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THE SABINES AND THEIR NEIGHBORS: THE RECOGNITION OF CULTURAL BORDERS THROUGH SKELETAL STUDIES

Introduction

The archaeological identification of the protohistoric peoples of central Italy with any historically noted people is a task which many historians do not believe possible. Recent attempts to delineate Umbrian culture (Bonomi 1991, also 1985 and this conference) are but one of the recent, focused efforts directed toward the better recognition of a specific ancient population. This volume offers the most current information regarding the Sabine culture. Of particular note in this modern review of the problems relating to the Sabines is the incorporation of biological data in an attempt to expand the methods by which these ancient peoples may be better known.

Recent archaeological efforts in the area believed to be that of the Sabines (see Guidi and other contributors to this volume) provide a variety of evidence for the recognition of what may be an identifiable culture of the people historically known as the Sabines. A review of the possible ways in which physical anthropology may be of help in supporting the studies of archaeologists, linguists and historians now interested in identifying the Sabines. This review also serves as a call for the careful recovery and curation of human skeletal materials from all archaeological contexts.

The geographical location of the sabines: the historical record

As so well demonstrated at the congress «Identità e civiltà dei Sabini» the delineation of ethnic and linguistic boundaries between the Sabines and their neighbors remain far from certain. Despite frequent references to the Sabines in the ancient literature, specific identification of their «territory» remains a problem to be solved, perhaps through the combined efforts of history, archaeology and physical anthropology. Since ancient borders were not as clearly defined as those surveyed lines with which we now are familiar,

we cannot seek precision in this search (cf. Martelli 1977). However, it may be possible to determine if a specific ancient town or village considered itaself to be Sabine, and thus derive a useful cultural map. The efforts of Prof. Mastrocinque and the research of S. Coccia and other contributors to this volume clearly demonstrate the ways in which this problem may be solved using historical and archaeological studies.

A brief summary of the historical questions may be of use. While some variations of the Romulus and Remus legends locate the Sabines on the Quirinal, with Quirinus (Mars?) as their chief deity, and other tales place the Sabines within the mainstream of Roman history, their actual location in the early Iron Age could not have been far different from where they appear in the V century BC (see Ampolo, this volume). The Sabines probably occupied the general region east and southeast of Umbria, and northeast of Rome, along the north side of the Anio. In the VIII century the «inhuming» Sabines may have been located in the outermost ring of hills surrounding Rome. Last (1964: 493-497) places the Sabines of the V Century to the east of Latium, and along a narrow strip beyond the Anio, and along the Tiber from Orta to Antemnae, and thence along the Anio to its headwaters. Many of the contributors to this convegno have significantly improved on Last's suggestion.

The evidence suggests that the Sabines are one of the many socio-political entities («tribes») occupying central Italy. Along with the Volsci (in the Liris Valley) and the Aequi to their south (but, see on the map facing p. 581, *Cambridge Ancient History* VII, 1964), the Sabini may have been centered in an Apennine location, quite possibly limited in their resource base to the area of these hills. If they did not have direct access to the coastal plain, exchange networks certainly would have brought coastal resources to the interior. The Sabines, however, appear most closely allied to their neighbors in early Rome, with the legend regarding the Sabine women probably reflecting both proximity and continuing interaction between these two peoples (cf. Mastrocinque, this volume) Similarly, the alleged Sabine origin of Titus Tatius also may relate to Sabine immigration or interactions with Rome from a very early date.

That the interactions of the Sabine peoples, with their considerable resources, with the Romans must have a prehistoric origin can be inferred from the continued relationship of the Sabina, however the area is defined, throughout the historic period. The enduring importance of the Sabina to the economy of Rome did not end with the delcine of the Roman empire, as is celarly revealed 1,000 years later, in the 780s A.D., when Charlemagne brought Farfa and much of the nearby area into his orbit, thereby depriving Rome of this valuable asset. The Muslim assaults on Rome in the period aound 870, from bases established in Campania, also enabled them to raid Latium and the Sabina. The threat was not reduced until about 900 A.D.

(Llewellyn 1971: 262-263, etc.; Daniel 1975: 49-79). These various assaults from the north and south are presumed to have had little serious effect on the skeletal biology of the Sabines, but this remains a question to be answered through direct observation. Clearly, the Sabina continued to be important to Rome throughout .the Middle Ages, and ultimately became so closely linked that any separation now would seem unthinkable.

The generalized boundaries of what may be considered «Etruscan» also may be examined using the epigraphic evidence. Morandi (1989) has made a useful contribution to this research, but this does not have application to the Sabine area or to other limited zones within a larger realm. By the first century BC the expanding Roman state had come to dominate all of central Italy, and correspondingly the use of Latin as the language of power and trade came to displace the much more limited use of the Etruscan language, and certainly whatever language was being used by the Sabines. Comparative studies indicate that Etruscan may have continued to be spoken for hundreds of years, but the written forms do not appear to have been in use by the first century AD. A more detailed view of the larger aspects of this process of «Romanization» as it applies to Samnium was the subject of a recent colloquium (Centre 1991). That conference addressed problems similar to the scholarly concerns now being applied to the land of the Sabines.

The Sabines may have spoken Oscan, or a related dialect, and were commonly believed to have been ancestral to the Oscan speaking Samnites (see Salmon 1967). Wuile they may have shared a distant common origin, the relationship between these two peoples during the early historic period is somewhat clarified by Adcock (1964: 615-616). Contemporary studies of the language of the Sabines, from an epigraphic view, are being led by work such as that of Cristofani and Santoro (this volume).

By the early V century the expanding Roman state came into constant conflict with most of their neighbors, probably for access to trade routes as well as for land and related local resources. Last suggests that conflict between the Romans and Sabines characterized the period 505-449 BC, after which little is said or known about the Sabines. That Sabines were actually present in Rome must be expected as Rome developed into a complex society, which by definition includes within its territories representativs or settlements of several cultures. In 460 BC the Sabini are said to have been spread across Mons Lepinos to the edge of the coastal plain of Latium (Frank 1911), perhaps having been forced off the plain by the Romans. A notable victory over the Sabines is claimed by Rome for 449 BC. Thereafter Sabine history is permanently linked with that of the Roman state.

A colloquium held on 4 June 1993 at the Institute of Archaeology (London) was organized on the theme of «Rome around 300 BC: the formation of the Roman state». This important period of transition (see also La Regina 1970) relates to the position of the Sabines in several ways. In 290

BC, at the end of the Samnite wars, Sabines became Roman citizens, but without voting rights (Adcock 1964: 616). This annexation provided Rome with a sound defensive buffer in the form of a «territory» whose borders remain to be defined, but clearly populated by close allies. In 268 BC the Sabines, who now formed a significant part of the Legions, received full Roman franchise. Thus their cultural and biological integrity would appear to have been intact well into the IV century BC, with *possible* alteration of their biology in the slow course of genetic admixture only after 290 BC.

While the general area inhabited by the Sabines has been discussed for some time, more specific recognition of the borders of their territory has been emerging very slowly (see Last 1964). Our question here is whether the biological data may be of use in solving this problem. The recognition of cultural borders, or the boundaries which separate ancient societies, enables us to identify the locations (home territories) of specific contemporary peoples and to examine their social dynamics through biological distance studies (Konigsberg 1988). Skeletal information can be important for our understanding of cultural processes and how they change through time, a problem examined with care for this area by Bartoloni (1986). A «culture» and its borders may be defined by 4 sets of information which may be recoverable through archaeology. These 4 are as follow:

1. *Artifact types:*

This includes ceramics and metal objects, as well as artifacts which are not normally preserved in archaeological contexts, such as textiles and foods. The decorations on textiles and evidence of body tatooing also are rarely preserved in the archaeological record, but may be preserved in rare circumstances, or may be indicated on sculpture or other depictions of humans. The rapidly expanding data base from the Sabine area, so clearly reviewed in this conference, holds great potential for the reconstruction of cultural boundaries (but, note the caution in Becker 1992).

2. *Customs:*

Mortuary behavior is the most commonly recognized set of customs recognized by archaeologists, followed closely by information on settlement pattern and trade. Social dynamics between males and females, as in Etruria, may be reflected in art, and other indirect indicators of the lifeways of a society are always sought by archaeologists. Of particular note with regard to the data presented at this conference are the tumulus burials from La piana di Corvaro excavated by Dott.ssa G. Alvino, which appear to reflect a tradition of particular interest in comparative research.

The vast quantities of archaeological information which we now have from the general region identified as subject to «Etruscan» influence,

stretching from the Po Valley on the north to Pontecagnano on the south, demonstrates that this area «shares» a number of characteristics, most clearly seen in ceramic types and generalized mortuary customs. Numerous recent studies focus on more localized patterns within and adjacent to the Etruscan realm. These studies have the potential to distinguish specific traits which characterize individual cities and their specific spheres of influence within and beyond the greater Etruscan realm. Present research, particularly that generated by the new museum at Magliano Sabina (see Santoro, this volume), clearly focuses on the heartland of the Sabini, with the potential for making useful distinctions in separating these peoples.

3. *Language:*

Written languages may provide direct access to the basic mode of communication among peoples of a single culture. Information about an ancient language may be found in surviving texts, as a direct form of evidence, or may derive indirectly from what is said about the language of these people by outside observers. Unfortunately,only a few words of the Sabine language are preserved, as noted by Roman authors, and even these words are suspect (cf. Bolelli 1959). As Prof. Cristofani points out (this volume), this record continues to be expanded, although at a slow rate, by the archaeological recovery of brief texts. However slight the record may be, these data continue to provide important sources of information regarding this ancient culture.

4. *Biology:*

The use of biological evidence, derived from archaeologically recovered skeletal remains, provides a means by which we can study any population directly. For over 100 years scholars have hoped to be able to use the evidence from physical anthropology to better understand ancient societies. Until the advent of computer technology, however, the masses of data which could be recovered from skeletons was too great for scholars to extract meaningful comparisons between populations (e.g. Key and Jantz 1981). Only recently have computerized programs of study begun to address these matters in the Mediterranean, with Musgrave and Evans (1980) being the first to demonstrate the capabilities of present technology to solve these old problems (see also Becker 1982).

At this point we should note that physical anthropologists now are in a position to go far beyond the analysis of age and gender, and beyond suggesting information regarding social class as inferred from calculations of stature (see Becker 1990). However, the close geographical relationship between the Sabines and their neighbors, whose material culture (artifacts) are similar in many ways, suggests that the evidence for biological differences

may not be better delineated than the artifactual record. Analytical techniques now available to physical anthropologists should be able to detect even small biological differences. Progress in this new directrion is dependant upon the recovery of skeletal material of appropriate preservation, and not the random recovery of fragmentary remains which so often characterized excavations in the past.

Of particular importance in this research is the belief that the Sabines, throughout the Early Iron Age, practised inhumation burials, as distinct from the cremations being made by most of the peoples of central Italy and beyond. Archaeological evidence appears to support this observation, thereby providing the potential for identifying good skeletal samples for biological distance studies from the Sabine area throughout the Iron Age. These data may provide a means by which we may establish a basis for comparison with neighboring peoples, at least during those periods after which these others began to practise inhumation burials. The reality, as will be noted below, is far different since the preservation of these inhumed skeletons is far from optimal. Studies of non-metric cranial traits and of dentition may, in the long run, become critical to the kinds of research which we are here suggesting. Therefore, these data should be recorded with particular care. Let us now consider what can be done once these data have been collected.

A BRIEF HISTORY OF BIOLOGICAL DISTANCE STUDIES

Interest in distinguishing between the Etruscans and their neighbors has a long history which now can be focused on the Sabines. Exactly a century ago Sergi (1893) discussed, in a necessarily philosophical way, the realtionship between the origins of the Etruscans and the Pelasgians, those mythological peoples supposed by classical authors to have inhabited ancient Greece and the islands of the eastern Mediterranean. Sergi's promised technical report (1893: 15) was not forthcoming. Brinton's earlier discussion of Etruscan origins (1889) identified them as dolichocephalic, but presented no evidence to support this minimal osteometric «observation». Nevertheless, Brinton stated that anthropological and other evidence indicated that the Etruscans derived from the Libyan population. Although such speculation now seems ludicrus, modern approaches to these questions were not to emerge until 50 years later.

Recently, Konigsberg (1991: 93) pointed out that the statisticians «Brandt [1933] and Yates [1934] were the first to derive and publish a more general form of the» T-test for different levels of sexual dimorphism between two populations, and that Greene (1989) and Relethford and Hodges (1985) brought this to the attention of physical anthropologists. Konigsberg (1991: 93) also notes that these recent publications include the suggestion that their

T-test can be calculated from *summary* statistics. This is extremely important since much of the published data on skeletons from central Italy includes *only* summary statistics, and not the more useful basic metric and nonmetric cranial data.

More significant was the publication in 1936 by P. C. Mahalanobis of a classic paper on statistical means by which multivariate problems, such as presented by skulls, might be solved (see in Barnicot and Brothwell 1959). The difficulty of applying these tests to the available data, plus the lack of concern for rigorous statistical evaluation of the evidence resulted in a consistant lack of results from the examination of skulls from various areas (see, e.g. Pfennensteil 1954). These problems were clearly pointed out by Modona (1959: 67), allowing attention to continue to be directed to Strabo and other historical literature (see Ciotti 1959) to examine problems properly addressed by serious archaeology and physical anthropology.

Barnicot and Brothwell (1959), in the important CIBA symposium on biology and the origins of the Etruscans, discuss the evaluation of metrical data from skulls. They measured some 30 Etruscan skulls in the Musée de l'Homme, Paris (p. 131), a collection which had been included in Puccioni's master list of Etruscan skeletal remains (1929). Barnicot and Brothwell (1959: 136, fig. 2) appear to have been unaware of Puccioni's work in their compilation, duplicating his efforts by indicating the locations of 120 supposed Etruscan skulls in various locations around the world, a work updated by Pacciani (1989). Although Barnicot and Brothwell clearly recognized the problem of sample size, they could not elicit significant results from the nearly 200 Etruscan skulls for which they purport to have taken measurements. They present the data in the form of calculated means rather than providing specific measurements, and also use other techniques which render the «data» from their tables as useless. However, they do provide a good list of references. Oakley's note indicates that only 5 or 6 of the 12 skulls said to be from ancient Etruria can be said with certainty to be Etruscan, including one dug from a field 6 miles southwest of Chiusi (see the data on 3 possible Etruscan skulls along with that of the Etruscan woman Seianti Hanunia Tlesnasa in Becker 1993b, see also Becker 1990).

Many of the indigenous peoples of Italy, such as the Lucanians and Messapians, are depicted on painted vessels recovered from various contexts (see Trendall 1971; also Briquel, this conference). Their differences are depicted in terms of costume, although cultural differences in hair style or beards may be used in such depictions. Biological differences, however, are too minute to be depicted in art forms. Thus studies of human remains offer a possible means by which ancient peoples may be differentiated.

Although human skeletal studies have a long history, and the supposed data base seems very large, there are numerous reasons why much of the information collected remains without value. Almost all of the information

collected from human skeletons lacked a standard data set into which the numbers could be placed, or the observations could be regularized. But even more significant as a problem, or limitation, was the lack of a statistical framework which could give meaning to this information. In 1954, at the meetings of the International Congress of Americanists, Montemayor (1958) reviewed the problems of applying statistical (and meaningful) analysis to the skeletal data base. Laughlin and Jorgensen (1956) appear to have been the first scholars to achieve success with studies of biological distance using techniques which have evolved into those now available. These scholars were able to differentiate among groups of Greenlandic Eskimoes using variations in their crania.

The work of Laughlin and Jorgensen (1956) and the subsequent thirty years of rapidly accelerating progress in biological distance studies are summarized by Buikstra *et al.* (1990; see also Hauser and De Stefano 1989). Critical to these studies is the work of Howells (1973; see also 1989), and a number of direct tests of these theories with documented protohistoric Native American populations (e.g. Jantz 1974; Key and Jantz 1981).

The transition to the use of these modern analytical techniques in Italy was marked by a landmark conference in 1958, convened to study the biological evidence for Etruscan origins (Wolstenholme and O'Connor 1959). Representing the traditional approach to this problem is Ciotti's (1959) study comparing the Etruscans and the Umbrians by focusing on the few texts available. Barnicot and Brothwell (1959), on the other hand, were attempting to use direct skeletal evidence to address these questions.

An important early attempt to identify an Italic population was made by Cresta and Vecchi (1969). Their attempt to define the biological characteristics of the Samnites focused on metric and morphological differences between these people and the ancient Romans. Their effort was not successful, but they established the fact that biological distance research to identify a population such as the Sabines *only* can be achieved through comparative studies. Thus earlier studies of Romans and Samnites, or any other specific group, provides a data base with which we can compare biometric and other information from the Sabine area in a study of microevolutionary biological change.

The specific history of skeletal studies in the area of the Etruscans is reviewed by Becker (1990: 23, n. 1). As noted above, one of the principal limiting factors in the application of these new statistical techniques has been the problem of identifying adequate samples of documented crania from which to recover appropriate information (see Becker 1993b). Postcranial studies are far less likely to produce useful results. Dental data is more likely to be useful in cases of poor skeletal preservation, and have been reviewed to examine the possible «Volsci» invasion of ancient Satricum (Becker 1994).

Recent genetic studies (e.g. Sokal *et al.* 1993) indicate that biological distances can be recognized even among modern populations.

Biological data from the Sabine area

Only 20 years ago when the Roman-Samnite colloquium was held, few modern osteological studies were available. The basic idea that individual Italic populations could be identified through skeletal studies had not yet been formulated. In the years since that pioneering effort in Naples, to distinguish among the many Italic peoples, attention has been gradually directed toward the recognition of *biological* distinctions between the various peoples of ancient Italy (see Becker 1982). These studies, however, have been slow to be implemented anywhere in in the world because appropriate skeletal materials are always difficult to recover.

As Prof. A. Guidi notes (personal communication), skeletal samples from the Sabine area also are rare. However, a review of the earlier archaeological literature provides suggestions as to where small collections of human remains may be found. Prof. Pallottino (1977) provides a useful summary of the early literature (see also Veloccia Rinaldi and Reggiani 1978, and reviews such as the one provided by Firmani 1985, see also Firmani 1979). Some of the more recent excavation reports, such as that of Colle del Forno near Eretum (see Santoro 1977, 1983, and this conference) reflect more modern approaches to these problems, but good skeletal collections are rarely identified and even more rarely collected and studied. Therefore, the first step in addressing this problem is the identification of skeletal populations which can be used in such a study as is here proposed.

The numbers of important archaeological excavations within the Sabine area have increased in recent years to the point where they now appear in a separate section of *Archeologia Laziale* (e.g. volume VIII; see Arnoldus *et al.* 1990), and in subsequent volumes of this publication. Culling these reports provides some indication of the potential for recovering skeletal remains which may be of use in identifying the Sabines. The recovery of skeletal data here, as elsewhere, continues to be a problem. As early as the 1830s excavators of large, open tombs observed that the bones within turned to dust when touched. In fact, *in situ* demineralizatioon and moisture in these bones when hen found creates a situation which *can* be controlled with ease. If skeletal material is allowed to dry before removal it often achieves a hardness equal to its original condition. Simple procedures now enable us to recover vastly better skeletal samples than once were the case.

Therefore, the information on skeletal biology which we *do* have from the Sabine area and the areas nearby must be recognized as extremely important. Perhaps one of the best samples of skeletal material now available

derives from the excavations of the British School at Rome in the medieval contexts relating to the Farfa Abbey (see S. Coccia, this volume). The report on the Farfa excavations, including the skeletal data from an extensive collection of well excavated burials (see Becker Ms. B; also 1994), is scheduled for completion in 1994. Some 75 adult crania are included in this collection, of which 67 now have been studied (40 males, 26 females, 1 ?). The non-metric data are included here (*table* 1) and copies of the metric data sheets are available on request. Although these skeletons represent a medieval population, dating from much more than 1,000 years after the period in which we are most interested, archaeological phasing provides a means by which this population can be divided into at least 4 units, dating from the 8th century until after 1450 A.D. This provides the means by which change may be seen during a span of at least 800 years, with the possibility of projecting this back toward the period of the Sabines. The bones from Farfa provide an extraordinary data base from the center of the Sabine area against which other populations may be compared.

The excellent skeletal collection recovered from Alfedena has provided an excellent regional data base (Coppa *et al.* 1980, 1980/1981: 285). This collection continues to provide one of the best samples for comparative studies in this region, and the basic research on these bones is extensive. From the general region we also have a very small group of fragmentary skeletons from a Late Iron Age context at Gabii (Becker and Salvadei 1992). The nearby site of Castiglione, however, produced a good sample of extremely well preserved skeletons (L. Salvadei, in process). A wealth of basic data now is available from Tarquinia and other Etruscan sites (Becker 1990, 1993b, 1993c) for comparative study.

TABLE 1 - Non-Metric Cranial Observations from Farfa, (after Berry and Berry 1967).

Phases are as follow: 1 = 8th and 9th centuries (to 898 A.D.)
2 = 10th to Late 11th/12th centuries.
3 + 3/4 = 12th century to ca. 1400 A.D.
5 = Post 1450 A.D.

Codes:

Absent	= 0
Present	= 1
Damaged	= d
Trace	= *
Fusion obscured	= f

Notes: (1) number of ossicles in each leg.
(2) number of ossicles exclusive of lambdoidal and bregmatic bones, numbers 2 & 5 below.

A very brief note on skeletal remains from the Sabine area is provided by Macchiarelli (1985). Catalano and Macchiarelli (1988) have been studying human skeletons from Cures (See in Arnoldus 1990: 293; see also Muzzioli 1980a, 1980b). Their minimal view of the skeletal record from Cures, which involves only the fragmentary remains of a few individuals of a late date, in many ways reflects the limited attention previously directed toward skeletal studies in the Sabine region. Rubini (1988) also describes the few bones from Cittaducale. These brief notes (see also papers in this volume), while often providing data useful for the archaeological record, do not include data which are useful in comparative studies of biological distance. Although tomb excavations are noted by Dott.ssa Paola Santoro, now director of the museum at Magliano Sabina, in her view of the Sabines as they relate to the Tiber, the osteological data are not available (see also Santoro, this conference). Santoro (1986: 111) notes a series of tombs at sites such as Eretum and Poggio Sommavilla, with the Eretum tombs including a VII century «tomba principesca» from the Colle del Forno (see Ogilvie 1965: 72-78). All of these tombs are important for the possible skeletal material recovered (cf. Becker 1993a).

Relatively recent tomb excavations at Cures Sabini area A 2 are indicated on *fig.* 3 of the report by Federico Bistolfi and Alessandro Guidi (in Arnoldus *et al.* 1990: 295-298). This illustration indicates that 52 tombs had been located in this necropolis, which has its origins in the «epoca romana». While a bit later than the period of Sabine independance, skeletal data from these excavations are of considerable value to the proposed study (see Muzzioli 1980; also Quilici and Santoro 1990: 319, n. 30 for references). Prof. Guidi's continuing work at this site (see his report, this conference) should produce extremely useful material in future years.

A more probable source of useful information are the excavations at Magliano Sabina (Quilici Gigli and Santoro 1990: 307, n. 2). These authors clearly review the extensive work done at this site in the 19th century and first half of this century, indicating that major tombs of the Iron Age were being identified at that time. This activity, paralleled throughout Italy, identified many of the best preserved skeletons, but less frequently curated these remains in ways which would now be considered suitable. Quilici Gigli and Santoro (1990) clearly identify burial areas of the VII-VI centuries, discuss the ancient and modern excavations in each location, noting clearly that these early excavators made gender «identifications» on the basis of associated tomb goods (p. 307, n. 7). This formerly common approach to archaeological interpretation not only ignored the skeletons in these tombs, but led these early excavators to forgo appropriate curation of skeletal material, resulting in the unfortunate loss of important evidence.

Extremely important for comparative studies are the 71 burials located within the tumulus at Corvaro di Borgorose, in the Valle del Salto, which

date «della prima età del Ferro (fine IX a.C.-VII a.C.; Alvino and Catalano 1990: 322, figs. 1-3). Some 57 skeletons, poorly preserved, were gender evaluated by the notably problematical technique of cranial morphology (cf. Becker and Salvadei 1992). Catalano recognizes 37 adults, but assigns gender to only 31. The analytical focus on the evidence for supposed biological «stress» and use of the notoriously problematical degree of dental wear in the calculation of age, provides no direct information of use in comparative studies. However, the skeletal remains have been recovered and are available for study. Note also is made to a similar tumulus also being excavated (Alvino and Catalano 1990: 327, n. 15). The human skeletons from the tumulus at Montériolo, in La piana di Corvaro, have been discussed in association with their archaeological context (G. Alvino, this volume; see also Reggiani 1979 for historical references).

Summary

The existing data base from excavations at Farfa, although providing materials from different aspects of the medieval period, offer a means by which comparative studies of the skeletal biology of the Sabines may be considered. The collection of larger and better preserved skeletal samples is essential for developing this line of research. The present data base may permit detailed dental studies, which could provide useful information regarding specific populations, as well as allowing studies of diet through trace element research. The recent developments in DNA analysis also may offer a potential vector for future studies, but one which is at present too costly to be used in a general research program. The full potential of biological distance studies must focus on improved skeletal recovery techniques and their implementation by all scholars excavating human remains.

Conclusions

The expanding human skeletal data base and improved computer programs to analyse metric and non-metric information offers the potential for identifying specific biological populations within central Italy. While the full potential has yet to be realized, continued attention to the human bones found in these rich tombs, once sadly neglected, offers us another major tool for understanding these past peoples.

Analytical tools now available to physical anthropologists enable us to evaluate more than the health and nutrition of specific ancient populations.

We can now provide valuable data on social relations and cultural interactions through studies of biological distances.

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	Unit Number:	279		436		986/1		1684		2056		2072		2102		2141		2159		58A		58B	
		R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
Number & Trait Name:																							
1.	Highest Nuchal Line	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	0	0	*	*
2.	Ossicle at Lambda		0		0		0		0		0		0		0		0		-		0		0
3.	Lambdoid Ossicles (see note 1)	0	1	0	1	0	0	f	f	d	d	1	2	0	0	0	0	-	-	d	1	2	3
4.	Parietal Foramen	1	*	0	0	0	0	0	1	1	d	0	0	0	1	1	0	-	-	0	1	0	1
5.	Bregmatic Bone		0		0		0		f		0		0		0		0		0		0		0
6.	Metopism		0		0		0		0		1		0		1		0		0		0		0
7.	Coronal Ossicle	0	0	1	0	0	0	0	0	d	d	0	0	0	0	0	0	0	d	0	0	0	0
8.	Epipteric Bone	0	d	0	0	0	0	0	0	-	-	0	0	0	0	d	d	-	-	d	d	-	-
9.	Fronto-Temporal articulation	0	d	0	0	0	0	0	0	-	-	0	0	0	0	0	d	-	-	0	d	-	-
10.	Parietal notch bone	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	d	-	0	0	0	0
11.	Ossicle at asterion	0	0	0	0	0	d	0	0	0	0	0	1	0	d	0	0	d	-	d	0	0	0
12.	Auditory torus	0	0	-	d	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	1	1
13.	Foramen of Huschke	0	0	-	d	0	0	0	0	0	0	0	d	0	0	0	0	0	-	0	0	0	0
14.	Mastoid foramen exsutural	0	0	d	0	1	d	1	1	0	0	0	1	0	d	0?	d	1	-	1	1	0	0
15.	Mastoid foramen	1	1	d	1	1	1	1	1	1	1	0	1	1	d	1	1	1	-	1	1	1	1
16.	Posterior condylar canal	0	0	1	1	1	d	1	1	1	d	1	1	1	-	-	1	0	*	1?	1	-	-
17.	Condylar facet double	1	1	0	0	0	0	0	0	0	0	1	1	0	-	-	d	0	0	0?	0	-	-
18.	Precondylar tubercle	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	d	0	0	0	0	-	-
19.	Anterior condylar canal double	0	0	0	0	0	1	0	1	0	0	*	*	0	-	-	*	*	1	1	d	-	-
20.	Foramen ovale incomplete	0	d	d	d	d	d	0	d	-	-	d	0	0	0	d	-	-	-	-	0	-	-
21.	Foramen spinosum open	d	d	d	d	d	d	0	0	-	-	0	0	0	d	0	-	-	-	-	-	-	-
22.	Accesory lesser palatine foram.	1	d	d	1	1	d	0	0	-	-	d	d	d	1	-	-	1	1	d	-	-	-
23.	Palatine torus		*		*		*		0		-		d		*		-		-		*		0
24.	Maxillary torus	0	0	0	0	0	0	1	1	-	0	d	*	0	0	-	-	0	0	d	-	0	0
25.	Zygomatico-facial foramen	1	1	1	1	1	1	1	1	-	-	1	1	1	1	-	-	1	1	-	1	-	-
26.	Supraorbital foramen complete	0	0	1	*	d	0	0	0	-	-	0	0	0	0	-	-	-	-	-	0	1?	1?
27.	Frontal notch/foramen complete	0	0	0	0	0	0	1	1	-	-	0	0	1	1	-	-	-	-	-	-	0	0
28.	Anter. ethmoid foram. exsutural	d	d	1	0	-	-	-	-	-	-	d	d	-	0	-	-	-	-	-	-	-	-
29.	Posterior ethmoid foramen	d	d	1	1	-	-	-	-	-	-	1	d	-	1	-	-	-	-	-	-	-	-
30.	Accessory infraorbital foramen	d	d	0	0	d	d	d	0	-	-	d	d	0	d	-	-	d	-	d	-	0	-
31.	Sagittal bone/s (see note 2)		0		0		0		f		0		0		0		0		0		1?		0
32.	Nasal guttering	0	0	0	0	0	0	0	0	-	-	d	0	0	0	-	-	0	-	0	0	0	0
33.	Incisor shoveling: Lateral	1	1	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
34.	Incisor shoveling: Central	*	0	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35.	Gender	M?		M		M???		M?		F?		M		M		M		M?		M		M	
36.	Age	50		50+		50		65+		28		60		53		60+		55+		50		55+	

Gr.:	2 G2c	2 G2d	2 G6/1	2 G6/2	2 G13	2 G25B1	2 G25B2	2 G25B3	2 G25B4	2 G25B5	2 G30	2 G34	2 G40B2	2 G54	2 G56/1	2 G58
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1.	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
2.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1?
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4.	0 0	1 1	d d	0 0	1 1	0 1	0 0	d 0	0 0	1 1	1 1	0 0	0 0	0 1	1 1	1 1
5.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
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27.	0 0	1 0	0 0	0 0	0 0	d d	0 0	0 0	0 0	d d	d d	0 -	1 *	0 0	0 0	0 0
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31.	0	d	0	0	0	f	0	0	0	0	0	f	0	0	2	0
32.	0 0	1 1	0 0	1 1	0 0	0 0	- -	0 0	- -	- -	1 1	0 0	0 0	0 0	0 1	0 0
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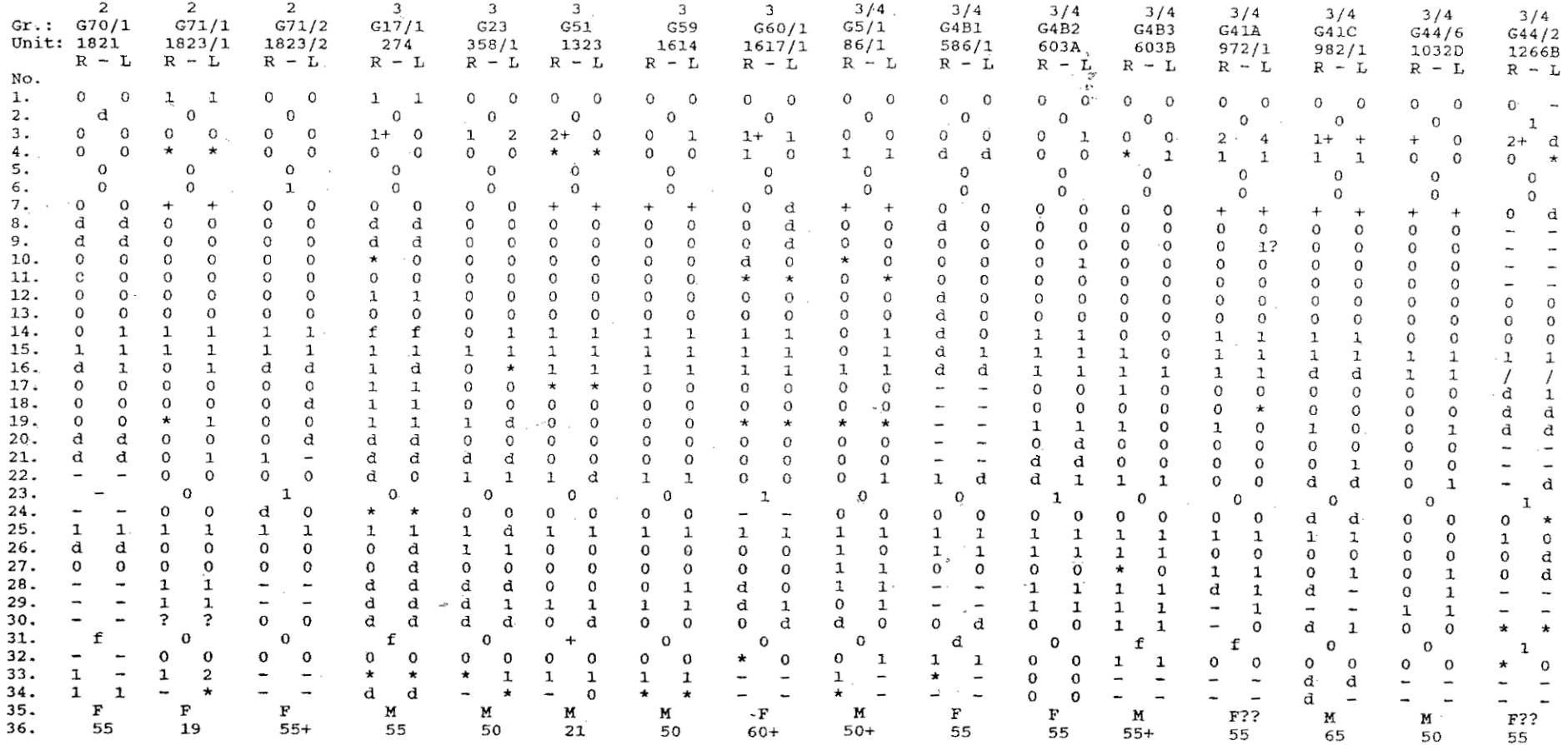
35.	F	F	F	M??	M??	M?	M?	M?	F?	F??	M	M	F	F	F	F??
36.	50	55+	50+	45	65+	60+	65+	65+	50+	14	45	53	50	60	40	60+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34.
35. F F F M M M F M F F M F?? M F?? M
36. 55 19 55+ 55 50 21 50 60+ 50+ 55 55 55+ 55 65 50 55

Gr.:	5 Pit?		5 Pit?		5 Pit		5?? Pit??		5?? Pit		U G1f		U G1g		U G1h		U G1i		U G10		U G10A		U G11		U G12a		U G12b		U G16		U G19	
Unit:	73B		73C		447		470		511		35F		35G		35H		35I		218		218A		221/1		234		238		264		294/1	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
No.																																
1.	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.	0		d		0		0		0		0		0		0		0		0		0		0		0		0		0		0	
3.	0	0	d	0	2	2	0	0	f	f	1	2	1	1	0	0	d	1?	d	0	0	0	d	d	0	1	0	1	f	f	1	d
4.	0	1	1	1	d	d	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0
5.		0		0		0		0		0		0		0		0		0		0		0		1		d		0		0		
6.		0		0		0		0		d		0		1		0		0		0		0		0		0		0		0		
7.	0	0	0	0	0	0	0	0	d	d	0	0	0	0	0	d	0	0	0	0	0	0	0	0	0	1?	0	0	f	f	0	0
8.	0	0	0	d	0	d	0	0	-	-	0	0	d	d	-	-	-	-	0	d	0	0	0	0	0	0	f	f	0	f	0	d
9.	0	0	0	d	0	d	0	0	-	-	0	0	d	d	-	-	-	-	0	d	0	0	0	0	0	0	0	0	0	f	0	d
10.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	-	-	0	0	0	0	0	0	0	d	1?	0	0	1	f	0	d
11.	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	-	-	0	0	0	0	0	0	0	0	0	0	0	f	f	0	d
12.	0	0	0	0	0	-	0	0	0	0	1	1	0	0	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	d
13.	0	0	0	0	0	-	0	0	0	0	0	0	0	0	d	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	d
14.	1	0	0	0	1	-	0	0	0	1	1	1	0	0	0	-	-	-	0	0	0	1	0	0	1	0	1	1	1	0	1	d
15.	1	1	1	1	1	-	1	1	1	1	1	1	1	1	1	-	-	-	1	1	1	1	1	1	1	1	1	1	0	0	1	d
16.	1	1	d	d	d	0	-	1?	1	d	1	1	1	0	-	-	-	-	1	1	1	1	1	d	0	1	d	d	1	0	d	d
17.	d	d	*	*	0	0	-	0	1	d	0	0	0	0	-	-	-	-	0	0	0	0	0	d	d	1	0	d	0	0	d	d
18.	-	-	1	1	0	0	-	d	0	d	*	0	d	0	-	-	-	-	0	0	*	*	0	d	d	1	0	0	*	*	d	d
19.	1	d	0	d	*	*	-	*	1	1	0	0	*	0	-	-	-	-	0	0	*	*	1	d	0	0	1	1	1	0	d	d
20.	0	0	0	d	d	-	0	0	-	-	d	d	0	d	-	-	-	-	d	d	0	0	0	0	0	0	d	d	0	0	0	d
21.	0	0	d	d	d	-	d	d	-	-	d	d	d	d	-	-	-	-	d	d	1	1	0	0	0	0	d	d	1	0	d	d
22.	0	-	-	-	-	-	1	0	-	-	-	-	-	-	-	-	-	-	1	d	0	0	1	1	d	d	d	d	0	0	1	1
23.		0		-		-		0		-		-		-		-		-		0		0		0		d		1		0		*
24.	*	1	-	-	-	-	0	0	-	-	-	-	-	-	-	-	-	-	0	d	0	0	0	0	0	0	0	0	d	d	0	0
25.	1	1	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	d	d
26.	1	0	0	0	d	d	1	0	-	-	1	0	1	1	-	-	d	0	1	1	0	0	0	1	0	d	0	0	0	0	0	1
27.	0	0	0	0	d	d	d	0	0	0	0	0	0	0	-	-	0	0	0	1	0	1	0	0	d	d	0	*	0	0	0	0
28.	-	d	-	-	-	-	d	1	-	-	d	1	-	-	-	-	-	0	d	d	0	0	d	d	d	d	d	d	d	1	d	d
29.	-	1	-	-	-	-	d	d	-	-	1	1	-	1	-	-	-	-	d	d	0	1	d	d	d	d	d	d	d	1	d	d
30.	d	0	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	d	d	1?	1?	0	0	d	0	d	d	0	d	0	d
31.		0		0		-		0		f		0		0		?		0		0		0		d		0		d		f		0
32.	0	0	-	-	-	-	0	0	-	-	-	-	-	-	-	-	-	-	*	0	0	0	0	1	0	0	0	d	0	0	*	0
33.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	-	0	-	-	-	-	0	*	d	d
34.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	d	0	-	0	-	*	*	-	-	-	0	0	d	d
35.	M		M		F?		M?		M?		M		M?		M??		F		F		M		F		M		M		M		E	
36.	35		30		25		40		70+		40		40		55		50+		55		35		40		40		60+		70		40	

	U		U		U		U		U		?		?		?	
Gr.:	G20		G20A		G24		G26		G29		?		?		Pit?	
Unit:	301		301A		387		419		424/1		390		907		2117/2	
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
No.																
1.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.	d		0		1		1		0		0		0		0	
3.	d	d	0	0	f	f	3	1	0	0	1?	1	1	0	0	0
4.	1	1	1	0	1	1	0	1	0	0	1	0	1	*	1	1
5.	0		0		0		0		0		0		0		0	
6.	0		0		0		0		0		0		0		0	
7.	0	0	0	0	f	f	0	0	d	0	+	d	0	0	0	0
8.	0	0	d	d	d	d	d	d	d	0	d	d	d	d	0	0
9.	0	0	0	d	d	d	0	0	d	0	d	d	d	d	0	0
10.	0	0	0	0	0	0	0	0	0	0	-	-	0	0	0	0
11.	0	0	0	0	0	d	0	0	0	0	-	d	0	0	1*	d
12.	0	0	0	0	0	0	d	0	0	0	d	d	0	0	0	0
13.	?	0	0	0	1?	1	d	0	0	0	d	d	0	1	0	0
14.	0	1	0	d	1	1	1	0	1	0	d	d	1	1	0	1
15.	0	1	0	d	1	1	1	1	1	1	d	d	1	1	1	1
16.	1	1	d	d	1	1	1	d	-	-	-	-	-	1	d	d
17.	*	0	-	-	0	0	0	d	-	-	-	-	-	0	0	0
18.	1	1	-	-	1	d	0?	0?	-	-	-	-	-	*	0	0
19.	1	0	-	-	*	*	*	d	-	-			-	0	*	*
20.	0	d	d	-	0	-	0	d	-	-			-	0	d	d
21.	d	d	-	-	d	d	d	d	-	-			-	0	0	d
22.	-	-	1	0	d	d	1	0	-	-	d	d	1	0	-	-
23.	-		0		d		0		-		1		*		-	
24.	-	-	0	0	d	0	0	0	-	-	0	0	0	0	-	-
25.	-	-	1	1	1	d	0	0	-	-	1	-	1	1	-	-
26.	0	0	0	0	1	1	0	0	0	0	-	-	0	1	0	0
27.	0	0	0	0	d	0	d	d	0	0	-	-	0	0	1	1
28.	1	1	-	-	d	d	-	-	0	d	-	-	d	d	-	-
29.	1	1	-	-	d	d	-	-	d	d	-	-	-	-	-	-
30.	-	-	d	d	d	d	0	0	-	-	d	-	0	-	-	-
31.	0		0		f		0		0		1		0		0	
32.	-	-	0	0	0	0	0	0	-	-	1	1	*	0	-	-
33.	-	-	-	-	1	*	2	-	-	-	*	*	1	1	-	-
34.	-	-	-	-	-	0	-	-	-	-	0	0	-	-	-	-
35.	F?		M		F		F??		F		M		M?		M?	
36.	45		45		65+		58		60+		60		65+		35	