GÖYTEPE
NEOLITHIC EXCAVATIONS IN THE MIDDLE KURA VALLEY, AZERBAIJAN

Edited by
Yoshihiro Nishiaki and Farhad Guliyev

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PREFACE

This volume presents the results of the archaeological fieldwork conducted by the Azerbaijani-Japanese Archaeological Mission at Göytepe from 2008–2013. The fieldwork was carried out under the collaboration agreement made between the Institute of Archaeology and Ethnography, the National Academy of Science, Azerbaijan, and the University Museum, the University of Tokyo, Japan.

The investigation at Göytepe is led by issues on the emergence and development of food-producing economies and communities in the South Caucasus. Although such issues have been a major focus of archaeological studies for decades in the South Caucasus, similar to Southwest Asia where the large number of investigations have been in progress, at the time of our research planning, our archaeological knowledge on the timing and processes of the transition from hunter-gatherers to farmers was limited. in the latter. However, a number of archaeological studies in the 1980s and 1990s on the Neolithic mound sites in the South Caucasus, including Göytepe, indicated their potential significance in contributing to the clarification of the socio-economy at the dawn of agriculture. In light of this research background, the Azerbaijani-Japanese joint project conducted archaeological investigations at Göytepe aiming to provide new archaeological evidence about the early agricultural societies in the South Caucasus by employing contemporary field and analytical methods.

Many of the chapters of the present volume were completed in early 2012 and, on the occasion of this publication, updated to include subsequent seasons' results and more recent references. However, some chapters may not have been fully updated for a variety of reasons. Nevertheless, we believe that the present volume provides essential information for the research of the South Caucasian Neolithic because its archaeological records have never before been published in a single work in this degree of detail using a high-resolution chronology based on dozens of radiocarbon dates.

The research was made possible with support from a number of sources. Most important was the understanding of the significance of the project and kind permission rendered by Dr. Maisa N. Ragimova of the Institute of Archaeology and Ethnography, the National Academy of Science of Azerbaijan. Dr. Bertille Lyonnet, Laboratoire ProCauLAC, CNRS, France, made a significant contribution to the collaboration arrangement between the two institutions in Azerbaijan and Japan. Financial support was obtained from grants by the Institute of Archaeology and Ethnography, the National Academy of Science of Azerbaijan, the Science Development Foundation under the president of the Republic of Azerbaijan, the Japanese Ministry of Education, Culture, Science, Sports and Technology (17063003 and 22101002), Japan Society for Promotion of Sciences (20401030 and 24251014), the Heiwa Nakajima Foundation (2009), and the Japanese Ministry of Education, Culture, Science, Sports, and Technology (16H06408).

The fieldwork was conducted by numerous colleagues. The major participants of the Azerbaijani team are Farhad Guliyev, Fuad Huseynov, Narqis Hazizade, Tarana Babayeva, Orkhan Zamanov, Mir Jafar Gedirov, Elena Muradova, Jaqob Mammadov, Aygun Alieva, Valeh Alakbarov, Ajhdal Babazadeh, and Shahin Salimbayov, and the Japanese team are Yoshihiro Nishiaki, Seiji Kadowaki, Yui Arimatsu, Shogo Kume, Kazuya Shimogama, Ken-ichi Tanno, Chie Akashi, Yuichi Hayakawa, Takahiro Odaka, Hiroto Nakata, Saiji Arai, Takehiro Miki, and Keiko Ohnishi.

We appreciate the various logistical assistance provided by local colleagues, their warm support and cooperation in the field and camp, notably Namiq Huseynli. We also appreciate the diligent work by the workers at the site, led by Zeki Jeferov, who helped us realize fruitful excavation seasons.

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Research crew for the 2009 season's excavations at Göytepe.

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Chapter 1

Introduction

Yoshihiro Nishiaki and Farhad Guliyev

The advent of farming in human history has attracted global attention since the early history of archaeology and anthropology because of its significant impact on the subsequent development of society in a given region. The transition from hunting-gathering to farming economies was even termed the "Neolithic revolution" or "Agricultural revolution" in some studies of the 20th century. The intensive ongoing archaeological research has now demonstrated that one of the earliest farming economies emerged in the Fertile Crescent of Southwest Asia, a region that reaches from the Levant to the hilly flanks of the Anatolian and Zagros Mountains. Research has also shown that the beginning of farming was a long-term process, and thereby better termed a "Neolithization," rather than a revolution. Consequently, the timing of its advent depends on the interpretation of how the earliest farming should be defined. Most researchers today agree that farming came to be practiced in the Fertile Crescent at the beginning of the Holocene period, approximately eleven thousand years ago, when the first Neolithic cultures appeared (Zeder 2011; Willcox 2013; Ibáñez et al. 2018 and references therein).

In the case of the Neolithization of the South Caucasus, our knowledge has also greatly increased recently, particularly in the past two decades, owing to intensive international field campaigns. Archaeologists have excavated important sites such as Mentesh (Lyonnet and Guliyev 2017), Hacı Elamxanlı (Nishiaki et al. 2015a), and Mil Plain (Helwing and Aliyev 2017) in Azerbaijan; Aratashen (Petrosyan et al. 2014), Aknashen (Badalyan et al. 2010), and Masis Blur (Martirosyan-Olshansky et al. 2013) in Armenia; and Aruchlo (Hansen and Mirtskhulava 2017) and Gadachrili Gora (Hamon et al. 2016) in Georgia, to mention only a few (Fig. 1.1). Consequently, while some studies in the mid 20th century may have suggested that farming originated independently in various regions, the current consensus argues that the Neolithization of the South Caucasus was a result of dispersals from the Fertile Crescent of Southwest Asia. However, scholars have not yet clarified the details of the dispersal processes: for example, the chronological patterns and geographic contexts of the dispersals, the cultural and population interaction of the incoming farmers and the local hunter-gatherers, if any were present, and the cultural development of the first farming societies after their acceptance of this novel economy. All of these represent important avenues of research for future studies.

Our research in the Middle Kura Valley of the Ganja-Kazakh Plain, Azerbaijan, also aims to contribute to a better understanding of the Neolithization in the South Caucasus. Substantial investigations of the Neolithic sites of this valley began with the pioneering fieldwork of Ideal Narimanov in the 1960s and 1970s. The most remarkable achievements of his study were the excavations of Shomutepe, Gargalartepe, and Toyretepe in this plain. From these excavations, Narimanov (1987: 17) proposed that the Shomutepe culture was the oldest Neolithic culture in the region. His description of the architectural and artifactual remains provided sufficient evidence that this site exhibited all aspects of Neolithic culture, such as plant cultivation, stock-breeding, mud-brick architecture, and the use of early pottery. Narimanov argued that this culture represented the first full-fledged Neolithic entity in Azerbaijan at that time, and scholars still agree with this today. However, despite this valuable

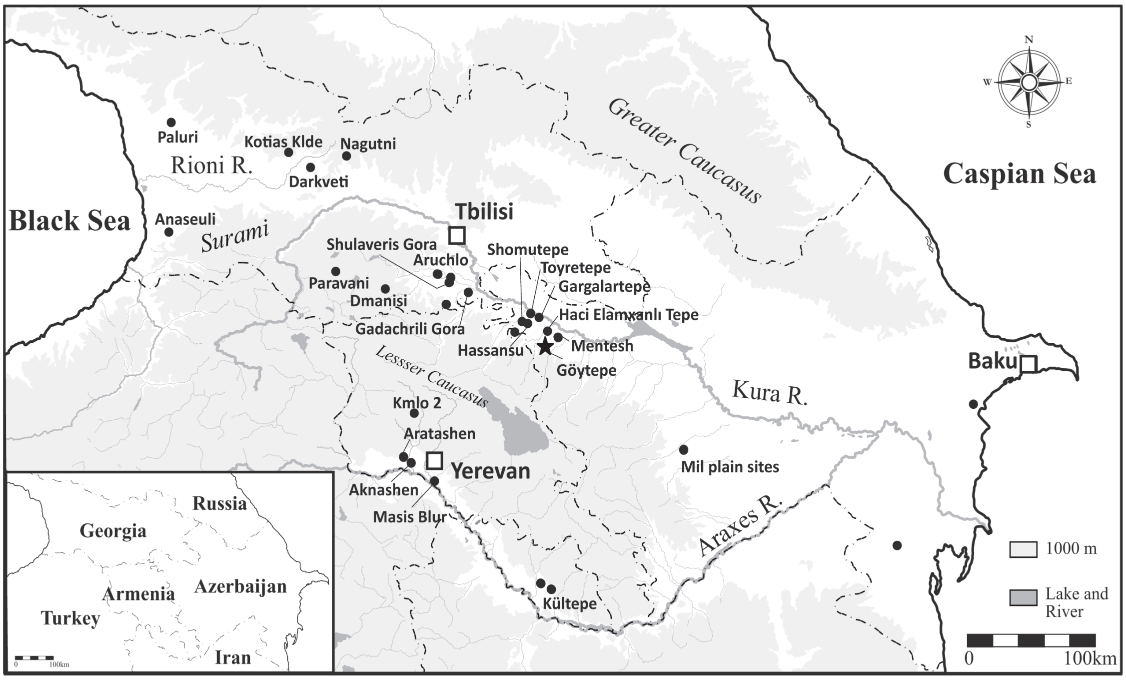

Fig. 1.1 Map showing the location of Göytepe and related Neolithic sites in the South Caucasus.

contribution, in light of the current standards, even the proposed cultural assemblage and chronology needs refinement. Narimanov developed the definition of the Shomutepe culture before adequate availability of modern excavation techniques such as stratigraphic sampling, recovering strategies for botanical and faunal remains, and radiocarbon dating. Nevertheless, because of a number of reasons, the next two decades did not witness any follow-up field research in Azerbaijan with regard to the Shomutepe culture.

Accordingly, the major objective of our research is to redefine the archaeological elements of the Shomutepe culture in detail and establish its chronological framework by means of scientific excavations that employ up-to-date field techniques. Through these, we intend to shed new light on the origin and development of the early farming communities in the Middle Kura Valley. The site we chose for intensive field investigations is the mound of Göytepe, situated on the right bank of the Middle Kura Valley at an altitude of about 400 m, approximately 10 km east of Tovus city (Fig. 1.1). It is, to date, one of the largest Neolithic sites known in the region. This mound was first identified as a Neolithic site of the Shomutepe type during the survey by Narimanov (1987: 31). Later in 2007, his interpretation was confirmed by an Azerbaijan-French survey, which made analyses of the surface archaeological materials and charcoal specimens for radiocarbon dating from the stratigraphic section exposed at the northern edge of this mound (Guliyev et al. 2009; see also Chapter 4). These investigations guided our research from the 2008 season. It revealed that, despite Narimanov's estimate of about 5 m high and covered an area of one hectare at the base, our excavations revealed that this mound is much larger, about 9 m high and nearly 1.5 ha in area. Moreover, cultural deposits were found to continue for 2 m below the present ground surface. Therefore, the total cultural deposits, all from the Neolithic period, are a total of 11 m deep.

The present volume addresses the results of the excavations conducted by the Azerbaijan-Japan Archaeological Mission from 2008 to 2013, under the direction of the editors of this volume. Although the fieldwork at this important site continues today, the first six seasons' excavations were more substantial than the later ones (Guliyev and Nishiaki 2012, 2014). The results of the first seasons' work are considered worth being published as a separate monograph. The present volume consists of two parts: Part I presents results from fieldwork that deal with our observations as to the geomorphological setting (Chapter 2), stratigraphy and architecture (Chapters 3–6), geo-archaeological aspects of selected features (Chapter

7), and the distribution of related archaeological sites in the surrounding region (Chapter 8). Part II then refers to laboratory analyses of the excavated materials such as flaked stone artifacts (Chapters 9–11), ground stone artifacts (Chapter 12), pottery (Chapter 13), clay figurines (Chapter 14), bone objects (Chapter 15), plant remains (Chapter 16), and animal remains (Chapter 17).

Before we begin the descriptions, we shall address the chronological framework of the Göytepe site. The statistical analyses of nearly 50 radiocarbon dates indicates that the Neolithic occupations at Göytepe started in approximately 5650 cal. BC and ended about 5460 cal. BC (Table 1.1). These results imply that the site was occupied for a relatively short period of about 200 years in the middle of the 6th millennium BC. According to the current chronological framework of the Shomutepe culture, the site at Göytepe was occupied in the late phase (Fig. 1.2).

This radiocarbon chronology has raised two important issues related to how we understand the Neolithic lifestyles at Göytepe. One is the very rapid cycle of rebuilding the architecture. As detailed in Chapters 3 and 4, the sequence of 11 m cultural deposits of Göytepe is divided into 14 architectural levels. Our Bayesian analyses of the radiocarbon dates estimate a duration for each level, 5 to 15 years at average (Table 1.1; Fig. 1.3). The lack of the comparable data from other sites in the South Caucasus prevents an evaluation of this pattern in the regional context. However, the available literature on the life history of mud-brick architecture of the archaeological and ethnographic examples in Southwest Asia point to a much longer cycle of 20 to 50 years (Nishiaki et al. 2018). Therefore, the unexpectedly short rebuilding cycle for the Göytepe architecture requires adequate explanation. The data from Göytepe, equipped with numerous radiocarbon dates on a hitherto unparalleled scale, provide us with an important insight into the residential/settlement patterns of the early 6th millennium BC in this part

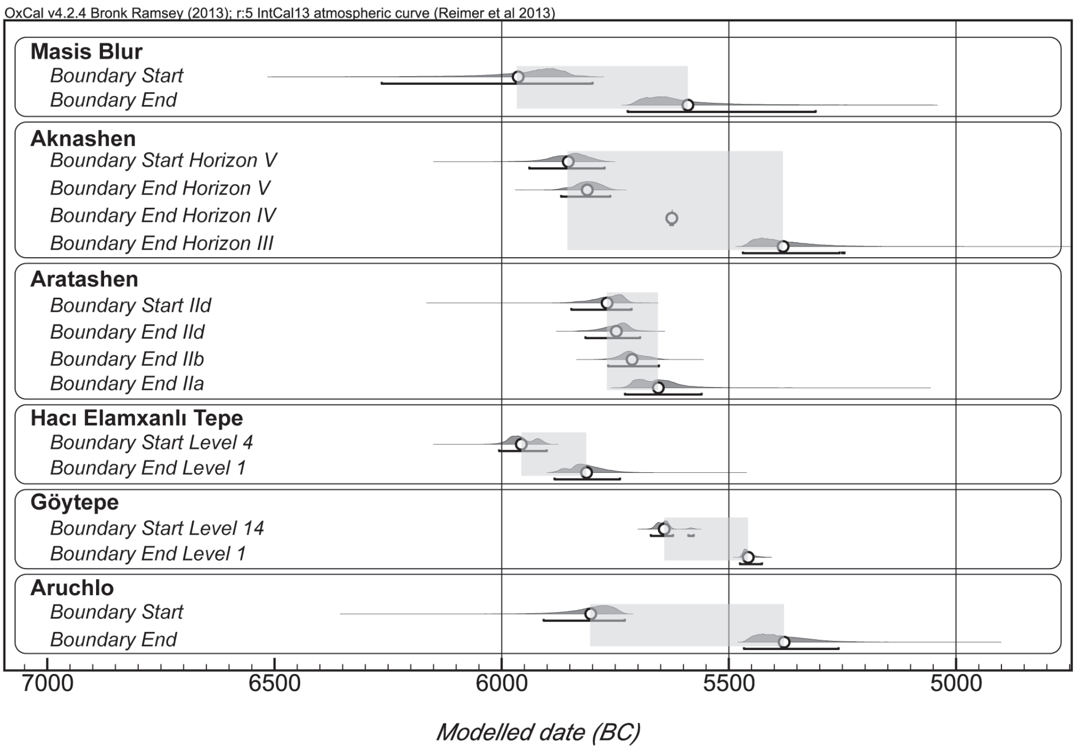

Fig. 1.2 Probability distributions of dates estimated with the sequence and phase models of the OxCal program (Nishiaki et al. 2015b). Gray areas mark the range between the mean values estimated for the start and end of the occupations at each site.

Table 1.1 Results of the Bayesian analysis of radiocarbon dates from Göytepe. The numbers in italics indicate estimated dates for stratigraphic boundaries (Nishiaki et al. 2018).

Level	Context	Lab. num.	^{14}C age (BP)	Calibrated age (cal. BC)		Modelled data (BC)			Agreement index	Posterior outlier probability
				68.2% probability	95.4% probability	68.2% probability	95.4% probability	Median		
Main trench										
	End of Goytepe seqeunce					***5475 - 5450***	***5485 - 5425***	***5460***		
Level 1	GOY14 1B-6	IAAA-141125	6385 ± 30	5465 - 5315	5470 - 5310	5480 - 5455	5490 - 5440		47.6	14
	GOY14 1B-3	IAAA-141123	6480 ± 30	5485 - 5380	5490 - 5370	5480 - 5460	5490 - 5435		135.9	2
	Boundary Level 2/ Level 1					***5485 - 5465***	***5495 - 5450***	***5475***		
Level 2	GOY14 1B-4	IAAA-141124	6565 ± 30	5535 - 5480	5610 - 5475	5490 - 5475	5500 - 5465		69.8	8
	Boundary Level 3/ Level 2					***5495 - 5475***	***5505 - 5470***	***5485***		
Level 3	GOY09 1AII	TKa-14998	6460 ± 50	5480 - 5375	5510 - 5320	5495 - 5475	5505 - 5470		46.5	7
	GOY14 1A-2	IAAA-141121	6530 ± 30	5515 - 5475	5560 - 5390	5495 - 5475	5505 - 5470		138.3	1
	GOY14 1A-1	IAAA-141120	6565 ± 30	5535 - 5480	5610 - 5475	5495 - 5475	5505 - 5470		101.5	3
	GOY14 1A-3	IAAA-141122	6650 ± 30	5625 - 5555	5635 - 5525	5495 - 5475	5505 - 5470		4.4	52
	Boundary Level 4/ Level 3					***5500 - 5475***	***5510 - 5475***	***5490***		
Level 4	GOY09 2AI	TKa-15000	6480 ± 45	5485 - 5375	5530 - 5340	5500 - 5480	5515 - 5475		64.3	4
	GOY09 2AII	TKa-14999	6480 ± 50	5485 - 5375	5530 - 5330	5500 - 5480	5515 - 5475		72.8	4
	GOY08 2B	TKa-14623	6500 ± 35	5515 - 5385	5530 - 5370	5500 - 5480	5515 - 5475		108.5	2
	GOY08	TKa-14622	6575 ± 35	5550 - 5480	5615 - 5475	5500 - 5480	5515 - 5475		108.1	2
	Boundary Level 5/ Level 4					***5505 - 5480***	***5515 - 5475***	***5495***		
Level 5	GOY10 4BI-17	NUTA2-22554	6418 ± 29	5470 - 5365	5475 - 5330	5510 - 5485	5520 - 5475		5.7	97
	GOY11 4AI	IAAA-120064	6470 ± 30	5480 - 5380	5485 - 5370	5510 - 5480	5520 - 5475		11.1	24
	Boundary Level 6/ Level 5					***5515 - 5485***	***5525 - 5480***	***5500***		
Level 6	GOY11 3AII	IAAA-120063	6610 ± 30	5615 - 5515	5620 - 5490	5520 - 5490	5530 - 5485		60.2	4
	Boundary Level 7/ Level 6					***5525 - 5495***	***5535 - 5485***	***5510***		
Level 7	GOY09 4BII-21	TKa-15170	6410 ± 70	5470 - 5335	5490 - 5225	5525 - 5500	5540 - 5490		10.3	16
	GOY09 4BII-21	TKa-15169	6520 ± 70	5555 - 5380	5620 - 5355	5525 - 5500	5540 - 5490		139.1	2
	Boundary Level 8/ Level 7					***5530 - 5505***	***5540 - 5490***	***5520***		

Table 1.1 Continued.

Level	Context	Lab. num.	^{14}C age (BP)	Calibrated age (cal. BC) 68.2% probability	Calibrated age (cal. BC) 95.4% probability	Modelled data (BC) 68.2% probability	Modelled data (BC) 95.4% probability	Median	Agreement index	Posterior outlier probability
Level 8	GOY09 4BII-51	TKa-15173	6450 ± 70	5485 - 5355	5545 - 5300	5535 - 5510	5550 - 5500		25.3	8
	GOY11 4BI-63	IAAA-120065	6560 ± 30	5535 - 5480	5610 - 5475	5535 - 5510	5550 - 5500		105.6	2
	AF06-no4	UBA-7615	6574 ± 41	5555 - 5480	5620 - 5475	5535 - 5510	5550 - 5500		127.2	2
	AF06-no1	UBA-7614	6575 ± 39	5555 - 5480	5615 - 5475	5535 - 5510	5550 - 5500		127.1	2
	Boundary Level 9/ Level 8					***5545 - 5515***	***5555 - 5505***	***5530***		
Level 9	GOY09 4BIIX-5	TKa-15168	6400 ± 50	5470 - 5320	5480 - 5305	5550 - 5520	5560 - 5510		4.9	88
	AF06-no8	UBA-7616	6602 ± 39	5615 - 5505	5620 - 5485	5550 - 5525	5560 - 5510		127.1	2
	GOY11 4BI-84	IAAA-120066	6620 ± 30	5615 - 5525	5625 - 5490	5550 - 5525	5560 - 5510		107.3	2
	GOY09 4BIIX-10	NUTA2-22555	6630 ± 30	5620 - 5535	5625 - 5510	5550 - 5525	5565 - 5510		86.6	3
	Boundary Level 10/ Level 9					***5560 - 5530***	***5570 - 5515***	***5545***		
Level 10	GOY09 4BIIX-53	TKa-15174	6530 ± 80	5610 - 5380	5625 - 5340	5565 - 5535	5580 - 5520		96.3	4
	GOY09 4BIIX-50	TKa-15172	6570 ± 70	5615 - 5475	5635 - 5375	5565 - 5535	5580 - 5520		113.1	3
	GOY09 4BIIX-51	TKa-15175	6580 ± 80	5615 - 5475	5645 - 5370	5565 - 5540	5580 - 5520		123.3	3
	GOY11 4BI-111	IAAA-120067	6610 ± 30	5615 - 5515	5620 - 5490	5565 - 5540	5580 - 5520		124.9	2
	GOY09 4BIIX-45	TKa-15171	6610 ± 50	5615 - 5510	5625 - 5480	5565 - 5540	5580 - 5525		120.7	2
	Boundary Level 11/ Level 10					***5575 - 5545***	***5595 - 5530***	***5560***		
Level 11	GOY11 4BI-116	IAAA-120068	6680 ± 30	5635 - 5560	5660 - 5540	5590 - 5560	5610 - 5545		103.1	2
	Boundary Level 12/ Level 11					***5605 - 5570***	***5620 - 5555***	***5585***		
Level 12	GOY12 4BIIX-113a	IAAA-120685	6590 ± 30	5550 - 5510	5560 - 5490	5615 - 5585	5625 - 5565		60.2	5
	GOY11 4BIIX-109	IAAA-120684	6620 ± 30	5615 - 5525	5625 - 5490	5620 - 5585	5625 - 5565		107.4	3
	GOY10 4BIIX-92	IAAA-120058	6730 ± 30	5665 - 5620	5715 - 5570	5640 - 5575	5645 - 5570		59.5	11
	Boundary Level 13/ Level 12					***5650 - 5600***	***5655 - 5575***	***5625***		
Level 13	GOY12 4BIIX-124	IAAA-120686	6800 ± 30	5720 - 5665	5735 - 5640	5655 - 5615	5665 - 5585		21.4	37
	Boundary Level 14/ Level 13					***5660 - 5620***	***5670 - 5595***	***5635***		
Level 14	GOY13 4BIIX-129b	IAAA-132141	6690 ± 30	5640 - 5565	5665 - 5555	5660 - 5625	5675 - 5610		74.8	3
	GOY13 4BIIX-129a	IAAA-132140	6700 ± 30	5645 - 5565	5670 - 5555	5660 - 5625	5675 - 5610		93.8	5
	Start of Goytepe sequence					***5670 - 5625***	***5695 - 5615***	***5650***		

Table 1.1 Continued.

Level	Context	Lab. num.	^{14}C age (BP)	Calibrated age (cal. BC) 68.2% probability	Calibrated age (cal. BC) 95.4% probability	Modelled data (BC) 68.2% probability	Modelled data (BC) 95.4% probability	Median	Agreement index	Posterior outlier probability
Pit 92A1										
	End of Goytepe seqeunce					***5475 - 5450***	***5485 - 5425***	***5460***		
Upper layer	GOY12 92AI-11	IAAA-120687	6590 ± 30	5560 - 5490	5615 - 5480	5560 - 5490	5615 - 5480		104.4	3
Middle layer	GOY13 92AI-17	IAAA-132142	6730 ± 30	5665 - 5620	5715 - 5570	5650 - 5570	5670 - 5555		84.3	7
Bottom layer	GOY13 92AI-18	IAAA-132143	6860 ± 30	5775 - 5710	5810 - 5665	5675 - 5620	5685 - 5580		7.3	65
	Start of Goytepe sequence					***5670 - 5625***	***5695 - 5615***	***5650***		
Pit 93A_1										
	End of Goytepe seqeunce					***5475 - 5450***	***5485 - 5425***	***5460***		
Upper layer	GOY12 93A1-13	IAAA-120690	6630 ± 30	5620 - 5535	5625 - 5510	5580 - 5515	5610 - 5490		91.3	4
Lower layer	GOY12 93A1-23	IAAA-120691	6620 ± 30	5615 - 5525	5625 - 5490	5620 - 5555	5630 - 5530		108.0	3
	Start of Goytepe sequence					***5670 - 5625***	***5695 - 5615***	***5650***		
Pit 93A_2										
	End of Goytepe seqeunce					***5475 - 5450***	***5485 - 5425***	***5460***		
	GOY11 93A-no2	IAAA-120057	6660 ± 30	5625 - 5560	5635 - 5530	5625 - 5560	5635 - 5530		102.0	3
	GOY11 93A-no1	IAAA-120056	6710 ± 30	5660 - 5575	5705 - 5560	5645 - 5570	5665 - 5555		104.9	4
	Start of Goytepe sequence					***5670 - 5625***	***5695 - 5615***	***5650***		
Pit 96F										
	End of Goytepe seqeunce					***5475 - 5450***	***5485 - 5425***	***5460***		
	GOY11 96F-5	IAAA-120059	6570 ± 30	5540 - 5480	5610 - 5475	5540 - 5480	5615 - 5475		101.7	3
	Start of Goytepe sequence					***5670 - 5625***	***5695 - 5615***	***5650***		
Pit 97F										
	End of Goytepe seqeunce					***5475 - 5450***	***5485 - 5425***	***5460***		
Upper layer	GOY11 97F-10	IAAA-120060	6530 ± 30	5515 - 5475	5560 - 5390	5510 - 5470	5535 - 5440		108.2	6
Middle layer	GOY11 97F-hearth	IAAA-120062	6410 ± 30	5470 - 5360	5470 - 5325	5545 - 5470	5585 - 5450		13.9	86
Bottom layer	GOY11 97F-13	IAAA-120061	6590 ± 30	5560 - 5490	5615 - 5480	5615 - 5515	5620 - 5495		95.2	3
	Start of Goytepe sequence					***5670 - 5625***	***5695 - 5615***	***5650***		

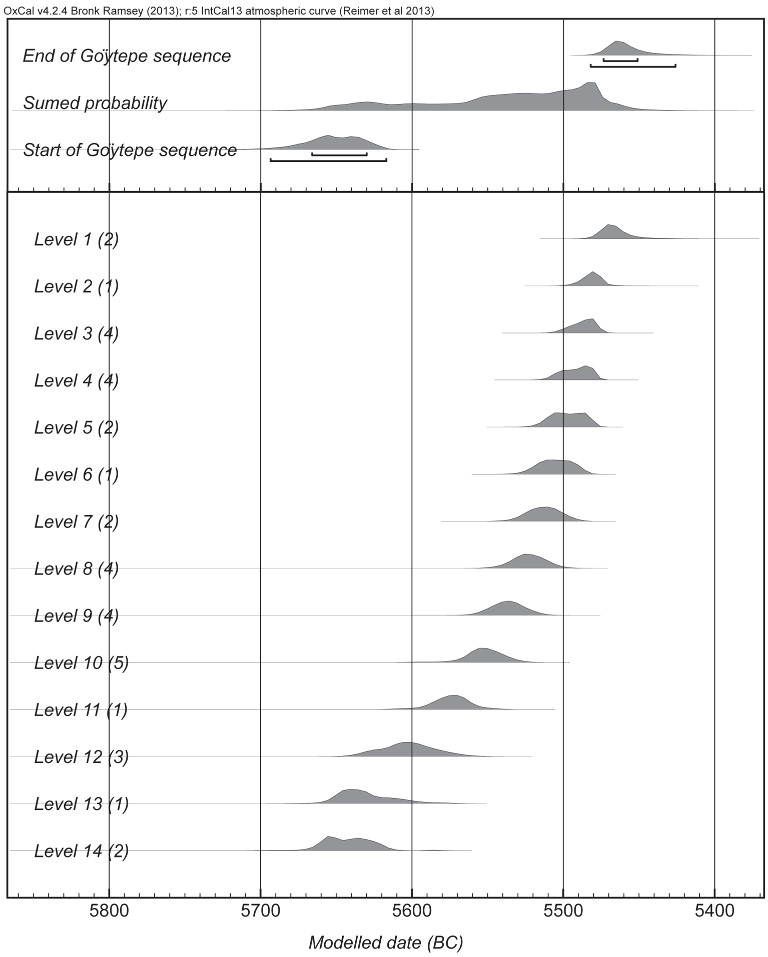

Fig. 1.3 Summed probability distribution of radiocarbon dates from Göytepe. Top: combined model using all the dates. Bottom: dates from the main excavation trench by level. Number of dates used for modeling in parentheses (Nishiaki et al. 2018).

of Eurasia. Our preliminary interpretation is that at least the late Shomutepe communities were not as sedentary as we envisage for the Neolithic period in general and these findings deserve verification with further evidence.

Second, our stratigraphic analysis of the archaeological record indicates a major break during the Göytepe sequence, between Levels 8 and 7, around 5530 cal. BC (Nishiaki et al. 2015b). At least four changes have been identified; 1) the use of pottery became common (Chapter 13), 2) the sources of obsidian procurement shifted from those of Southeast Anatolia to the Lessor Caucasus (Chapter 9) after Level 8, 3) the mud-brick size changed between Levels 8 and 7 (Chapter 6), and 4) the acceleration of rebuilding cycles of the mud-brick architecture. We estimate that the duration of each level from Level 7 and later is as short as five years or so (Nishiaki et al. 2018). These changes are best interpreted to reflect a substantial event in the Neolithization processes of the Göytepe communities and likely the neighboring communities during this time period. The detailed dataset for a range of archaeological findings presented in this volume will help interpret the socio-economic implications of those changes.

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