Surface <> Subsurface

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3 Biases of the archaeological record

3.1 Introduction

Our understanding of pre- and protohistory is essentially based on our research approach and affected by conscious, and sometimes unconscious, choices about the way we investigate and reconstruct past societies. Although since the 1960's archaeologists have made clear efforts to make their research more objective and less intuitive, interpretations of the fragmentary archaeological record are rarely free of biases caused by research strategy, the researcher's background, or academic tradition. Such biases can result in emphasis on specific parts of the fragmentary archaeological record, on certain theoretical viewpoints, or in particular landscape parts. In the research of Metal Age societies in Italy several such research biases are clearly visible, which ultimately result in an emphasis on specific find locations and find categories. In this chapter, I discuss in detail the biases signaled in Chapter 1 and their effect on studies of protohistoric settlement patterns and landscapes. This chapter is designed to give background to the current state of scholarship, and to prepare for my own contribution to this on the basis of the RLPI field results (Chapter 9).

For the present research, three biases in our current knowledge of the Italian Metal Ages are of specific interest. The first is a preoccupation with large sites with extents of several hectares, especially in the later phases of the Bronze Age and the subsequent Iron Age, when differentiation in site size is interpreted to reflect the social dynamics behind centralization and settlement hierarchy. As a result, intensive research into the remains of Metal Age societies is focused almost exclusively on large archaeological sites, despite the hundreds of small surface scatters mapped by field walking survey projects during the past decades. Understandably enough, large find locations are likely to yield most information about the lives of people in the past, and this focus is therefore not necessarily typically Italian. However, for Italian protohistory research it is not just the expected amount of recoverable data that inspires this preoccupation with large-scale remains, but also a traditional focus on themes of social complexity, territorial behavior and the dynamics of power. In northern Calabria, this resulted in the intensive investigations of territorial centers and the emergence of elite groups at Broglio di Trebisacce and Torre Mordillo, whereas minor and ephemeral find locations remained mostly uninvestigated after their initial identification until the research project presented here started in 2010. Likewise, research into the protohistory of Tyrrhenian Italy is strongly focused on the rise of proto-urban centers in the later Etruscan territories. As I will discuss below in section 3.2, these topics and research interests are strongly rooted in the eventful recent Italian past and in the political background of a few key figures in Italian archaeology[1].

A second, related bias is caused by site-oriented research strategies and assumptions of site distributions in the study of regional site patterns, both by Italian and foreign research groups. The Italian archaeological sub-discipline of *Topografia Antica*, which aims at detailed descriptions of archaeological remains in their local setting, typically follows a site-oriented approach. This results in either a bias towards already known archaeological remains, or towards locations which are expected

[1] It is important to stress that this focus is not due exclusively to Italian scholars; foreign archaeologists working in Italy have obviously also contributed to the large literature on Italian early urbanization processes, such as Stoddart, Attema, Whitehouse, Burgers, and many more.

to yield new archaeological evidence. The landscape-scale investigations in Etruria, conducted from the 1970's onwards by Italian protohistorians, were indeed strongly focused on landscape units where archaeological surface scatters were assumed, such as plateaus, defendable outposts or valley floors (Pacciarelli 2001). Even the large-scale surveys executed in the context of the *Forma Italiae* project directed by Lorenzo Quilici and Stefania Quilici-Gigli, aimed at recording diachronic archaeological remains throughout Italy, were typically focused on delimitations of material concentrations rather than on explanations of off-site distributions and archaeologically 'empty' zones (see section 2.2.2).

Where *Topografia Antica* often creates its own assumed location preferences, Anglosaxon-inspired Landscape Archaeology creates similar biases based on survey strategy. Generally speaking, this sub-discipline differs from *Topografia Antica* in its explicit focus on methodological rigor, attention for site formation processes and recording of off-site patterns[2]. Although this usually implies that low-expectation areas are included in field walking transects, a bias towards accessible fields with optimal surface visibility is seen in most survey projects. This means that regularly ploughed arable fields are over-represented in the field coverage, whereas poorly accessible, heavily vegetated or remote landscape units are often left aside. Even with the increased application of remote sensing techniques, accessibility, logistics and cost-effectiveness cause marginal areas to be avoided for intensive research. As such, remote landscape parts such as mountains, forests and wetlands remain hidden for archaeological documentation and reconstruction – whereas in the past they may not have been marginal at all, and in the present they may hold a largely undisturbed archaeological archive. This type of bias will be further explored in section 3.2.5 below.

The focus on site formation processes and preservation issues, especially strong in geo-archaeological and Landscape Archaeology research, draws the attention to a third type of bias relevant for the present study: the essentially fragmentary state of the archaeological record. By definition, archaeologists base their reconstructions of the past on an extremely limited dataset of non-perishable materials, uncovered at locations where these materials are preserved. Even if we are aware of this selection, it is important to state how we deal with the biases in our data caused by post-depositional processes, land use histories, and recovery. Our research area in northern Calabria is situated in a generally erosive landscape, where both natural slope processes and human intervention to prevent soil movement and degradation affect the preservation of archaeological deposits. In section 3.3, I will go deeper into the effects of post-depositional processes and events on the archaeological record in our research area and similar Mediterranean landscapes.

[2] Italian 'landscape-archaeological' projects focusing on methodological refinement and systematic recording of off-site artefact distributions include the excellent work of the Padova school of Armando De Guio and colleagues (the Alto Polesine – Basso Veronese survey in northern Italy) and the Tuscan landscape studies of Riccardo Francovich of the department of Medieval Archaeology in Siena and his pupils, most notably Stefano Campana.

3.2 Research and conceptual biases

In this section, I discuss conceptual biases within Italian Metal Age research and demonstrate how these are rooted in the particularities of Italian academic archaeology. To do so, first the relatively isolated development of Italian archaeology and the theoretical itineraries within it will be discussed in the light of the recent Italian past. This is essential to understand the backgrounds and ongoing importance of the current model for protohistoric societies in the Sibaritide, based on the work of Renato Peroni.

3.2.1 Background: Pre- and protohistoric archaeology in Italian academia

'Italian archaeology' does not exist: there is a dichotomy between archaeological research undertaken by Italian scholars, and research in Italy undertaken by foreign archaeologists (Rajala 2004: 9). The first sphere is a world on its own, with its own laws and dynamics, and relatively few outside interactions. This inwardness is a continuous effect of the isolation that Italy and Italian archaeology underwent during the Fascist years (Guidi 2010: 16), but also of its structure and debating culture: archaeological discussions in Italy are mostly conducted in Italian; and preferably in real life, at conferences and meetings, rather than in articles and monographs (Pearce 2014: 154). The second sphere, of foreign archaeologists working in Italy, is essentially multiform and related to foreign research traditions, methods, and paradigms. That both spheres of archaeology in Italy do not necessarily mix has been explained by Pearce as a result of interests, language, and research schools (2014).

Academic archaeology in Italy is organized by chronological segments. Prehistory includes all periods before the introduction of written sources, although studies of hunter-gatherer societies and early hominids are usually institutionalized as *Antropologia* or *Paletnologia*. Protohistory as a separate study of the Bronze and Iron Ages is a relatively young branch to the discipline tree: it was invented as a new discipline in 1959 as an academic-political compensation to Salvatore Puglisi, who lost the competition for the *Paletnologia* chair at Rome's La Sapienza University to Alberto Carlo Blanc (Peroni 2007: 26; Puglisi's influence on Italian archaeology will be elaborated on below). At present, protohistory is in most universities joined departmentally with prehistory. A further fragmentation in pre-classical archaeology comes in the separate position of Etruscology, which chronologically speaking covers the last part of protohistory including the beginnings of Rome, but differs from protohistory in more art-historical interests and approaches, and also in its focus on written sources (Vanzetti 2002: 36). Etruscology in turn partly overlaps with classical archaeology, which broadly speaking covers the Mediterranean, and importantly in Italy, the Roman world. Of these segments classical archaeology has been pre-eminent in many ways, translated in university positions, funding, and the fact that the regional archaeological heritage authorities (the *Soprintendenze*) are still predominantly manned by Classical archaeologists (Guidi 2010: 14).

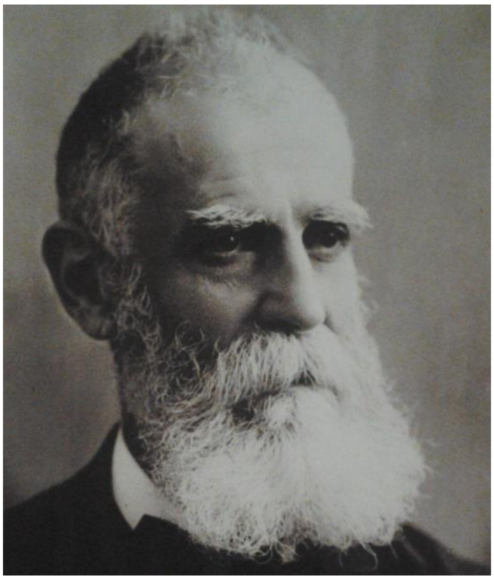

Figure 3.1. Luigi Pigorini (1842-1925).

Despite this dominance of Classical archaeology, the disciplines of *paletnologia* and prehistory have blossomed into many local research traditions, especially when Italy became less isolated after the Second World War. In the 1950's six new university chairs in *paletnologia* were founded: Pisa, Milan, Firenze, Bari, Palermo and Cagliari; a few years later more new departments were opened, amongst others in Ferrara, Siena and Padua. Until the Second World War, Italy had only one chair in prehistory: the one in Rome, inaugurated in 1876 by Luigi Pigorini (1842-1925; FIG. 3.1). This chair was occupied by a sequence of archaeologists working in a culture-historical tradition, or, as Guidi calls it, the 'archaeological tradition' (2000; 2010: 13), with a strong focus on later prehistory and protohistory. This tradition stood in contrast, and in heavy polemic, with the followers of a 'natural science' approach, such as Paolo Mantegazza and Paolo Orsi, which were inspired by French Palaeolithic research of De Mortillet, Peyrony, and Breuil (Broglio 1998). Many of the new post-war Prehistory chairs were occupied by archaeologists from a 'natural science' background, thus institutionalizing this second large tradition in Italian prehistory (notably the departments in Ferrara, Siena, Firenze, and Padua).

Figure 3.2. Renato Peroni (1930-2010) . (photo Istituto Italiano della Paleontologia Umana)

Most protohistoric work in the post-war years was focused on establishing chrono-typologies for the Bronze and Iron Ages, a focus which is still central in Italian archaeology today [3]. Important investigators in this trend were Luigi Bernabò Brea, who excavated the Arene Candide cave in Liguria and the Lipari island settlement, and Etruscologist Massimo Pallottino, who in 1962 presented the still used terminology for Bronze and Iron Age periods[4]. Two scholars from the Rome chair emerged in this framework: Salvatore Puglisi (1912-1985) and Renato Peroni (1930-2010), both of whom would later become *professore ordinario* in Rome. However, inspired by Marxist ideas, they took the discipline a step further by looking for explanatory models for societal dynamics. Puglisi would be the first to focus on a specific chronological period and try to describe its socio-economic structure (the 'Apennine' Bronze Age as a pastoral society, background in rigid German typological archaeology, was the first to offer an explanation for cultural change in Italian protohistory (Peroni 1969). The Marxist influences in Puglisi's and Peroni's work, which set the tone for protohistoric models in the following decades, will be discussed below.

In the field of methodology, Italian archaeology features one specific approach which is of interest for the present study; namely, the topographical tradition. *Topografia Antica* is a typical Italian tradition

[3] For instance, a large part of Italian protohistoric debate in the 1990's was centered on the right nomenclature for pottery styles and specific diagnostic features, and on establishing regional standard typologies for ceramics and bronze objects (Cocchi Genick 1999). In Italy and other European countries, these regional typologies are further subdivided into very specific chrono-cultural groups of objects, the so-called *facies* (Pacciarelli 2001: 19). *Facies* is a concept adopted from geology, describing the specific properties of a body of rock.

[4] Interestingly, Bernabò Brea was not trained as a prehistorian, but as a classical archaeologist, while Pallottino is an eminent etruscologist. Both are among the few examples of scientists who crossed the chronological segment borders.

within Classical studies which entails the location and detailed description of archaeological remains in their landscape setting, but without the explicit methodological framework of field walking surveys in the Anglo-saxon archaeological sense[5], even though the discipline became methodologically influenced by the work of Ward-Perkins and the British School at Rome in Etruria in the 1950s. At the moment, a typical *Topografia* thesis still consists of the complete coverage of a 1:25.000 topographical map sheet, which requires a systematic approach to field visits, but method development itself was never a central focus. Pre- and protohistoric remains were underrepresented in most *Topografia* projects, as the discipline originated from the desire to identify cities and monuments mentioned in historical sources. In the 1960's this resulted in a counter-movement by amateur archaeologists and young pre- and protohistorians, who started to conduct regional mapping projects focusing on pre-Classical remains (Pacciarelli 2001: 12). This movement was especially strong in Etruria, where a group of volunteers called the Gruppo Archeologico Romano documented many pre-Roman surface sites[6]. These surveys often focused on landscape units where such remains were expected, such as hilltops or tufa plateaus, thus exhibiting an explicit topographic determinism or, as Armando de Guio calls it, 'haphazard sampling' (De Guio 1985). These surveys inspired detailed models of protohistoric settlement patterns in Central-Tyrrhenian Italy (Tuscany and Lazio), and surveys in other parts of Italy, such as Pacciarelli's work in the Tropea promontory. From the 1960's onwards, regional studies by classical and medieval archaeologists also emancipated from the *Topografia Antica* tradition, notably by the research group of Riccardo Francovich in Siena. 'Haphazard sampling' is also present in Peroni's work in the Sibaritide, as is discussed below in section 3.2.4.

3.2.2 Theory in Italian archaeology

Figure 3.3. Benedetto Croce (1866-1952).

Guidi (2010) signals localism as a main characteristic of theoretical archaeology as Italian universities maintain their own local traditions linked to their key investigators. This, Guidi states, is the reason why Italian archaeology never embraced a single theoretical paradigm. Instead Italian archaeological thought in the past three decades can be described as a 'pluriverse' of more or less theoretical viewpoints (Guidi 2010: 19, referring to Tosi 1985). Moreover, Italian archaeology in general has a strong practical, not particularly theoretical side, consisting of high-quality data collection, publication, and presentation. This covers mainly rescue work and maintenance of museum collections, both of which form a large

[5] Important names in the Topografia Antica tradition are Quilici and Quilici-Gigli, who in the 1960s revived an ambitious project, the *Forma Italiae*, to map archaeological surface remains in various parts of Italy.
[6] Prominent members of the GAR were Marco Pacciarelli, Francesco di Gennaro, Andrea Cardarelli, and Alessandro Guidi, all of whom would later conduct surveys in other parts of Italy and become key figures in Italian protohistory studies.

part of current archaeological practice in Italy, and ties well into the Italian tradition of detailed material studies.

Guidi (2000) and Terrenato (2000) argue that generally speaking, archaeology in Italy is still strongly linked to a prevailing culture-historical approach. This conservatism can be traced back to two seemingly contradictory factors: the central position of Luigi Pigorini in the ideological climate of Italy right after the unification and the deep influence of philosopher Benedetto Croce (FIG. 3.3) in the early 20th century. First, Pigorini preferred positivism and Herbert Spencer's theory of progressive evolution over Darwinism, which in catholic Rome of the late 19th and early 20th century was not accepted as a valid scientific model. Instead, Pigorini adopted the idea of 'cultural types', with which the past becomes a series of distinct cultures which become more complex under the influence of external populations (Loney 2002: 205). These cultural types are the basis for the cultural *facies* (a distinct set of material properties, often related to a region), a concept which is still commonly used in Italian archaeology (Pacciarelli 2012: 217-220; Ippolito 2016: note 14).

The second factor, the influence of Croce on archaeological thought, is signalled by Guidi as the main cause for stagnation in Italian archaeological theory (Guidi 1987; Loney 2002: 206). An opponent of Spencer's theory of progressive evolution, Croce rejected reconstructions of the past based purely on material remains: in a famous quote, he dares the reader to "become a Neolithic Ligurian or Sicilian in your mind" in order to understand their true history (Croce 1921: 134-35). Important in the diffusion of Croce's 'mentalist', or non-functionalist, theories was their keen adoption by left-wing intellectuals during the 1960's. With their focus on social conflict, a dry processualist analysis of archaeological remains regardless of psychological impulses was unacceptable for the post-war progressive left. Due to the profound influence of Marxist-inspired archaeologists, and with them the rejection of purely functionalist explanations of the past, the direct impact of the New Archaeology in Italy was limited and only gained some influence from the 1970's and 1980's onwards.

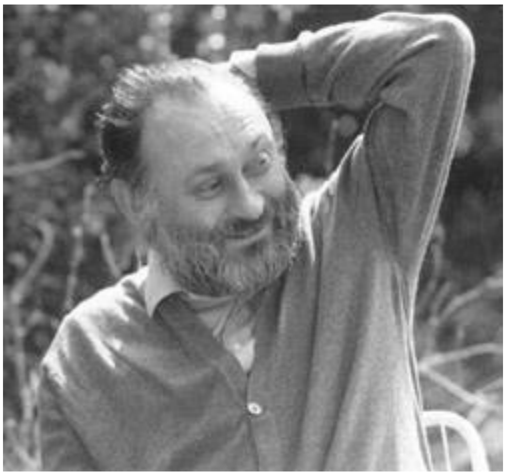

Figure 3.4. Amilcare Bietti (1937-2006) (photo Istituto Italiano della Paleontologia Umana)

Although culture-historical approaches, mixed with Marxist and Crocean ideas, dictated much of the Italian archaeological debate in the second half of the 20th century, some local 'pockets' of processualist archaeology flourished in departments focusing on early prehistory. As explained above, many of the new post-war prehistory chairs were occupied by archaeologists from a 'natural science' background. As Palaeolithic research in Italy had withered during the Pigorini and Fascist years, these new departments were susceptible to scientific developments in France, the UK, and the USA. Among them was the department of Animal and Human Biology at La Sapienza University in Rome, where Amilcare Bietti (1937-2006) taught ecological prehistory and ethnology (FIG. 3.4). Bietti, educated as a theoretical physicist in both Italy and the USA, switched to prehistoric archaeology in the 1970's, where he introduced mathematical and statistical methods to the analysis of prehistoric remains. Influenced both by the research methodology of French Paleolithic specialist Francois Bordes and Anglosaxon processualists, one of Bietti's main contributions to Italian archaeology is hypothesis building and verification. He strongly rejected Crocean 'mentalism', stating that it "goes beyond my comprehension; in some way, these researchers have succeeded in imagining, or understanding, the mental structure of all prehistoric humans, including that of the Neanderthals or even of the Homo erectus, whom we have never seen or met!" (Bietti 1988-89: 224; my translation).

In Italian protohistoric research, processualist approaches have never gained much ground except at universities in the North. At present, the theories and methodologies of the New Archaeology are still strongly present in the Padua school of archaeology, where geology and environmental studies are emphasized (Vanzetti 2002: 36). Guidi remarks that processualist thought is generally pre-eminent in North-Eastern Italy, where it is characterized by a strong interest in Middle Range theory and computer applications (2010: 18). Despite this northern focus, two important processual pockets in southern Italian protohistory departments are represented by Guidi himself, and Bietti's wife, Anna Maria Bietti Sestieri. The latter continued to advocate anthropological research approaches in Lecce, where she recently retired as professor in European protohistory[7]. One of the most prominent protohistorians of her generation, Bietti Sestieri has made a remarkable theoretical development. Initially influenced by the 'Marxist wave' of the 1960s, she now holds a strong belief in market and its self-regulatory potential; for instance, for Etruria she proposes that it was the strong economic position of the Villanovan societies which triggered the development of the city-states (Bietti Sestieri 2005: 20-21). Whereas Bietti Sestieri's publications continue to be very much oriented on anthropological models, such as her work on Mycenaean contacts in the Late Bronze Age (1981, 1988, 1992), Alessandro Guidi, currently *professore ordinario* at Roma Tre, represents the more statistical/quantitative side of processual archaeology (Loney 2002:210).

In addition to these local encapsulations of processual approaches, post-processual archaeological thought was introduced in Italian archaeology without a strong reactive force. This may partly be ascribed to the incompatibility between processualism and Croce-inspired archaeological interpretation, which was signaled by Bietti Sestieri (2000: 215): the New Archaeology never gained much ground because of Italy's particular ideological framework in the 1960's and 1970's; therefore post-processual approaches could be introduced without a strong paradigm schism. Nevertheless, some strong critical notes were expressed towards processual approaches, most notably by archaeologists specialized in funerary contexts. Turning away from the anthropological approach as advocated by Bietti Sestieri in the Osteria dell'Osa cemetery excavations, archaeologists like Mariassunta Cuozzo and Bruno D'Agostino sought new ways to interpret the relationships between material remains and societal structures. Both are protagonists of the 'Naples post-processuallist school', which developed after Iron Age specialist D'Agostino became *professore ordinario* at L'Orientale university in Naples in 1980. Initially, however, D'Agostino's analyses of funerary remains were strongly influenced by the Marxist theoretical approach of Andrea Carandini for the origins of Rome, as well as the philosophical thought of the Frankfurt School of Jürgen Habermas (Iacono 2014: 7). Apart from the Naples school which focuses mainly on the Iron Age, post-processualist thought remains rather limited in Italian prehistory and protohistory (Guidi 2001:10, contra Terrenato 1998: 188-92), and comes mostly from foreign archaeologists (see below).

The 'Rome school' of pre- and protohistory founded by Pigorini features as a central turntable of ideas in Italian prehistoric archaeology. Its influence on Italian archaeology is significant: many

[7] For instance, in her analysis of the Iron Age cemetery of Osteria dell'Osa near Gabii (Lazio).

archaeologists educated in Rome currently hold key positions in universities and *soprintendenze*[8]. Ever since the 1950's and 1960's when Puglisi and Peroni obtained prehistory chairs, the Rome School has been preoccupied with finding socio-economic explanations for archaeological data. Despite prominent processualists like Bietti and Bietti Sestieri, most of these explanations came and continue to come from material-typological seriation approach, albeit since the 1960's with a strong Marxist or Crocean impetus. This left-wing influence on Italian archaeology, as distributed from Rome, will be explored below.

3.2.3 Marxism in Italian prehistory

Marxist philosophy had become fashionable under young Italian archaeologists in the 1960's; to such an extent that Guidi describes it as a more important revolution in Italian archaeology than the introduction of statistics in Paleolithic research, around the same time (2010: 16). Marxism took a particular form in Italian archaeology, fueled by national events and influential political theorists such as Antonio Gramsci. Gramsci was censored under Fascist rule but published his *Prison Diaries* in 1947, in which he stressed that history is not necessarily a result of economic processes, but rather a dialectical result of the interplay between culture and economics, and structure (the forces and organization of production) and superstructure (politics and ideology) (D'Agostino 1991: 57; Renfrew and Bahn 2012: 472). As will be explained below, this dialectical model greatly appealed to young scientists in post-war Italy.

The first seminal work influenced by Marxist thought in Italian prehistory was Salvatore Puglisi's *La Civiltà Appenninica* (1959). It differs from later Italian Marxist-inspired works in that Puglisi was more influenced by explanatory models as applied by V. Gordon Childe than the neo-Marxist ideas which found their way into Italian archaeology in the 1960's and 1970's. Puglisi (1912-1985) sought explanations for the specific circumstances under which the Italian Bronze Age developed, including regional trajectories; thereby he focused on economic behavior and relationships with the environment just like Childe had done in *Man Makes Himself* (1936; translated into Italian in 1952). Puglisi, who became a militant communist after having deserted from the Italian Fascist army in 1943 (Peroni 2007: 25), was the first Italian archaeologist to try and explain cultural change from a socio-economic point of view. In his approach, a 'culture' was not similar to a set of typological characteristics of a group of artefacts (the concept of *facies*, or Pigorini's 'cultural type'), but rather a complex combination of social, economic and productive aspects (D'Agostino 1991: 60-61). Therefore, the typology of material remains was of less importance in his work than in that of contemporary archaeologists.

Renato Peroni (1930-2010), who as a recent graduate worked on some of Puglisi's excavations, was one of these contemporaries who emphasized the use of close material studies as a way to come to a reconstruction of the historical development of past societies. Following a strict methodology of rigorous typological descriptions and seriation of contexts, Peroni tried to come to a better understanding of historical change by stressing political and social structures rooted in access to resources. Marxist focus on materialism and production modes provided a good framework for this approach, as can be seen in Peroni's 1969 paper on exchange networks in the 2nd millennium BC

[8] For instance: Di Gennaro (Chieti), Guidi (Roma Tre), Pacciarelli (Napoli 2), Bietti Sestieri (Salerno), Bettelli (Matera), Levi (Modena). Vanzetti (La Sapienza) is Peroni's scientific heir and very much a central figure in Italian protohistory research, but does not hold a *professore ordinario* position.

(although Iacono (2014) does not see this early work as consistently Marxist). The Marxist influence on Peroni's work can be directly traced to Puglisi and to Ranuccio Bianchi Bandinelli (FIG. 3.5), a famous left-wing art historian to whom the young Peroni was introduced by Puglisi in the 1950's (Peroni 2007:26).

Figure 3.5. Ranuccio BIanchi Bandinelli (1900-1975), receiving a foreign member diploma from the Soviet Academy of Sciences at the Soviet Embassy in Rome, October 1959 (photo Wikipedia).

Ranuccio Bianchi Bandinelli, a member of the Italian communist party, was the democratically chosen president of a cultural society in Rome called the *Amici dei Dialoghi di Archeologia*, which became a central force in the adoption and dissemination of Marxist ideas in Italian archaeology. The members of this group were mostly young scholars who wanted to radically change academic and public archaeology, especially by inter-disciplinarity, an adoption of approaches from related sciences, and building a 'scientific community' (Iacono 2014)[9]. As such the Amici ('Friends'), whose members include some of the biggest names in Italian archaeology today, functioned as a laboratory for new ideas. Most members were trained as Classical archaeologists (including later key figures such as Carandini, Coarelli, and Torelli) but some were interested in the earlier periods (D'Agostino, Guzzo, Vagnetti, Bietti Sestieri). Peroni, with his degree in *paletnologia*, was the only prehistorian in this group. Under Bianchi Bandinelli's presidency, the group launched a new journal called *Dialoghi di Archeologia* in 1967, which functioned as a sort of platform where new, often Marxist ideas were tested. It existed until 1992, having lost its left-wing orientation in later years.

Marxism appealed to the Amici in two different ways. First of all, it provided a more realistic theoretical model for cultural change, which was something traditional, cultural-historical archaeology did not have a sufficient answer for. In culture history, change is often presented as a gradual process of adaption. By contrast, Marxism centers on conflict and antagonism as catalysts for change, especially when these concern the relations of production. As a dialectical model, Marxism stresses that development of conflict can only be understood within the total framework of society, instead of mere parts of it (Johnson 2010: 96). The young archaeologists working in post-war, post-Fascist Italy witnessed that the strong cultural change in motion at that time was far from gradual. Instead, it was accompanied by sudden adaptations in different parts of Italian society, exposing the contradictions and conflicts at the heart of it. Therefore, Marxist philosophy provided a theoretical framework for both the ancient past and the eventful present. This relates to the second way in which Marxism appealed to the Amici: it rejects the divide between academic thought and political action. According

[9] The introduction of quantitative methods in the 1970s, advocated pre-eminently by Roman *paletnologia* professor Amilcare Bietti, can be related to this innovative period in Italian archaeology.

to Marx, and influential Italian philosopher Benedetto Croce after him, scientists are influenced by the current events of their time, and should be aware of this. Therefore, one of the explicit main goals for the *Dialoghi di Archeologia* journal was to bring politics into archaeology.

The profound influence of Marxist philosophy and related ideas from the Frankfurt School of Jürgen Habermas on Italian archaeology can be traced back to the radical Amici years. This influence has resulted in a set of research interests specific to Italian archaeology, which is still current today. First of all, Marxism is a materialist philosophy, and emphasizes the production of goods as a starting point for understanding structures of societies. This results in a stress on material studies as the basis for economic models. Secondly, Italian archaeological thought has firmly adopted Marx' typology of state formations corresponding to modes of production. Thus explanations for the stages in models of socio-political evolution, another principle of Marx' thought, still prevail in the current debate. Elman Service's (1975) influential classification of socio-political organization in four evolutionary stages, band society (Marx' 'primitive communism'), tribe, chiefdom and state, agrees well with Marx' typology of social formations and his evolutionary ideas of human history[10]. Finally, Marx' idea that change arises from contradictions between the forces and the relations of production, has taken firm root in Italian protohistoric archaeology, where significant stress is laid on the catalyst role of power and conflict as defining factors in social development.

Here the prevailing interest of Italian protohistorians in the origins of social stratification, power relations, and the dynamics of conflict and the structural basis of state formation were planted. The lasting presence of Marxist dialecticism can be explained by one of the peculiarities of Italian archaeology: namely that it is strongly linked to the personality of a few key players who dominate the scientific debate. Therefore, Carandini's original Marxist-materialist reconstruction of Rome's rise to power (1979) is as influential as his later rethinking of the model in the 1980's. Similarly, Peroni's Marxist-inspired models for protohistoric societies became institutionalized because Peroni himself became a central figure in Italian protohistory, creating his own 'Peronian' school which includes some well-known archaeologists such as Vanzetti, Bettelli, and Levi. While some of his former Amici colleagues turned away from Marxism in the 1980s, Peroni maintained the old paradigm and in fact inspired a new revival with the publication of *Enotri and Micenei nella Sibaritide* (1994). This publication of excavations at Broglio di Trebisacce and further investigations of the Sibaritide took a strong theoretical position in emphasizing both the social mechanisms behind production, thereby focusing on both the changes in material culture and territorial exploitation, as well as on the opposition of social groups within such production (see section 9.2.4). Despite problems with the ceramic typo-chronologies presented in this book, it is still the starting point for models of societal development and increasing social complexity in protohistoric societies in southern Italy.

The fact that Marx is not dead, at least not in Italian archaeological thought, is illustrated by a publication by Cazzella (a pupil of Puglisi) and Recchia from 2014[11]. Both educated in Rome but never

[10] 'Prehistory' only emerged as a discipline in Marx' time, and Marx did not consider prehistoric societies at all in his theory-building.

[11] The paper is based on a presentation held during a session on European Archaeology and Marxism at EAA in 2008, organized by Italian protohistoric archaeologist Francesco Iacono (currently at Cambridge University). The session was never published as a whole, which the authors interpret as a decline in interest in Marxist archaeology (2013: 192 note 2); the Cazzella-Recchia paper appeared in the periodical of the Archaeology department of La Sapienza University.

official members of the Amici or the Peronian circle, they offer a Marxist reconstruction, enriched with an adapted version of Agency theory, to explain intra-site change at Coppa Nevigata (Cazzella and Recchia 2013)[12]. The connection between Marxism and Agency theory was stressed by two prominent advocates of the latter approach, Dobres and Robb, who quote Marx in their introduction of *Agency in Archaeology* (2000: 5-8). Although both approaches appear to have lost influence in the Anglo-saxon theoretical debate, the Cazzella-Recchia paper illustrates how Marxist ideas stayed *en vogue* in Italian archaeology since the 1950's, and how flexible they are incorporated across different theoretical paradigms until today.

3.2.4 Central sites, topographic determinism and territoriality

Our current knowledge of the protohistory of northern Calabria is strongly linked to the work of Renato Peroni. Not only did he direct the excavations of the settlement at Broglio di Trebisacce for years, he also instigated topographical research into the protohistoric settlement dynamics in the wider region and promoted academic offspring who continue to do research in the area (FIG. 2.8)[13]. Peroni's model for Bronze and Iron Age settlement patterns and increasing social complexity in the Sibaritide, formulated in *Enotri e Micenei nella Sibaritide* (1994) is still the starting point for reconstructions of Metal Age societies in this area. It is a complex model which includes archaeological surface recordings, physical-geographical observations, hypotheses about territoriality, assumptions about subsistence strategies, and a specific focus on emerging elite groups. The content of the Peroni model will be discussed in detail in Chapter 9; here I will deal with its research and conceptual biases.

A main bias in the thought on protohistoric societies in the Sibaritide is caused by pre-conceptions about site location preference. Peroni's model of the dynamics of protohistoric settlement is based on a mere 36 surface scatters (FIG. 3.6). Twelve, including known (excavation) sites, were already reported by P.G. Guzzo in the early 1980's (Guzzo and Peroni 1982), the rest was added by targeted topographical surveys of the La Sapienza team (Peroni and Trucco 1994). The methodology of these surveys is not explained; only the resulting sites are presented, therefore we cannot assess the intensity or success rate of the field investigations. They appear to have been aimed at land units where protohistoric sites were expected, on the basis of earlier topographic studies in Etruria. The result is a dataset of protohistoric surface scatters in particular landscape settings: on capes, plateaus and outcrops, in strategic locations and /or overlooking rivers or agricultural areas. However impressive Peroni's contribution to the study of protohistoric regional developments, the impression arises that Bronze and Iron Age settlement occurred only in very specific geomorphological locations selected for investigation.

Linked to these assumptions of strategic interest and location preferences are assumptions about territoriality and control. Starting with a dispersed settlement pattern of 14 sites in the MBA, Peroni proposes a system of singular autonomous cells, each controlled by a habitation nucleus. These cells, or territorial communities, consist of a delimited geographical unit. The delimitations are found in natural borders, in most cases two rivers, running from the mountainous inlands to the Ionian coast (Peroni and Trucco 1994: 840). The main argument for the application of the rivers as territorial

[12] Cazzella currently holds one of two chairs in Prehistory at La Sapienza (the other is Cardarelli); Recchia is lecturer at the University of Foggia.
[13] The Broglio di Trebisacce research project continues under direction of Alessandro Vanzetti; the team includes former Peroni pupils Andrea di Renzoni, Antonia Castagna, Nicola Ialongo and Andrea Schiappelli. The team conducted small-scale excavations at the EBA settlement of Acri-Colle Dogna, in the southern Sibaritide.

borders is seen in the fact that generally speaking, one protohistoric settlement was recorded between each set of rivers; that some of these cells are ‘empty’ during one or more protohistoric sub-phases is interpreted as a result of settlement development and dynamics over time. However, not all rivers are judged to be large enough to have a proper border function, such as the Caldanelle; and other rivers are interpreted as important strategic routes at the centre of a territory, such as the confluence of the Crati and the Coscile below the plateau of Torre Mordillo (FIG. 2.7). Although Peroni admits that there are some problems with his divisions, for instance in the zone between the Raganello and the Eiano, the model is firmly based on the concept of the naturally defined territory. As a result, this model is interested mostly in the developing relations between the centers of each territory, a process towards centralization of power in the FBA/EIA.

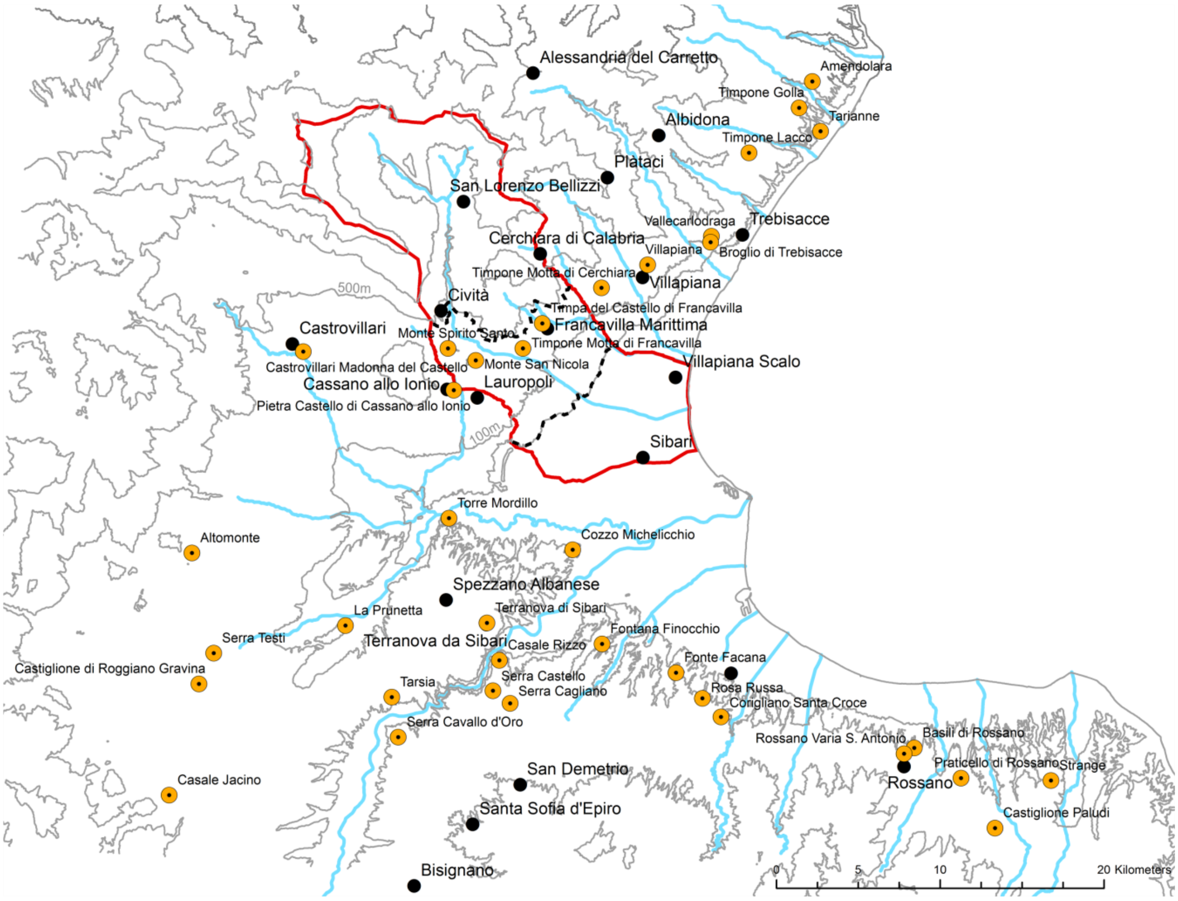

Figure 3.6. The Sibaritide, with the Raganello basin outlined in red. Modern towns are indicated with black dots; sites mapped by the La Sapienza team are indicated with orange dotted circles (after Peroni and Trucco 1994).

A consequence of the focus on territoriality and centralization is a neglect of more ephemeral traces of human activity. Apart from the documentation of ‘minor’ settlements, such small-scale remains are rarely studied in more detail – a bias which occurs not only in the Sibaritide. The ‘minor settlement’ in the Peroni model is a settlement of up to 3 hectares; apart from the hilltop settlement of Timpone della Motta and the Iron Age necropolis of Macchiabate, such dimensions are not reached by the protohistoric surface scatters in the RAP surveys, which typically consist of diffuse ceramic concentrations with a diameter of 10-15 m. Such minimal traces are not included in the Peroni model at all; yet their ubiquitous presence in different landscape parts, and the fact that they form the majority of archaeological remains mapped by the RAP surveys, indicate that protohistoric activity and land use is not limited to concentrated settlements. If we want to understand protohistoric economies, subsistence and land use strategies, we should not only look at the top of the settlement pyramid, but also investigate the traces of rural life.

Material studies

For the Sibaritide, Peroni and his collaborators placed an emphasis on antagonism between different social groups and the access to resources and modes of production as explanatory factors in social change. They interpreted the presence of exotic or rare artefacts, such as imported Mycenaean ceramics, in specific contexts as an argument for the emergence of elites who control the access to such materials. The fact that such rare materials are found in large settlements is seen as a sign for increasing centralization of power and control over production of specific artefacts, concentrated within social groups (not individuals). He further elaborated this trajectory for the large settlements in Apulia, for which he proposed the emergence of a patron-client dependency system during the FBA (Peroni 1969).

The focus on the evolution of social differentiation, expressed in limited access to specific materials, leads to an overrepresentation of such rare materials in the study of protohistoric societies. In the publications of the two most intensively investigated protohistoric settlements in the Sibaritide, Torre Mordillo and Broglio di Trebisacce, a large number of pages is dedicated to imported or imitated foreign wares and other exotic artefacts. By contrast, the study of local hand-made ceramics (impasto) is limited to typo-chronological characterizations of feature sherds, often of fine wares; the large amounts of non-feature fragments are counted and stored, but not studied or published[14]. This results in a strong research bias towards a few specific finds categories, while the majority of archaeological material from protohistoric contexts in the Sibaritide remains unstudied. This focus on fine wares is not specific for the Sibaritide or for Peroni's work, but is common to the Italian archaeological tradition of detailed typo-chronological material studies (see section 3.2.1), as well as to petrographic and chemical analysis of ceramic wares.

The contemporary research projects of the protohistoric settlements at Broglio and Torre Mordillo in the 1980's initiated an impulse in Italian ware studies by a relatively early interest in mineral-petrographic and chemical analysis of different pottery categories. Already in 1981, a small research project was started by J.A. Riley of the University of Manchester to characterize the chemical properties of 36 different ceramic classes found in Broglio through thin slice analysis. A year later, in 1982, an Italian team published a mineral and chemical analysis of 21 impasto samples and 14 samples of depurated and painted wares from the Iron Age necropolis of Torre Mordillo (Carrara *et al.* 1982-83). Riley never published his results, but the samples were studied by Richard Jones of the University of Glasgow, who became involved in the Broglio investigations a few years later. Jones and his colleagues focused mainly on the petrographic and chemical properties of imported or imitated fine ware groups, such as Mycenaean and grey wares (1994: 413). This study of the Aegean and Italo-Mycenaean pottery of Broglio was the start of a long series of publications on an increasing dataset of

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[14] In *Enotri e Micenei* (1994), 81 pages are dedicated to a total of 237 grey Ware fragments found during the excavations between 1979-1985, almost all datable to the RBA (C. Belardelli, pp. 265-346). A further 41 pages is dedicated to mineral-petrographic studies of wheel-turned wares (grey wares, Mycenaean wares, and *dolii cordonati*; Jones *et al.* pp. 413-454). In comparison, all other RBA ceramics (mostly hand-formed impasto wares) are described and analyzed in 79 pages (C. Giardino, pp 185-264). In the publication of the Torre Mordillo excavations of 1987-1990 (Trucco & Vagnetti 2001), the RBA phase as a whole is discussed in 22 pages, whereas 28 pages are dedicated to 280 fragments of Aegean-Mycenaean wares, and another six pages to a chemical analysis of Aegean pottery.

samples from all over the Mediterranean. A complete overview of the Italo-Mycenaean ware analyses was published in 2014 (Jones *et al.* 2014).

Figure 3.7. Two *dolii a cordoni o fasce* from Broglio di Trebisacce, exhibited in the Museo Nazionale della Sibaritide at Sibari.

The studies of Riley and Carrara focused on both impasto and wheel-turned wares, but the substantial work by Jones and his group were centered on the local and imported fine pottery. This bias towards fine wares was partly reversed by Sara Levi, a pupil of Peroni who conducted ceramic studies with Jones in Glasgow. The result of this research, *Produzione e circolazione della ceramica nella Sibaritide protostorica* (Levi *et al.* 1999), is a study of two types of coarse ware, hand-made impasto and *dolii a cordoni o a fasce* (FIG. 3.7) with the aim to reconstruct production processes and exchange systems. A total of 163 new ceramic samples were obtained from 22 sites in the Sibaritide and the Materano; the majority of these (136) are of impasto wares, 20 *dolio a cordoni o fasce* fragments, 6 hut loam, 1 loom weight and one oven fragment. Nevertheless, Levi's study of handmade pottery remains an exception in Italian protohistoric material studies, and domestic handmade wares remain studied far less than fine wares, especially on regional scales.

3.2.5 Hidden landscapes, peripheries and mountains

The present study aims at coming to terms with small-scale, poorly preserved, and ephemeral archaeological surface remains. Such remains are often obscured by more visible, better preserved or even monumental traces of past societies, and as such form a marginal, poorly understood section of the archaeological record. They often remain 'hidden' behind studies of more visible remains, which causes a tremendous bias in our reconstructions of the past (Bintliff *et al.* 1999; Bintliff 2011: 15-19). Since then, the concept has received attention and a number of research projects were initiated to study remains which are concealed for various reasons (see for an overview the contributions of the proceedings of the 2005 symposium on 'The Hidden Landscapes of Mediterranean Europe', Van Leusen *et al.* 2011). Despite this awareness the bias still exists in many archaeological datasets, especially in field walking survey data.

The methodology of archaeological field walking dictates that areas are investigated where archaeological remains can be expected to be found on the surface. This implies an a priori focus on agricultural areas were ploughing exposes near-surface deposits. Since agricultural mechanization started in Italy in the 1970's, this has resulted in an abandonment of small fields and areas with poor infrastructure, such as the inlands of the peninsula. This, in turn, has led to an underrepresentation of such abandoned agricultural areas in archaeological survey data. Moreover, areas which were never under cultivation, such as strongly accentuated terrain or forests, generally remain uninvestigated because of their inaccessibility.

A further bias towards easily accessible areas is furnished by a focus on historical periods in Mediterranean landscape archaeology. Urbanized societies tend to be centered on lowland plains and broad open areas such as valley bottoms, therefore studies of such societies are often interested in these landscape parts (Van Leusen *et al.* 2011: xiii). Although pre- and protohistorians are not affected by this lowland bias – traditionally, prehistoric remains are sought for in remote areas such as caves – their disciplines are poorly represented in survey archaeology, or have hardly developed landscape approaches themselves. In Italy this is illustrated by the adoption of the judgmental survey approach of the *Topografia Antica* tradition by protohistorians, including a focus on lowlands, seen for instance in Etruria and the Sibaritide (see section 3.2.4).

The mountain bias is spread unequally across Italy. While in central and southern Italy the mountains remain largely uninvestigated, Alpine archaeology has developed into a sub-discipline in its own, practiced in universities in and around the Alps but also further away [15]. In northern Italy, archaeological superintendences, museums and universities such as those in Bolzano, Trento, and Ferrara have strong research interests in the Italian Alps. These includes the long-standing work of Paolo Biagi on prehistoric occupation and climate reconstruction of high-altitude areas (Biagi 1994, 1998; Biagi *et al.* 1994), surveys of high-altitude areas such as those of the Val di Sole and Val di Fiemme (Carrer 2013), excavations at rock shelters such as Monte Terlago (Dalmeri *et al.* 2011), and the ongoing research of the Chalcolithic ice mummy Ötzi. Journals specialized in high-altitude areas such as *Preistoria Alpina* and the *Journal of Glacial Archaeology*, and the inauguration of a special commission for 'Mobility in mountain environments' within the UISPP (International Union of Pre- and Protohistoric Sciences) attest of the interest for the archaeology of high altitudes.

Alpine archaeology has a strong methodological focus, rooted in the challenges of investigating remote areas. This has resulted in further development of remote sensing and survey techniques aimed at detecting remains of high-altitude seasonal exploitation, but also in a strong ethno-archaeological component (Carrer 2012; Lambers and Zingman 2013). Furthermore, a strong interest in environmental data is invited by the specific conservation circumstances of high-altitude sites in sensitive but often undisturbed environments. The cycles of glaciation and glacier retreat affect human occupation of high altitudes in the long term, so that alpine research tends to be focused more on the longue durée conjunctures of climatic change than 'lowland' landscape archaeology projects (Finsinger and Tinner 2006; Tinner *et al.* 2003; Walsh *et al.* 2006). Despite these impulses, the multi-disciplinary approaches and research network developed for archaeology in the Alps have only minimally reached, or inspired, investigations in other mountain ranges.

3.3 Site formation, post-depositional effects, and land use histories

The formation of the archaeological record is not just the result of past human activities, but also of processes that happen after these activities. These may be natural, anthropogenic, or a combination of both. The effects of these processes may distort, cover or even obliterate archaeological remains, but they can also create what appear to be 'sites' (Banning 2002: 72; Terrenato 2000: 66). Depositional processes can thus cause biases in the detected data, in the sense that archaeologists may attach anthropogenic meaning to spatial patterns which are actually the result of post-depositional cultural or non-cultural processes. Most survey projects are aware of this, but the level at which such biases

[15] Notably, Zürich and Bern (Switzerland), Innsbrück (Austria), York (UK) and Stanford (US).

are actively investigated varies. In this section, the effects of natural and human-impact processes on the archaeological record will be explored as background to the RLPI field methodology (Chapter 4). These processes were a central focus of the RLPI project, which aimed at practical mitigation of such distortion effects in the detectability of protohistoric remains.

3.3.1 Background

Ever since the New Archaeology, it has been recognized that the archaeological record is patterned, because human behavior is patterned (Binford 1962). This essential concept allows landscape archaeologists to infer land use strategies and settlement patterns from survey data, and to reconstruct the human behavior that resulted in the deposition of artefacts. However, in the same theoretical context it was also quickly recognized that such patterning is not necessarily the simple product of single human acts in the past. Ethnographic studies and experimental work have shown that material remains are subject to a wide range of human actions even after they are disposed of, and that these actions also cause patterning. Similarly, natural sedimentation processes are also systematic and like human behavior they occur on different scales: within habitation contexts but also in wider zones.

A scientific debate about archaeological sampling in the 1970's resulted first in the recognition by Cowgill of the discontinuities between the three stages of material deposition of interest for archaeological research: 1) the events in which artefacts are used, 2) the artefacts deposited by those events, and 3) the artefacts that survive and are found by the archaeologist (Cowgill 1970, Schiffer 1983: 677). All three stages are subject to material selection caused by human action or depositional processes, but Cowgill also identified the third set to be the result of the skills and concepts of the archaeologists – a point which was made above in section 2.1. In a further elaboration of Cowgill's concept, Collins added the selective forces and artefact reduction in each of these stages (or statistical populations), and added a few more stages. Furthermore, he made it clear that each of the depositional stages is a potentially biased sample from a previous potentially biased sample (Collins 1975). Therefore, we have to be very careful in extracting meaning from archaeological artefacts in their present-day contexts: essentially, the archaeological record is in itself a complex of biases.

Nevertheless, if human behavior and natural sedimentation processes follow certain rules, it should be possible to retrace these if we want to come to a reconstruction of what actually happened at a certain point in time. The key to such retracing is the understanding of site formation processes. This point was stressed by Schiffer, who argues that deposition biases show regularities and that they thus can be predicted (Schiffer 1983: 678). To do so, archaeological deposits and data should always be investigated for traces of transformation. Broadly speaking, such transformations can be divided into two realms, the anthropogenic and the natural, although any combination of both is possible; for instance, in soil deposition in terraced landscapes or altered hydrology as the result of damming for reservoirs. Below, I will give an overview of site formation processes, after a short introduction to the life cycle of artefacts in human hands.

3.3.2 Life histories and artefact biographies

Like living things, artefacts and structures also have a life cycle that follows broad stages of conception, birth, life, death, and disposal (Appadurai 1986). Evidently, some objects have a longer lifespan than others: a house can be used for a generation, but also much longer. Some artefacts travel large distances during their 'life' and pass through many hands. In favorable circumstances it is possible to retrace the use histories of artefacts and reconstruct the life phase at which they entered the archaeological record, but also the events that preceded their disposal. These events are rarely coincidental, and thus the artefact biography can be used as a witness of patterned human activity. This implies that the isolated surface find for which we do not have a ready explanation is very unlikely to be the pot that fell of the donkey's back. Even if such scenarios cannot be excluded entirely, there is a myriad of possibilities that should be explored first, including the 'afterlife' of the artefact (see section 3.3.4 below).

Figure 3.8. Apsidal hut with abandoned inventory, excavated at the EBA village of Afragola (Campania, Italy). From Laforgia *et al.* 2009.

Since archaeological remains are the witnesses of the death and afterlife of cultural products, more information is needed to elucidate the activities that created them. Ethnographic studies, alongside experimental work and use-wear analysis, have proven to be invaluable for the reconstruction of the social dimensions of production, daily routines, specific use patterns, and discard behavior. They also confirm how essentially fragmentary the archaeological record is, since many objects do not survive discard or deposition. Therefore, ethnography is essential for countering the preservation biases inherent to archaeological remains.

Artefact biographies are important for archaeological field walking survey since they add an extra dimension to spatial material disposal patterns. These patterns are not just the product of the primary activities for which specific artefacts were intended, but also of secondary and even tertiary anthropogenic processes. In a review of processes that affect the preservation of habitation contexts, LaMotta and Schiffer (2001) have shown that what archaeologists eventually recover from inside a structure does not necessarily have to have been used there; moreover, it may be the product of many different life phases in the structure's biography; in short, "house assemblages cannot simply be interpreted a priori as tool-kits or 'household inventories' related to activities of the habitation stage" (2001: 20). Furthermore, Binford's 'Pompeii Premise' (1981) has to be taken into account: it is highly unlikely that archaeologists find an active habitation context in a frozen moment in time. One of the few prehistoric examples of such a frozen moment is the Campanian EBA settlement of Nola-Croce di Papa, the so-called 'Bronze Age Pompeii' which was buried under the ashes of a Vesuvian eruption (the Avellino event, ca. 1900 BC). Yet even in this extreme case, it can be argued that the life history of the Nola settlement ended in a very hasty abandonment before it was buried under meters of volcanic debris: its inhabitants managed to flee, because no skeletal remains were found in the houses, and they possibly took some portable objects with them. However, they did not have the time to take their storage or set free the pregnant goats which were found attached to a small fence (Albore Livadie *et al.* 2011: 163). Similar hasty abandonment scenes are known from other EBA villages nearby, such as Afragola (FIG. 3.8; Laforgia *et al.* 2007, 2009)

3.3.3 Deposition, abandonment, and reuse

In less extreme situations than Nola or Pompeii, human activities during and after abandonment can have considerable influences on the preservation of settlements. According to LaMotta and Schiffer (1999), the life history of, for instance, a house floor can be divided in three stages – habitation, abandonment, and post-abandonment[16] – each of which is affected by accretion and depletion processes. In the habitation phase, accretion occurs as the primary deposition of artefacts on the floor, whereas depletion describes the intended or accidental removal of artefacts from the place where they were used, or even their removal from the house altogether.

In the habitation phase, structures and settlements are regularly cleaned and reorganized. Ethnographic studies show that cleaning occurs regularly, and that this has a major size-sorting effect on artefact remains. Small artefacts are likely to remain behind as primary deposits within structures or activity foci, whereas larger objects will be cleaned away to end up in a secondary refuse heap. The systematic nature of this effect in repeatedly used activity foci was first recognized by McKellar, and it is known as the McKellar Hypothesis (1984). Schiffer notes that in single-use locations such systematic cleaning does not have to take place, and large fragments can remain lying around (1984: 679). Reorganizations of inventories also take place, and artefacts may be moved around the habitation from season to season (see also Chapter 8 for ethnographic observations of mixed agricultural communities).

In the abandonment phase, decisions are made as to which objects are taken to a new location (depletion), and which are consciously left behind (accretion or accumulation). A number of ethnographic studies have been conducted on such curation, or translocation, processes and their effects on material assemblages (Binford 1973; Hayden 1976; Cameron and Tomka 1993, Schiffer 1996). Although the behavior varies, decisions are often made by simple practical considerations: heavy and broken objects are more likely to be left behind than portable, reusable and rare artefacts. The mechanisms behind these considerations can be summarized by G.K. Zipf's Least-Effort principle, which states that human priorities in cases such as translocation are guided by the attempt to maximize the result by exerting minimum effort (Zipf 1949). In a more nuanced view, LaMotta and Schiffer argue that the decisions behind translocation of objects are guided by replaceability, transport costs, and the conditions of abandonment (1999: 22). These priorities would thus have been very different for the inhabitants of Nola than for Dutch Iron Age farmers of the 'wandering farmsteads': the latter would doubtless have taken the goat along[17].

However, there are also many examples of ritual activities marking abandonment of settlements. In terms of artefact biographies, such activities can be interpreted as death rituals. There are many examples of indigenous peoples in North America who have been observed to burn houses after

[16] I would also add 'construction', since the actual surface of a house floor affects the preservation of materials on and in it.

[17] The 'wandering farmstead' is a common phenomenon in the Bronze and Iron Ages of NW Europe. It implies that after the lifespan of a farm has ended by exhaustion of the surrounding fields or the collapse of the structure, its inhabitants move to a location nearby to erect a new structure. This results in a sequence of moving farmsteads within a region. A discussion of the concept is given by Arnoldussen (2007), who refuses it as a model for protohistoric settlement pa tterns (see also Arnoldussen and Jansen 2010).

abandonment (Cameron 1990; 1991), but there also is evidence that such rituals occurred in Iron Age Britain and Neolithic Italy (Shaffer 1993, Robb 2007: 88; Muntoni 2004; Muntoni *et al.* 2009). Ethnographic studies in North America have shown that house burning may also be part of the death ritual of a deceased person: for instance, the Navajo, Cocopa and Quechan have been recorded to burn down deceased persons' complete household inventories along with the house in which they lived (LaMotta and Schiffer 1999: 23; Kent 1984: 140). Apart from ethnographic observations, part of the evidence for the intentionality of the burning of structures comes from experimental archaeology. Experiments in Butser Hill (UK) and Lejre (Denmark) have shown that it is quite difficult to burn a complete wattle-and-daub or adobe structure, and that repeated firing is needed to burn down such buildings completely (Rasmussen 2007; Harrison 2013; De Neef and Van Leusen 2014; 2016). Further rituals may occur after the burning, such as covering the burnt remains with earth or refuse, or adding non-domestic objects (Montgomery 1993). Such extensive abandonment activities can therefore hardly be fit into Zipf's least-effort model.

The afterlife of a structure or settlement starts with post-abandonment human activities, which can result in tertiary deposits. These may include reuse of a specific location for a new settlement, but also for refuse heaps which were transferred to the location of abandoned structures. Some cultures also have been recorded to use abandoned structures as graves, or to mark their locations with objects which would not have been used in them. Such rituals may occur for instance in societies where children are buried inside habitation structure (Radcliffe-Brown 1933: 109). In an extended view, archaeological excavation is also a post-abandonment activity affecting the remains of a feature, and so is grave robbery or scavenging (Gorecki 1985). Schiffer mentions the proximity to modern roads as a factor in tertiary human activities, as easily accessible sites are more likely to be visited and disturbed by pot or lithics hunters (Schiffer 1983: 692).

3.3.4 Environmental processes

Environmental processes affecting the remains of human activity occur on different scales, from tectonic movements to very local chemical effects. Therefore, the study of these effects should incorporate observations both in the landscape range and in local circumstances. Below is a short overview of various natural processes which may affect archaeological deposits.

Broad scale tectonic movements can have effects on archaeological deposits. Earthquakes can cause severe alterations in deposited sediments, for instance by change in inclination, which in turn may result in different soil erosion patterns. Less dramatic, but with potential large impact in the long term, is tectonic uplift. The African-European fault line which crosses Southern Italy causes uplift in the Sibaritide, an effect which can be seen in the dramatic limestone slabs of Timpa San Lorenzo and in the stepped appearance of the marine terraces south of the Raganello (FIG. 3.9). The uplift of the marine terraces has been estimated to have been 0,98 mm/yr since the Eemian (MIS 5). The terraces formed during MIS 5c, Cucci's T1 phase, now have elevations between 75-80m asl (Cucci 2004: 1399-1400; Feiken 2014: 26) The oldest and highest marine terraces, Cucci's T5 phase, are found at approximately 650 m asl near Trebisacce and Lauropoli. They are tentatively dated to MIS 15 (0,6 Ma). Cucci concludes that the average uplift during the past 124,000 years, and possibly 600,000 years, has been ~1 mm/yr.

Figure 3.9. Monte San Nicola, a marine terrace formed in Cucci's phase 4 (Cucci 2004), seen from the north. Note the deep erosion scar in the slope to the left.

Soil movement occurs in complementary processes of depletion (erosion) and accumulation. In mountainous areas such as Calabria these processes are mainly caused by water and gravity (Feiken 2014: 29), but other factors such as wind and glaciation can also play a role18. Soil movement to lower areas may occur in three different processes: colluviation, alluviation and accumulation. Colluviation occurs in areas with thin soils where soil aggregates are transported downslope by rainfall, ploughing, or surface run-off. The result is a loose, non-stratified, ill-sorted re-deposition of soils at the base of a slope. Alluviation is caused by hydrological patterns and results in well-sorted sediments. Accumulation is caused by a process called mass wasting, a general term for downslope movements caused by gravity without the assistance of water, ice or wind (Summerfield 1991: 167). There are different mechanisms behind such movements (for an overview see Feiken 2014: 29). Such movements occur ubiquitously in Calabria, most notably rock fall, creep erosion and tillage erosion. Archaeological remains can become buried by such soil movement processes, but also be moved or destroyed as a result of erosion. Both mechanisms cause a bias in the preservation, and thus detectability, of surface scatters.

Alluviation is a major process in the lower Raganello basin and the coastal plain. In these lower parts of the landscape, sedimentation and subsidence strongly influence the preservation and recovery potential of archaeological deposits. The Sibari plain is a sinking (subsidence) area that has gradually filled in since the Late Pliocene (see Feiken 2014: 26-27 for a discussion and references). Subsidence is caused here by tectonic movements and by the compression of sediments under their own volume. The subsidence of the Sibari plain has been estimated at 3 mm/yr, with local outliers at 4,4 mm/yr (Bellotti *et al.* 2003-2004: 123); Feiken mentions that this process accelerated in the 20th century due to land reclamation and draining. Proof for this acceleration rate can be seen in an IGM datum point set up in 1971 in the plain, which subsided 20 cm in twenty years. The largest contribution to the infill of the plain comes from river Crati, which approximately 26000 years ago started to form a delta along the coast (Ricci Lucchi *et al.* 1984). The average progradation of the delta has been estimated to be

[18] Aeolian displacement hardly occurs in Calabria as the wind force is generally too low (Torri *et al.* 2006: 245; Feiken 2014: 28).

between 0,92 to 2m/r. River Raganello has formed an alluvial fan at the transition between the plain and the marine terraces since the final phase of the Pleistocene. Remainders of fluviatile terraces can be seen along the foothills: for instance, the Timpone della Motta and part of Contrada Portieri consist of such conglomerate banks. Evidently, these sedimentation and subsidence rates have had major effects on the recovery of possible archaeological remains in the coastal plain: not only are pre- and protohistoric remains buried underneath meters of alluvial sediment, the compression caused by the volume must also have caused considerable transformation on deposited artefacts.

On a much smaller scale, local hydrological processes can affect the deposition of anthropogenic materials by redistributing objects and sorting objects by size. Fluvial force can realign artefacts to their longitudinal axes and displace small fragments, whilst large objects remain in place. Hydrology and ground water fluctuations can also abrade materials and cause cracking, crumbling and exfoliation; effects which are potentially severe on hand-made protohistoric pottery but also on bone. Further effects of water content changes in soils are shrinkage and swelling in soils with a high clay content. In dry, hot seasons the water locked between clay particles evaporates and causes cracks, in which larger components such as stones and archaeological artefacts can be displaced. In wet seasons these cracks are filled up again due to swelling, which in turn may cause material abrasion due to increased soil density. Shrinkage and swelling are common processes in smectitic clays, which occur in the Raganello basin in Contrada Damale and the Maddalena catchment (Sevink *et al.* forthcoming; Feiken 2014).

Other local formation processes consist of chemical alterations, bioturbation, and the impact of animals. Geochemistry is progressively being applied in archaeological detection, by detection of specific elements such as pH (phosphate) or Hg (mercury) as traces of certain materials (Cuenca-Garcia 2013), but chemical techniques can also be applied to describe preservation conditions. The complex interplay of pH, temperature, moisture, bacteria, and chemical composition of soils can induce material deterioration in deposited artefacts. As a result, ceramics can be subject to chemical weathering, patinas can form on stone artefacts due to leaching, and bone can dissolve in acidic soils (Schiffer 1983). Furthermore, bioturbation or intrusions by small animals, insects and roots causes artefacts to be displaced within soils. Another alteration effect is caused by scavenging, digging and gnawing by carnivorous animals, especially in recently deposited refuse. Schiffer also notes that carnivores may influence the composition of anthropogenic deposits, notably those in caves, by bringing and storing their prey.

Grazing and trampling by animal herds also have large effects on soil density and compaction, especially in shallow soils. Trampling has an effect on the fragmentation, distribution, orientation and dip of artefacts, but it can also influence the compactness and permeability of a deposit. Grazing can result in bare patches of soil, which then become susceptible to erosion. Trampling by animals can be a natural process but it can also be a component of human land use histories (see below).

3.3.5 Cultural processes and land use histories

Land use can have far-reaching impact on the preservation of archaeological remains. As in the environmental processes discussed earlier, the cultural processes caused by human activity can have impact on very different scales. They are influenced by political, infrastructural and agricultural regimes.

Figure 3.10. Site RB121 at the foot of the Timpa Sant'Angelo (San Lorenzo Bellizzi, uplands). The tarmac road cuts the debris slope on which the Bronze Age site is located.

On a large scale, borders, rules and access rights influence human presence. Some parts of the landscape may have been out of bounds for long periods because of restrictions or ownership, but religious beliefs may also have caused certain access taboos. The latter are well-known in mountain areas such as the Himalayas or the Andes, where mountains are believed to be the seat of the gods and thus a taboo for humans. Thus far we have no evidence that mountains were worshipped in Italian protohistory, but there are symbolic depositions near springs and water courses that indicate that natural places played a role in belief systems, and that special access rules may have applied (Whitehouse 1992). Ownership can have an effect on the exploitation of large areas; for instance, in large estates which were kept for hunting[19]. Historical documents record the extent to which Church-owned forests were accessible as common grounds for villagers to herd their pigs. Similar large-scale regimes apply to the Medieval *Dogana delle Pecore*, a long-distance transhumance system between Apulia and the Central Apennines which had fixed routes, toll control, and animal enclosures for communal use (Veenman 2002). The exploitation strategies for the Italian inlands are further discussed in Chapter 7.

Related to these regional exploitation regimes are formation processes caused by infrastructure and quarrying. The direct impact of artefact hunting by casual visitors on sites close to access routes was already mentioned above. Routes through inland areas usually follow the most logical paths, guided by least-cost mechanisms or access to necessary resources on the way, such as water and shelter. This means that such routes are likely to have been used in historical or archaeological times, too, but also that traces of earlier use may be obscured by path erosion or trampling. Modern infrastructural construction such as the creation of tarmac roads, bridges, hairpin bends and tunnels have large impact on local topography. There are many cases of archaeological sites being disturbed by infrastructural works; in our own research area the two upland sites RB130 'Mandroni di Maddalena' and RB121 'Timpa Sant'Angelo' are partly damaged by respectively a hiking path and a tarmac road (FIG. 3.10). Such construction involves the removal of soil and depositing it elsewhere; if archaeological remains are involved these thus become displaced and may potentially cause an irretraceable translocation bias. Quarrying is even more damaging to local topography since it usually involves the large-scale removal of partial or complete landscape units. However, the radical effects

[19] For instance the Hagengebirge, south of Salzburg (Austria) is still very remote: it was for centuries the private hunting property of the Archbishops of Salzburg, and thus has no path infrastructure. Today the family Piëch (part owners of Volkswagen-Porsche) still denies public access to the Blühnbachtal on the southern border of the Hagengebirge.

of road construction and quarrying can have positive side-effects: they can also result in the discovery of deeply buried archaeological deposits such as prehistoric activity areas, and so contribute to the deconstruction of detection biases. The EBA village of Nola-Croce di Papa mentioned earlier, for instance, would not have been found if the local authorities had not mandated the construction of an 8 m deep parking garage.

On a similar scale, human impact can be seen in the effects of agriculture. Controlled plant cultivation demands a systematic annual cycle of field preparation, sowing, weeding, harvesting and various soil improvement methods such as rotation systems and manuring (see section 8.2 for a discussion of exploitation regimes). Taylor (2000: 16) distinguishes three preparatory activities to make arable land ready for crops: ploughing, subsoiling or panbusting, and land drainage. Ploughing can be divided into two principles: mouldboard ploughing and tine-and-chisel ploughing. During mouldboarding first the soil is cut and then turned over by the forward movement of the mouldboard, so that the base of the plough zone becomes exposed (impacting typically on the upper 30-35 cm). Tine-and-chisel ploughing does not invert the soil, but breaks it up by forward force (impact typically 25-30 cm). Present-day farmers in Calabria often also add a mechanical deep plough cycle to their fields, typically once every 5-7 years, during which depths of up to 80 cm can be reached. Subsoilers are similar to tine-and-chisel ploughs, but their aim is different: by shaking up the soil at greater depth (35-70 cm), they are applied to break compact layers to improve drainage and aeration. Shallow-depth activities such as harrowing affect only the uppermost part of the surface (5-10 cm).

Ploughing affects deposits that lie within the reach of the specific plough employed, which is often only the upper part of archaeological stratigraphy. Considering the complex deposition processes during a habitation's life cycle (see above), it is evident that ploughed-up remains consist of an aggregate of durable remains from various deposition phases, and thus a mix of biased samples from potentially biased previous samples (Haselgrove 1985: 16; Taylor 2000: 17). Furthermore, repeated ploughing causes further transformation of the artefacts that have entered the plough zone. Taylor divides these transformation processes into attrition (destruction) and displacement (movement) mechanisms. Both mechanisms cause new patterns in the composition of artefact assemblages (2000: 19). Attrition can occur as mechanical abrasion and breakage, but also as the complete destruction of sensitive materials such as bone. Abrasion is especially strong in ceramics fired at low temperatures (600-800°C), such as hand-made impasto wares common to Italian protohistory.

Artefact displacement effects due to cultivation have been studied by a number of researchers over the years (Dunnell and Simek 1995; Terrenato and Ammerman 1996). Some of these focused only on a specific material category, such as lithics (Rick 1976), others have done experimental work on movement of assemblages under specific regimes (Odell and Cowan 1987). As Taylor observed, many of these experiments have inconclusive outcomes because of their flawed methodology (2000: 23). Like in the house burning experiments mentioned earlier, the Butser Farm Research project in the UK provided useful insights due to reproducible tillage experiments with planted proxy sherds. These experiments showed that agricultural practice with alternating plough directions will move artefacts around, and that they will gradually disperse (Yorston *et al.* 1990). In inland areas of southern Italy, where ploughing is usually conducted only across the slope, such displacement is likely to occur in one direction (Ammermann 1985; 1995).

Soil loosened by ploughing and not held together by plant roots is more susceptible to movement caused by rainfall, heavy wind, and gravity-induced mass movements. The relationship between erosion and anthropogenic activities has been attested in several regions in Italy, especially in the study of river sedimentation. There is evidence for an increase in river aggradation from 4000 BP, around the time when agriculture intensified in EBA communities (Feiken 2014: 31). The link between increased agriculture and heavy alluviation rates has been put by the Biferno Valley survey in three distinct phases: a Neolithic-Bronze Age phase, a Late Samnite-Roman phase, and a 20th century one related to agricultural mechanisation (Barker and Hunt 1995: 156). Barker has argued that the uplands of the Biferno Valley (Molise) only became attractive for systematic exploitation at the end of the Neolithic, when the dense forest vegetation changed due to climate change (Barker 1995, see also section 9.2.2). Similar observations have been made for Greek prehistory (Halstead 2000; Bintliff *et al.* 2006). In the Sibaritide, such acceleration in the sedimentation of rivers Crati/Coscile and Raganello has been attested for the Roman period onwards, until ca. 450 BP (Attema *et al.* 2005). Attema *et al.* estimate the sedimentation rate during this period at 0.5 cm/yr, a steep increase from the average 0.03 cm/yr estimated by Belotti *et al.* (2003-2004: 123) for the past 2700 years (Feiken 2014:31).

In recent years, geo-archaeologists have turned away from singular explanations of increased alluviation by either increased human exploitation or climatic fluctuations. Bintliff *et al.* (2006: 672) argue for a more integrated approach in which both factors are combined to model landscape change by erosion and alluviation. Feiken (2014: 32-33) notes that climate changes may have played a less important role than often acknowledged in such models, and stresses that erosion should be studied as a local process, and not be generalized to a landscape scale. First of all, erosion may not occur at all in specific locations because any soil was already eroded during previous phases. Secondly, there may be a delay of centuries or even millennia between the actual onset of soil movement and deposition in river basins, depending on steepness and local slope processes. And thirdly, there may be local geomorphological or anthropogenic thresholds that cause a balance in the deflation and alluviation of soils. A good example of this is terracing, a common practice in erosive landscapes, which decreases the effect of downslope movements. However, when terraces are not maintained anymore, the local reservoirs behind them may rapidly erode, causing delayed alluviation. The effect of terraces on the archaeology of Mediterranean landscapes will be discussed below.

3.3.6 Terraces, banks and lynchets

Terraces, banks and lynchets are three distinct forms for the management of slope processes (FIG. 3.11). The word 'terrace' is commonly used for all types of reinforced structures, traditionally consisting of a dry-stone wall erected to stop downslope soil movement. However, a distinction can be made between erected structures on top of an uninterrupted slope, which is the classical terrace in the strictest sense of the word, and reinforced interruptions of the natural slope (Ruiz del Arbol Moro 2001: 201). This second type is usually referred to as 'bank' (*banco* in Italian, *bancal* in Spanish). Lynchets, on the other hand, are not reinforced: they are local soil accumulations downslope of a repeatedly ploughed area.

Terraces, banks and lynchets are characteristic features in intensively cultivated sloping landscapes such as the Mediterranean. Terracing turns natural slopes into manipulated ones (Frederick and Krahtopolou 2000: 790), which affects the preservation of archaeological remains in several ways. First of all, archaeological deposits may become buried under local basins of alluvial material held by the terrace. Such deposits are potentially well-preserved, but can also be difficult to detect as terrace accumulations grow. Secondly, soils at the foot of a terrace tend to erode away almost completely because no new material arrives from upslope. Archaeological deposits in such locations are therefore more susceptible to erosion than locations on unaltered slopes. A third effect is the damming of eroding material by a terrace. Such displacements can result in new archaeological 'sites' in reservoirs trapped by an obstacle. The accumulation processes in terraces vary between different construction types (see Frederick and Krahtopolou 2000: Figure 6.3 and Table 6.2 for an overview of hypothetical effects of terrace construction on the preservation of soil stratigraphy).

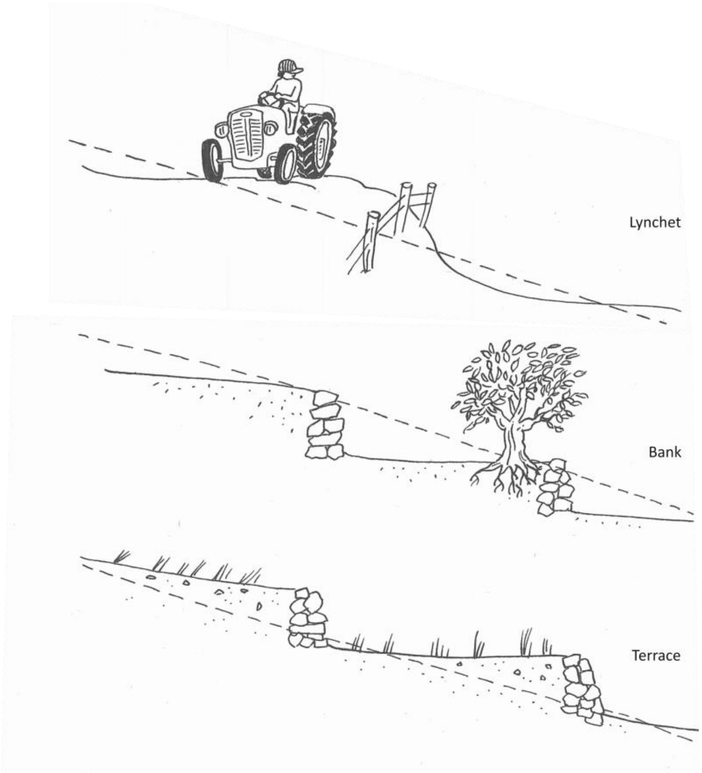

Figure 3.11. Schematic representation of lynchets, banks, and terraces. The dashed line indicates the original angle of slope.

There is a vast literature on Mediterranean slope management, in which archaeological, culture-historical and geomorphological aspects are highlighted, yet the dating of terraces remains difficult (Bevan and Connolly 2011). Typo-chronologies are notoriously complicated by the variety of technologies and strategies. Banks as part of platforms for building constructions are attested in Italy from the MBA onwards; for instance, in the settlements of Sorgenti della Nova (Negroni Catuccio 1995; Dolfini 2013) and Broglio di Trebisacce (Peroni and Trucco 1994). Terrace building may also have started in the MBA (French and Whitelaw 1999: 173-75; Frederick and Krahtopoulou 2000: 80), but earlier dates have been argued for terraces and field furrows on Malta which can be associated with the Neolithic temples (Sagona 2015: 115-133). C14-dates are often obtained from wooden construction parts or wood trapped in the terrace infill, but such dates are potentially uncertain due to old-wood effects. Advances in OSL dating make it possible to date materials trapped in terrace reservoirs more accurately (Yuval Gadot, pers.comm., September 2015), but this gives at most a *terminus ante quem* date. Dating of lichens attached to terrace elements is a promising option, assuming that they formed not long before or after the structure was erected (Whitelaw 1991; Given *et al.* 1999). There is evidence of Bronze Age terraces on the Greek mainland and the Aegean islands (Van Andel *et al.* 1997: 48; Bevan 2002: 232; Bevan *et al.* 2003).

Studies of terracing in Mediterranean archaeological contexts are often tied into studies of erosion, site preservation and sedimentation histories, crucial topics for regional archaeological studies and field walking surveys. The earliest recognition of the long-term impact of terracing on Mediterranean soils, and its importance for archaeology, came from the Argolid Exploration project in Greece in the 1980's, which from its start involved geo-archaeological approaches. Initially the model of Vita-Finzi (1969) was adopted that Mediterranean sedimentation occurred in two major phases, the Older (Late Glacial) and the Younger (Late Roman – early Post-antique) Fills. This model was based on the assumption that the Mediterranean was subject to strong climate changes, and did not take human impact into account. However, the Argolid team discovered multiple indications that this model was too simplistic and instead reconstructed no less than seven periods of strong erosion, four of which occurred after the Neolithic (Pope and Van Andel 1984, Van Andel *et al.* 1986; Ruiz del Arbol Moro 2001: 214; Feiken 2014: 32). Furthermore, they proposed that human action strongly influenced sedimentation rates. The sedimentation rates in the Argolid led the investigators to propose that Mycenaean land use probably included slope management, although they did not have datable evidence for this (Van Andel *et al.* 1986: 117).

Typologies for slope management systems are usually based on either construction techniques, or landscape setting, or specific aims for terracing. The first large-scale typological studies of terracing focused on Latin America (Donkin 1979), followed from the 1980's onwards by studies of European systems (Runnels and Van Andel 1987; Bottema *et al.* 1990; Bell and Boardman 1992; Ruiz de Arbol Moro 2001: 211). The first typology of terraces, formulated by Donkin, is based on location. He distinguishes three terrace types: cross-channel terracing, lateral / contour terraces, and valley floor terraces. The first type consists of walls which are erected across hydrological channels, and which quickly accumulate alluvial sediments to form new, level cultivation planes. Lateral terraces (sometimes a combination of bank and terrace) are built across a slope and are filled up to reach a new plane; in South America such terraces can reach elevations of up to 9 m. The third type is rarer than the other two, and consists of rectangular walls erected in valley floors, designed in such a way that they allow maximum irrigation. All three types are aimed at irrigation and water management in cultivation fields, which is crucial in South American climates characterized by long dry seasons alternating with intense wet seasons.

Mediterranean seasons are more moderate and the exploited slopes are generally less steep than in Latin America; therefore, terracing around the Mediterranean basin is different from Latin America. Obtaining a 'maximum irrigation potential' is a minor objective when compared to strategies aimed at soil management or crop management (see Frederick and Krahtopoulou 2000: Table 6.1 for descriptions of these three broad reasons for the implementation of terraces). Furthermore, terraces in the Mediterranean are usually smaller and less elevated.

Specific cultivation seems to be a decisive factor in the typological construction of terraces. In present-day Crete, Moody and Grove (1990) observed that terraces built for the cultivation of olive trees and orchards are better constructed than those for cereal cultivation. They recognize three types of terracing (1990: 184-185): parallel traditional terraces, which occur on all types of soil and are used in all types of cultivation; intertwined terraces, which are found in all types of soil and all cultivation types except horticulture; and 'pocket terraces', which occur on steeper slopes and are usually built for arboriculture. They also make a technical distinction between excavated terraces and built terraces, which may occur in all three cultivation types. Excavated terraces have a foundation trench dug into the natural soil and filled with stones, whereas built terraces are accumulations of stones on top of the surface. Evidently, the construction of excavated terraces has more impact on potentially present archaeological deposits than the built terraces.

In the Vasilikos valley in Cyprus, Wagstaff (1992: 155) came to a different typology after establishing that the terracing here was not primarily aimed at optimizing cultivation but at minimizing slope movement. He identified several small systems of erosion prevention, which did not appear to be built according to a planned design but rather as haphazard solutions to urgent local problems. He identified three types of terraces: long, shallow terraces with lengths of 20 m or more and elevations of maximum 1 m; rhomboidal terraces in lateral side-valleys, with elevations between 80 cm and 2,35 m; and parallel terraces in the upland valleys with elevations between 1-2 m (FIG. 3.12). The rhomboidal terraces resemble Donkin's cross-channel type, whereas the parallel terraces are similar to Moody & Grove's parallel traditional terraces (Ruiz del Arbol Moro 2001: 219).

Figure 3.12. Parallel terrace on the marine terraces near Cività.

This overview of terraces and their typologies shows that although terracing is a common feature in cultivated sloping landscapes, there is no common typology. Although construction may show similarities across time and space, techniques and placement are inherent to the aim of the terracing system, climate, steepness and type of cultivation. This variation implies that the effects of terracing on archaeological deposits should be studied in a regional setting rather than in a chronological, generalized or supra-regional approach.

3.4 Recovery strategies, field walking, and recording

After the conceptual biases (section 3.2) and potential multiple distortions caused by site formation processes (section 3.3), the present section will focus on biases caused by practical aspects of field walking survey. Systematic field walking is a relatively new archaeological field method and a debate is ongoing about its methodology, effectivity and interpretative potential. Biases due to recording and site formation form a central issue in this debate, and most survey projects apply mechanisms to deal with their most acute forms. However, surprisingly little research has been done on the assumptions on which field walking is based, resulting in a number of potentially severe distortions in the interpretations based on these assumptions. In this section I discuss these assumptions and related issues of field methodology and recording to address the problematic inference of past occupation patterns from surface data. In doing so, I emphasize the survey strategy applied by the RAP surveys in northern Calabria. Like the previous section 2.4, mitigating this 'technical' type of bias caused by detection strategies was central to the RLPI project. The discussion below provides a background to the methodological choices made in the RLPI project (Chapter 4).

3.4.1 Assumptions about archaeological surface distributions

The main assumption which causes survey archaeologists to actually go out into the field is that concentrations of archaeological surface finds correspond with places where human activities took place in the past. This assumption goes back to W. G. Clarke, who observed in 1922 that lithic material occurred in elevated densities in a field in Norfolk (1922: 30; Banning 2002: 3). On a very basic level Clarke was right; however, as was pointed out in section 3.3, the patterns observed in surface finds distributions can be the result of multiple human and natural deposition processes. The related assumption that there is a direct relationship between the dimensions of the surface concentration and the actual size of the human activity area producing it is therefore problematic. The inference of human activities and diachronic patterns should be made cautiously, and not on the basis of surface distribution maps alone. This point will be further explored in section 7.5.3 and is well illustrated by our work in the Maddalena catchment (for an overview of fieldwork results, see Chapter 5 and Appendix 1).

A second assumption is that patterns of the past can be deducted from 'sites' or obvious clusters of material. Although this assumption has become under pressure since archaeologists began recognizing the importance of 'off-site' patterns (Bintliff and Snodgrass 1988; Bintliff 2000), many surveys are still aimed at recording high-density concentrations and basing their interpretations mainly on the distributions of such clusters. Such strategies may partly be inspired by fieldwork restrictions, for instance in artefact-rich landscapes where severe strain is put on storage facilities if every single object were to be collected. Nevertheless, the awareness of off-site patterning has resulted in geo-archaeological studies of depositional processes causing the spread of material and the dynamics behind surface manifestations.

A third assumption is related to the earlier two: namely, that density within artefact concentrations is not constant. In a constant distribution, it would be possible to establish a threshold between a general background level and an average density within sites. However, most archaeologists assume that such models are too simplistic and that artefact density distributions are either random or clustered (Banning 2002: 14). Therefore, most surveys do not apply a clear density threshold to establish sites from off-site distributions. Nevertheless, find densities are often visualized as continuums within a survey unit, which do suggest that the density within a unit can be averaged. Evidently, such contradictory extrapolations are based on collection strategies, due to which small-scale density variations cannot be mapped precisely. In the RLPI we have experimented with recording of individual artefacts within areas of elevated artefact densities (the so-called Total Station surveys, see section 6.1 for an evaluation), to establish whether such micro-patterns indeed exist in small protohistoric sites and whether they can help us confirm intra-site spatial patterns such as the often assumed 'fried-egg model'[20].

Behind these assumptions lies a fourth: that we actually can detect archaeological materials to such an extent that our observations become meaningful. This assumption is based on confidence in our own capabilities as archaeologists, but also on the detectability of archaeological (surface) remains.

[20] The 'fried-egg' or 'bullseye' model assumes that a site has a central focus, around which finds density falls off towards the outer border of the concentration (Banning 2002:16).

Detectability involves the "possibility of failing to notice the target even when it is included in an observation" (Banning 2002: 40), and is influenced by a number of factors such as visibility, obtrusiveness, survey resolution, and experience. Evidently, detectability is a cause for biases within overall survey results. The effect of these factors has been recognized by most survey projects, and many make observations or estimations of their influence on the survey result. Most surveys also correct their distribution maps for detectability variations. The detectability factors in the RAP surveys will be discussed in more detail below (see Chapter 2 for an overview of the project).

3.4.2 Resolution, intensity, and detection probability

Figure 3.13. Survey in the Upper Raganello valley, September 2006.

The RAP surveys have one of the highest resolutions among Mediterranean survey projects. This is a result of the spacing and arrangement of survey units, but also of effort intensity. The aim of the surveys was to investigate all agricultural fields within three survey transects in a systematic way, following a standardized methodology. Survey units were typically 50 x 50 m and usually surveyed by 5 people walking at 10 m intervals at slow walking speed (FIG. 3.13). All finds were taken from this sample. Each unit was described in a unit form on which the specific detectability factors were recorded.

The standardized survey unit is by no means a common feature in archaeological surveys; many projects sample agricultural fields as a whole or sample walker transects. The 50 x 50 m resolution allows observations about overall artefact densities and establishing the variations in the background density levels. The 50 x 50 m resolution is too coarse for establishing the precise borders of material concentrations and additional sampling is usually needed, but it is efficient for mapping overall density variations and off-site patterns.

Intensity of a survey describes the search effort used in the sampling strategy. Intensity is not only a function of resolution and coverage (discussed below), but also of invested time. The detection probability is a function of site radius and the interval between field walkers, provided that visibility factors stay the same (Banning 2002: 68). Interestingly, the relationship between detection probability and search time in field walking survey is not linear, but exponential (Koopman 1980: 55, 71-74, 329; Banning 2002: 60). This means that if all visibility factors of a survey remain constant, increasing time spent searching will result in increased probability of detection, but with diminishing results. Therefore, survey strategies are aimed at finding the perfect point in this exponential curve; in other words, maximizing their effectiveness.

3.4.3 Obtrusiveness and visibility

Obtrusiveness and visibility are related factors in the detectability of archaeological surface remains. Obtrusiveness describes the level of contrast between an object and its surroundings. Practically, this means that brightly colored objects are easy to detect against a dark background, but also shiny objects on an opaque surface. This means that artefacts with similar colors and textures as the natural background are difficult to screen without a trained eye. This is often the case for hand-made pottery fired at low temperatures, such as protohistoric impasto, which have a lower obtrusiveness than orange depurated wares. Similarly, artefacts which look like natural materials, such as lithics, also provide detection difficulties.

Visibility is not a property of an artefact, but of the general surroundings in which they are found. The obtrusiveness of an artefact may vary to the visibility characteristics of various backgrounds. In the RAP surveys, 'visibility' was used to describe a combination of different factors influencing the visual access to the ground surface. These factors included ploughing, shade, vegetation, modern materials, and weathering. These different factors were evaluated for each survey unit on a scale of 1-5. Furthermore, a measure of 'overall visibility' was given as a combination of these factors. The overall visibility was used for recovery corrections of finds densities.

3.4.4 Coverage

Coverage describes the estimated area covered visually by field walkers. Coverage is subject to an assumption applied by most field walking archaeologists, namely that a swath of 2 m can be inspected by a field walker (1 m on each side). With field walkers crossing a field at 10 m intervals, this means that 2 out of 10 covered meters are inspected, resulting in an estimated coverage of 20%. Naturally, this percentage is relative to the visibility factors listed in 3.4.3. The coverage influences the detection probability discussed in 3.4.2.

The assumption that a field walker covers a 2m swath is commonly accepted by survey archaeologists. Interestingly, however, is that there are no published studies to confirm the width of this visual range. Witmer and Van Leusen conducted an (unpublished) experiment with visual swaths of experienced and inexperienced field walkers in Calabria in the summer of 2014. Unfortunately, the experiment was not controlled and only two fields were tested. However, the results are interesting and merit further work: inexperienced field walkers appear to have wider swaths than experienced walkers (see also 3.4.5 below). This probably has to do with the effort they put into recovering 'enough' material.

3.4.5 Experience and motivation

Every person is different, and so is every field walker. Every survey archaeologists knows from experience that there are some people who have 'lithics eyes', or who can put on their 'impasto radar'. Such differences can be softened by instructing new field walkers and making them familiar with the expected material categories, but this can also work the other way around. For instance, in the RAP surveys initially no obsidian was found because nobody expected this category; a visit by a specialist was required to discover that obsidian actually occurs in the Raganello basin. Such 'material blindness' can thus occur even in the most experienced people. Therefore, it is advisable to include people with different interests and experience in a field team to counter interest biases.

It is difficult to stay focused on the whole range of possibly present materials, especially in long field seasons. It is commonly known, but so far untested, that people with hangovers and tired feet detect fewer artefacts than highly motivated people who are actively involved in further research.

3.5 Summary

In this chapter, I explored the nature and background of the three bias types relevant for the ongoing 'hiddenness' of Italian protohistoric landscapes, as stated in Chapter 1. Archaeological remains of small-scale protohistoric settlement and land use are obscured by the way archaeologists think about past societies and ideas of how these should be studied (section 3.2), depositional and landscape formation processes (section 3.3) and practical effects of research strategies (section 3.4). By discussing these bias types in detail, I have made explicit the pitfalls and challenges of protohistoric landscape studies in preparation for the detailed investigations of protohistoric surface scatters mapped in the Raganello basin, and for my own interpretative work on the results of these studies.

In section 3.2, I have shown how Italian pre- and protohistory, which under the influence of political and societal developments followed a different theoretical course than archaeological science in other countries, has arrived at a theoretical 'pluriverse'. Within this academic climate, models of protohistoric communities are still strongly influenced by the political left. This is especially the case in the Sibaritide, where Renato Peroni's model is the focal point for protohistoric research. I have shown how a particular interest in power relations and social conflict have resulted in a strong focus on central places, rare artefact categories, and elite emergence; a focus which is accompanied by a neglect for supposedly marginal areas and non-centralized settlement.

In section 3.3, I have given an overview of the effect of site formation processes, human behavior, and post-depositional effects on the detectability of archaeological remains. This overview builds strongly on the work of a number of American archaeologists, most notably Michael Schiffer, who inspired a line of research into such processes in the archaeological record. I put emphasis on the effects of terrace building, as terraces and lynchets affect the preservation of archaeological remains in Meditterranean landscapes such as the Raganello basin.

The third set of biases explored in this chapter are the effects of archaeological field work. In section 3.4 I have recounted the ongoing debate on recovery strategies and highlighting the challenges of archaeological field walking survey. The RLPI project was primarily concerned with mitigating the 'technical' biases of archaeological research, as discussed in sections 3.2.5, 3.3 and 3.4. In the following chapters I will discuss our methodology and approaches in mitigating these practical types of biases (Chapter 4), the results of our fieldwork in the Raganello basin (Chapter 5), and highlight the contribution of our multidisciplinary approach for our understanding of protohistoric landscapes (Chapter 6). The conceptual type of bias caused by archaeologists' background and theoretical viewpoints will be countered in Chapter 9, where I use the results of the RLPI project to fine-tune existing models of protohistoric settlement and land use in the Sibaritide, which were formed in the academic climate explored in section 3.2.