous chapter, any research concerning the origins of the "Minoans" acquires a certain sociological dimension. The fact that archaeogenetic methodology in its own right requires the entanglement of ancient and modern population groups can lead to fuzziness and groundless association between ancient and modern identities. At the same time, research is not conducted in an ideological and political vacuum, but often reflects prevailing ideas of the society that produces it. Thus, in this section, I analyze aspects of contemporary perceptions of the Cretan and by extension, Greek past, as they rise through the particular research.

Historically, "Minoan" archaeology, the study of Cretan Bronze Age prehistory as inaugurated and named by Arthur Evans, formed a fundamental part of the discourse on the origins of Europe and the racial theories around it (Varouhakis 2015, 121). To be more precise, "Minoans" have symbolically long been

identified as the cradle of European civilization (Hamilakis and Momigliano 2006). The case study research, reaffirms this notion, right from the beginning. The title itself "A European population in Minoan Bronze Age Crete", joins together modern-day European identity and that of the prehistoric residents of Crete, in an entirely ahistorical manner. Needless to underline at this point that researchers here attempted to associate two cultural groups, which have never coincided in time. The title, and the research's content respectively, reanimates the 19th century European ideal that saw in prehistoric Crete the beginning of

European culture and, apparently, race. The researchers' position fits perfectly the narrative that was gradually established during the 18th and 19th centuries, which saw in "Minoan" Crete the womb that gave birth to glorious ancient Greeks and Europeans equally (Varouhakis 2015, 120). The argument seems to be circular. The "Minoans" were the "first advanced Bronze Age civilization" on European ground, and molecular biology does certify after years of archaeological doubt and dispute, their European genetic identity.

The case study research, continues, not only contradicting Evans' argument of "Minoan" kinship with Libyans and Egyptians (Evans 1925, 216–18), but also his idea of their non-Hellenic identity (Arthur Evans 1921, 11; Arthur Evans 1925, 200). Evans himself, had conducted "cranioscopy" research on ancient Cretan human skulls, the results of which were used as proof of his belief that modern-day Cretans were not the biological successors to those ancient populations. By the end of the publication, the conclusion of an autochthonous development of the "Minoan" civilization is taken a step further, entering the spectrum of modern-day identities once more. The "Minoan" mtDNA haplotypes are proven not only to resemble those of European populations, but also have high affinity with Greek populations and modern Cretans in particular (fig 2). This argument, irrelevant to the initial pursuits of the research, verifies the biological affiliation of Modern Greek and European identity. Perhaps this might come as an answer to what Michael

Herzfeld has described as Modern Greeks' identity ambivalence between the European and the Other (Herzfeld 1987), in that case, the East. Having in mind Benedict Anderson's ideas about the construction of national memory, it becomes obvious that this archaeogenetic research promotes an idea that the "old" and the "new" coexist within homogenous, empty time. When it comes to Greek national determination, this research offers modern Greeks a "genealogically useful past" (Said 1993, 15).

Special attention is paid to the genetic affinity between "Minoans" and the modern-day residents of the Lassithi plateau (fig 3), underlined by the article's last conclusion: "the modern inhabitants of the Lassithi plateau still carry the maternal genetic signatures of their ancient predecessors of the Minoan population" (Hughey *et al.* 2013, 5). Direct lines of ancestry are drawn between ancient and present-day

inhabitants of the island, promoting the notion of linear continuity from prehistoric times to the present. With biological similarity acting as the starting point, the authors legitimize modern Cretans as heirs to the islands prehistoric archaeological heritage, automatically initiating with that last statement a much more extensive and polemical discussion.

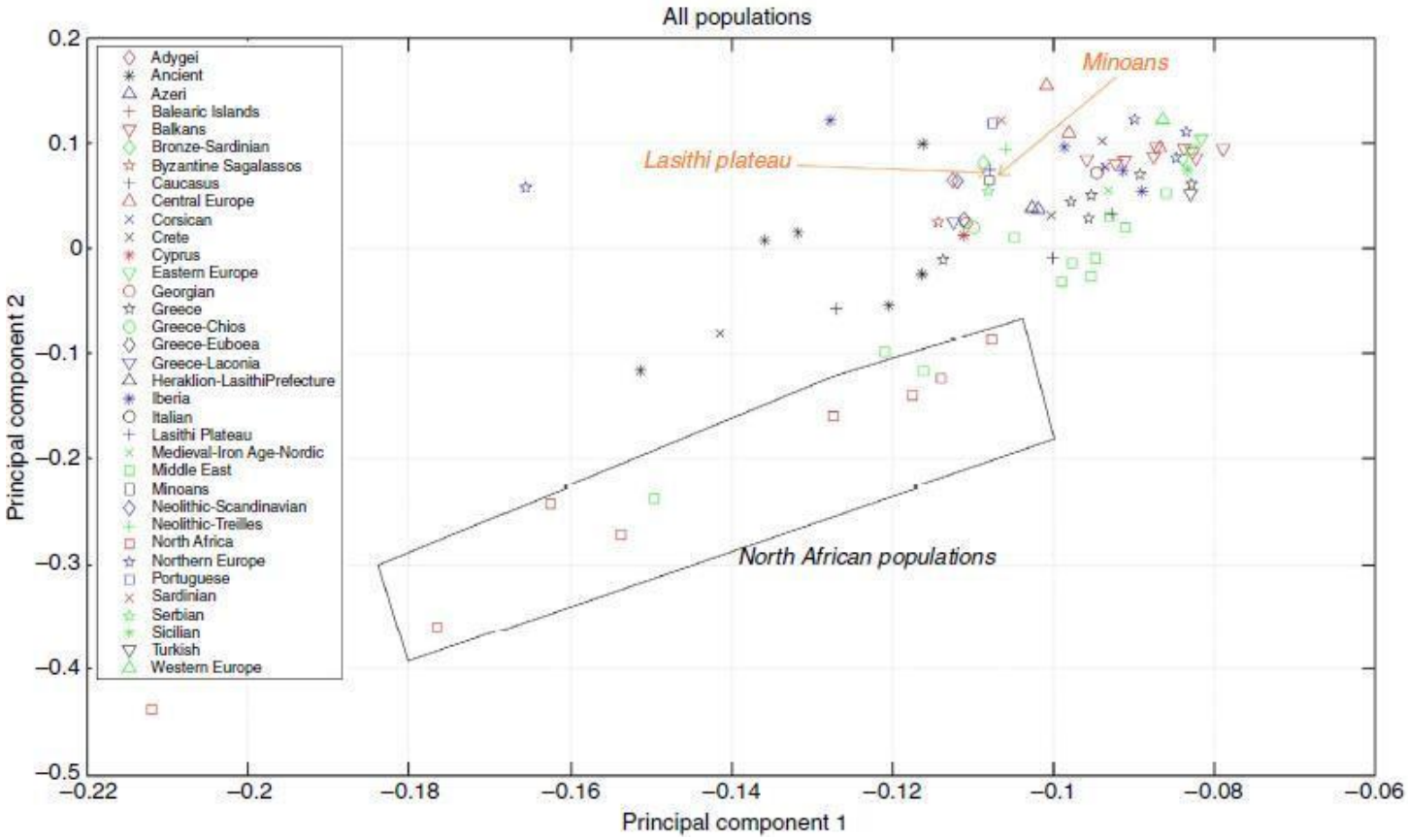

Figure 2 Projection on top two principal components of 71 extant population groups in comparison to the Minoans. The top 15 nearest neighbors to the Minoans are shown in the figure and legend with individual symbols. The remaining populations are marked using broad geographic labels; for example, all North African populations are marked with the same red square symbol. Notice the genetic distance between the Minoans and the North African populations and the similarity between the Minoans and the population of Lassithi plateau (Hughey *et al.* 2013, 5).

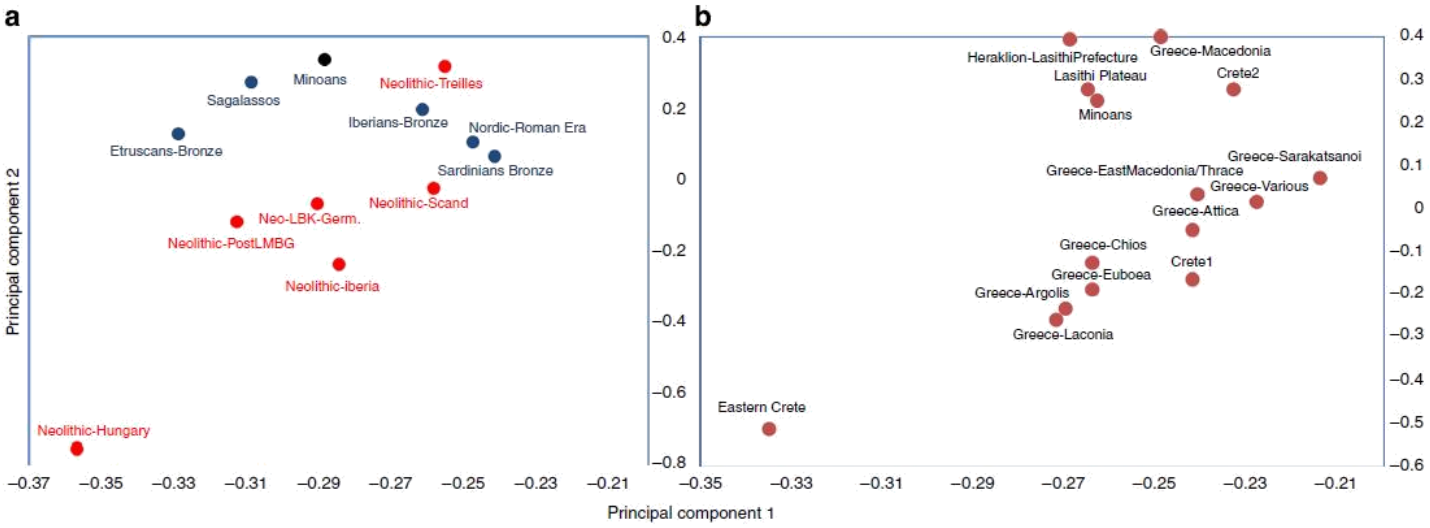

Figure 3 Relationships between the Minoans and other European populations. (a) The ancient European populations and (b) the modern Greek populations. Notice in b the close relationship to the inhabitants of the Lassithi plateau (Hughey *et al.* 2013, 5).

The pitfall of engaging to such discourse, even if concealed by alleged scientific objectivity, can be easily appreciated. The authors' position could be leveraged in order to reconstruct and affirm ideas about human population groups, reminiscent of darker eras for human history and science. For instance, Lidio Cipriani (1892-1962), a prominent Fascist anthropologist who visited Crete during the 1940s, had expressed the opinion that modern Cretans were racially descended from their ancestors, the "Minoans" (La Rosa and Militello 2006, 244).

The fact that the article under study could be used to verify Cipriani's hypothesis is not problematic in its own right, but the overall theoretical position of this research promotes nationalistic and Eurocentric ideas about Cretan origins. The authors' expressions, terminology and theoretical standing point is at perfect odds with existing notions of Greek and Cretan identity, such as Greeks' privileged position among other European peoples and linear continuity between the country's present and ancient inhabitants. Given that the research's integrity has proven dubious, both from an epistemological and a sociological perspective, it should come as no surprise that these results would be misinterpreted or underpin precarious public speech on Greek racial purity and superiority. To sum up with, the results that were reached so far, confront archaeogenetics' precarious position today, as it often walks the tightrope of confounding biological and cultural criteria of population groups affinity.

6.5 From the laboratory into the public sphere

Clearly, scientists are primarily responsible for the ethical and political consequences of their work (Mirza and Dungworth 1995, 351), but as scientific evidence enters the spectrum of public discourse through the press and cyberspace it will inevitably undergo alteration and misinterpretation, gross simplification at best. This last section offers insight to the release of scientific results for public consumption and the media alteration process, always focusing on the foregoing case study. It is of great interest to follow the case study's path from the laboratory, to the newspapers and the web.

The titles under which the research is featured in the news, are quite enlightening. On one of the most frequently-visited Greek news website, the story is featured under the title "Minoan civilization: a creation of native, European populations, DNA reveals" (www.skai.gr), while another prominent Greek newspaper announces that "Present-day Cretans descended from Minoans" (www.tovima.gr). Both the articles are merely a reproduction of the research's results, in an accurate manner. It is the titles then, which attest to the impression created by this scientific research. Attention is paid on the local, autochthonous and racially pure nature of the prehistoric population under discussion, but through that, of modern Cretans as well.

One of the popular local newspapers of Crete, *Nea Krit*i, devoted a lengthy article soon after the publication of the archaeogenetic research in *Nature Communications* journal. Under the title "The Minoans are the first Europeans", the article's author expresses his confidence that "an end is put to the discourse about the origin of ancient Cretans" as archaeogenetic research "finally proved they were Europeans and, most importantly, their descendants still live among us" (www.neakriti.gr). Parts of an interview with Giorgos Stamatoyannopoulos, one of the geneticists participating in the publication, are cited. The researcher guarantees the results' indisputable nature and states that even Arthur Evans could not have imagined how the "beautiful and advanced" Minoan civilization developed by people "superior in terms of knowledge, culture and technology", was an accomplishment of native populations after-all, and not "immigrants" (quotation in the original) of Egyptian or Libyan origin. "The founders of the Minoan civilization…descended from Neolithic European populations, while there is an undisturbed continuity between the later and present-day Western European populations, and the inhabitants of the Lassithi plateau in particular, thus with the majority of present-day Cretans!", the author adds. The emphasis with which the local press disseminated the news corresponds to the expectations of Cretan localist stereotypes, as the headline and content of the article verify the patriotic idea that Cretans are "*primus*

inter pares among Greeks" (Varouhakis 2015, 206). The interview, on the other hand, is only indicative of the researchers' theoretical and ideological position, identical to the one reflected in the research itself.

Given that the image presented above comes from reasonably reliable Greek media sources, one can only imagine the rhetoric prevailing in the rest of the web and the press. The phenomenon of pseudoscientific amateurism when it comes to archaeological inquiry, has deluged Greece's public sphere during the last decade (Giannopoulos 2012, 9). Several books and web-blogs deal with Greek history and archaeology. Despite the fact that they lack any kind of scientific integrity, they seem to be constantly gaining ground thanks to their popularized character, promoting a hazardous ideologization of the past (ibid). The case study research featured prominently in a plethora of blogs promoting nationalist and racist ideas. But, the most concerning reaction to the research's results, came from the Cretan charter of the Far Right, neo-Nazi "Golden Dawn" party. The announcement was rather moderate, a mere reproduction of the research's results (xa-kriti.blogspot.gr). Interestingly though, great emphasis has been given to the scientists who contributed to the research, including the archaeologists who offered the archaeological material for the analysis, which brings back to the initial premise of this thesis. Science has certain implications afar from the laboratory or the archaeological trench, and it is scientists' responsibility not to add credibility to such public discourse (Varouhakis 2015, 14).

7. Chapter 7: Conclusion

The initial motivation for conducting this research was to explore the ways in which archaeological practice affects the construction of common experiences, histories and myths of living individuals, to investigate the discipline's public influence. More precisely, I chose to focus on palaeopopulation research and its impact on the determination of Greek national identity in the present. In order to do so, I analyzed the data yielded by recent archaeogenetic research concerning the genetic origin of the Bronze Age "Minoan" population, addressing the question of its impact on contemporary Greek society's perception of what it means to be Greek.

This thesis proposes an approach on palaeopopulation genomics that combines theories of nationalism and heritage to shed light on the interdisciplinary field's public dimension. In terms of methodology, the core of my thesis is based on bibliographical research, so as to bridge theories and outcomes deriving from various scientific disciplines, such as social anthropology, sociological approaches to theories of nationalism, and the history of archaeology and molecular biology respectively. What was missing from earlier conceptions of the nature of archaeogenetic research was a sense of the heterogeneity of the epistemic fields of which it is composed, along with an approach to the field's entanglement with identity politics. Owing to this, my research had to overcome the challenge of establishing a solid theoretical framework which would traverse relevant ideas and bring in a new theoretical perspective of viewing archaeogenetics in relation to heritage studies.

My research was methodologically enriched by the review and analysis of existing palaeopopulation research results, along with a review of the press coverage of the case study. This last element was included as means of approaching Greek public opinion on the subject. It became apparent that there was only a handful of reports about archaeogenetics in the Greek press. Nevertheless, they constituted a still-useful sample. I believe more extensive qualitative research would be instrumental in gaining better representation of the public's voice in future research.

Nonetheless, my approach led to the fulfillment of the research aim to a satisfactory extent. It demonstrates that palaeopopulation genomic research, the study of ancient populations' movements and origins, can play a major role in the way living individuals define and understand their national identity. My results concerning Greece show that archaeogenetic data's influence on people's understanding of their past and heritage has a twofold dimension of relevance to future research.

On one hand, mingled with archaeology, archaeogenetic research can alter our understanding of ancient civilizations, of human history in the main. The interdisciplinary field's lack of an established epistemological position can often lead to precarious associations between culture and biology, reviving the anachronistic cultural-historical paradigm in archaeological discourse. This should be taken into consideration on behalf of both archaeologists and geneticists involved in such interdisciplinary projects in future. While the field advances technologically and methodologically, establishing better cooperation between representatives of both disciplines and bridging the gaps in archaeogenetic theory should become a priority. If work on cultural and biological characteristics remains only loosely joined together, archaeogenetic research runs the risk of promoting obsolete associations of biological findings with social identities, and thus of reanimating 19th century approaches to ancient and contemporary cultures.

On the other hand, scientific work is not conducted in a social or political vacuum. Palaeopopulation genomic results can both reflect and impact upon widespread notions of national belonging and self-definition in the present. My research aptly demonstrates how archaeogenetic data is prone to misinterpretation by the media and abused for propaganda purposes. The case study presented in this thesis exposes how genetic information about a prehistoric population aligns with existing nationalist discourse, establishing bloodlines between the Bronze Age and modern residents of the Greek island of Crete. This conclusion, when reached by a formal scientific endeavor, should not be overlooked with naiveté. Following the established national Greek narrative, the publication under study (Hughey *et al.* 2013) incorporates Bronze Age Cretans into a biological and cultural Greek continuum. The archaeogenetic study identifies "Minoan" populations as Greek, and vice versa. The role that this conclusion plays in the construction of Greek national identity in the present thus becomes apparent. It offers modern Greeks a genealogically useful past (Said 1993, 15). At odds with nationalist ideas about heritage, it legitimizes the Greek nation as the inheritor of glorious archaeological pasts. Ultimately, it invigorates nationalist claims on archaeological heritage, providing credentials of biological nature.

Through the media, these stories mingle with nationalist pseudoarchaeologies and conspiracy theories and become all the more influential in Greek society, where, since a very early stage in modern Greek history, national pride seems to have been produced and consumed on the basis of ancient glories (Voutsaki 2003, 232). In sum, palaeopopulation datasets can impact upon modern Greek national self-definition, establishing Greek genetic identity as proof of cultural/ national continuity.

The responsibility for avoiding precarious associations of blood and cultural affinity lies entirely with researchers. Given the methodological developments in the field of archaeogenetics and the recent

establishment of the first ancient DNA laboratory in Greece, it would be of great interest to follow palaeopopulation studies in the future, through the theoretical starting point proposed in this thesis. As my research reaches a conclusion, many questions emerge anew. Taking into consideration the proliferation of interdisciplinary crossings of archaeological practice, discussing the social implications of the discipline acquires a new dimension. The conjugation of natural sciences and the humanities, despite expanding our scientific capability, can also lead to the reification of anachronistic scientific paradigms.

Abstract

Drawing upon the idea that collective identities are firmly rooted in the past, this thesis explores the relationship between archaeological practices and identity formation in present-day societies. The focus lies in the social implications of the interdisciplinary field of archaeogenetics. Approaches on human origins and migration events through palaeopopulation research, attain both a biological and a cultural dimension. This thesis investigates the field's epistemological position and public impact in Greek society, in regards to modern perceptions of Greek national identity. This is achieved through the analysis of a recent archaeogenetic study concerning the origin of the Bronze Age "Minoan" population in Crete. The case study is evaluated for its theoretical position towards notions of cultural continuity and blood affinity, while my approach culminates to the point of the research's 'release' to the public sphere through the Media, in order to reach an understanding of the ways such research can form contemporary perceptions of 'Greekness'.

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