STATE FORMATION IN JUDAH: BIBLICAL TRADITION, MODERN HISTORICAL THEORIES, AND RADIOMETRIC DATES AT KHIRBET QEIYAFA

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ABSTRACT. During the past 30 yr, the biblical narrative relating to the establishment of a kingdom in Judah has been much debated. Were David and Solomon historical rulers of an urbanized state-level society in the early 10th century BC, or was this level of social development reached only at the end of the 8th century BC, 300 yr later? Recent excavations at Khirbet Qeiyafa, the first early Judean city to be dated by radiocarbon, clearly indicate a well-planned, fortified city in Judah as early as the late 11th to early 10th centuries BC. This new data has far-reaching implications for archaeology, history, and biblical studies.

INTRODUCTION

For thousands of years, the biblical narrative concerning the kingdoms of Judah and Israel has been considered a reliable historical account. According to the biblical account, a United Monarchy was established about 1000 BC, a golden age ruled by kings David and Solomon. After some 80 yr, it was split into two: the Kingdom of Israel in the north (destroyed by the Assyrians in 721 BC) and the Kingdom of Judah in the south (destroyed by the Babylonians in 586 BC) (see e.g. Malamat 1979; Mazar 1990). However, over the last 30 yr some scholars, so-called "minimalists," have argued that no real historical data is embedded in the biblical tradition, proposing an alternative history, reconstructed based on royal inscriptions from the ancient Near East. These interpretations entirely eliminated the United Monarchy, placed the rise of the Kingdom of Israel in the early 9th century BC, and the rise of Judah in the late 8th century BC, 300 yr later than the biblical narrative (Lemche 1988; Finkelstein 1996; Thompson 1999). A third view is that though there was no United Monarchy, a kingdom was established in Judah by King David (Garfinkel 2011). These 3 scenarios are presented in Figure 1.

In order to resolve the historical and chronological debate, a few hundred samples of organic materials from Iron Age sites in the southern Levant were sent for radiocarbon dating over the past decade. These samples were collected mainly from excavations in progress, whose geographical distribution was mainly limited to the Kingdom of Israel, Philistia, and southern Jordan (e.g. Bruins et al. 2005; Finkelstein and Piasetzky 2006; Sharon et al. 2007; Levy et al. 2008; Mazar and Bronk Ramsey 2008). From the core area of contention, Judah in the 10th and 9th centuries BC, no radiometric samples were tested. This situation has now been corrected by the excavation at Khirbet Qeiyafa.

THE KHIRBET QEIYAFA EXCAVATION PROJECT

Khirbet Qeiyafa is located ~30 km southwest of Jerusalem, in the core area of the early biblical Kingdom of Judah. This area likely includes 3 main urban centers: Hebron, Jerusalem, and Khirbet Qeiyafa (Garfinkel 2011). The Iron Age city of Khirbet Qeiyafa was constructed on bedrock, 2.3 ha in area, surrounded by massive fortifications of megalithic stones. Six seasons of excavation were carried out in 2007–2012, 6 areas of the site (areas A–F) were examined, and over 20% of the city has been uncovered. The expedition excavated 200 m of the city wall, 2 gates, a pillar building

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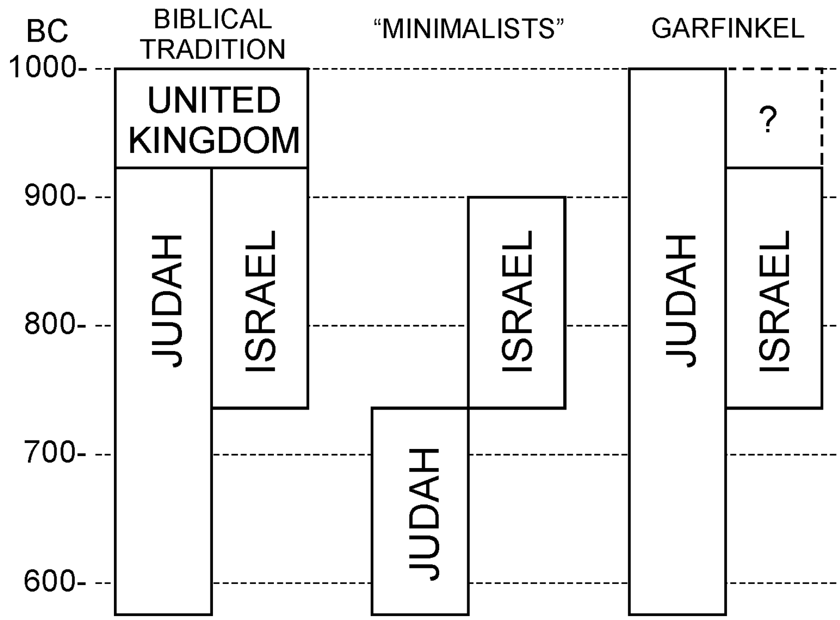

Figure 1 Three possible models for understanding the establishment of the biblical Kingdom of Judah (Garfinkel 2011: Figure 1).

(small stable?), and 10 houses (Garfinkel and Ganor 2009; Garfinkel et al. 2010). The city came to an end in a sudden destruction, as indicated by hundreds of restorable pottery vessels, stone utensils, and metal objects left on the floors of the houses. Khirbet Qeiyafa was rebuilt 700 yr later, during the mid-4th to early 3rd centuries BC, in the late Persian–early Hellenistic period. A few short episodes of occupation are also known at the site during the Late Chalcolithic, Middle Bronze Age, and Byzantine (Garfinkel and Ganor 2009).

The urban planning of Khirbet Qeiyafa includes the casemate city wall and a belt of houses abutting the casemates, incorporated in the fortifications (Figure 2). Such urban planning has not been found at any Canaanite or Philistine city, nor in the northern Kingdom of Israel, but is a typical feature of city planning in Judean cities: Beersheba, Tell Beit Mirsim, Tell en-Nasbeh, and Beth Shemesh (Shiloh 1978; Herzog 1997:237–49).

Three different levels of construction technology were utilized at Qeiyafa, as can be deduced from the size of the stones and their placement in the different architectural units: (a) Megalithic stones, 2–3 m in length, 4–8 tons in weight. The quarrying, transportation, and final placement of these huge stones required sophisticated technology and professional masons. These stones are found only in the gates and the outer wall of the city fortification. (b) Large stones, about 0.5 to 1 m in length and a few hundred kg in weight. The quarrying, transportation, and final placement of these required a few strong people, but would have been possible without sophisticated know-how. These stones were used for the construction of the inner casemate wall. (c) Medium and small stones, <0.5 m in length and 20–30 kg in weight. These can be collected and moved by the average person, including children and women. These stones were used for the construction of the dwelling units. We suggest that the 3 different levels of construction technology indicate 3 different levels of craftsmanship. Professional builders were responsible for the construction of the outer city wall.

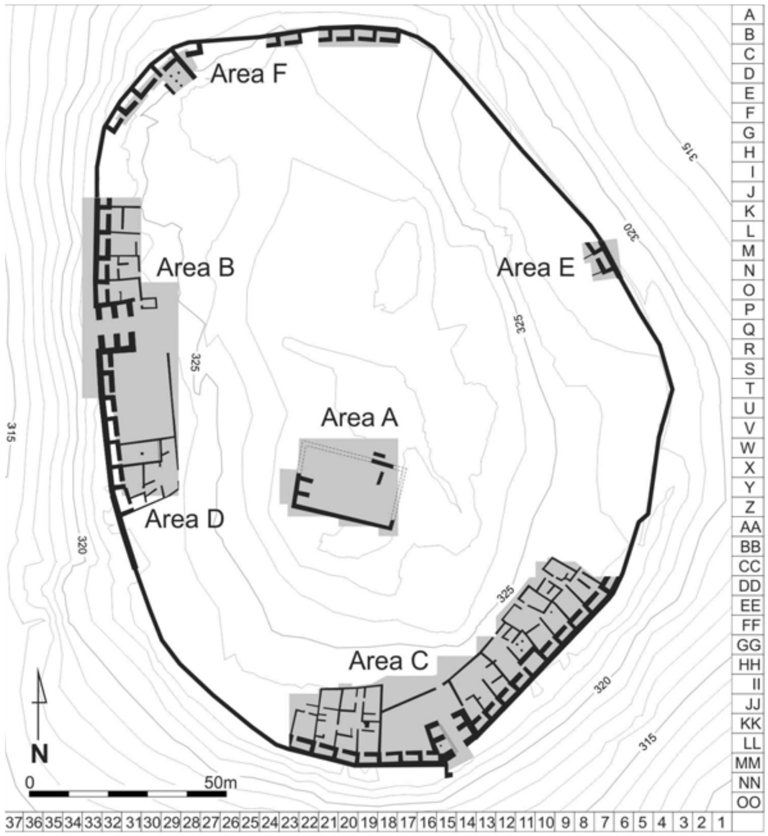

Figure 2 The Iron Age city of Khirbet Qeiyafa by the end of the 2012 excavation season

We regard Khirbet Qeiyafa as a Judean city for the following reasons: (a) its location in Judah, only a day's walk from Jerusalem; (b) city planning typical of Judah only (Garfinkel and Ganor 2009; see above); (c) no pig bones were found; these do occur in the nearby Philistine cities of Gath and Eqron (Kehati 2009); (d) ceramic baking trays, unknown at Philistine sites, were found in nearly every house; (e) an inscription uncovered at the site is written in a Semitic language, probably Hebrew (Misgav et al. 2009); (f) 3 cultic room uncovered in the 2010–2011 seasons do not bear any of the anthropomorphic or zoomorphic imagery characteristic of Canaanite or Philistine cultic activity.

Based upon pottery typology (Kang and Garfinkel 2009a,b) and the very archaic script of the inscription uncovered at the site (Misgav et al. 2009), the city clearly belongs to the very first stage of state formation in Judah. Thus, radiometric dating of Khirbet Qeiyafa can play a major role in resolving the debate over the chronology of the state-formation process in biblical Judah.

Dating a Single-Phase Site

Ultrafine dating questions like the Iron Age chronology of the southern Levant require a dating resolution that is close to the limitations of the ^{14}C dating method. The shape of the calibration curve in the period needs to be taken into account. A single-year difference can cause a shift by several decades in the calibrated age of the sample. In the case of the transition from Iron I to Iron II in general, the debated dates are between 1000 to 925 BC, a ~75-yr difference. In the case of the beginning of statehood in Judah, the debated dates are between 1000 BC (Mazar 1990) and the late 8th century BC (Finkelstein 1996), a ~300-yr difference.

While following a strict sampling and pretreatment protocol of ^{14}C samples provides control of physical and chemical contamination of samples, stratigraphic contamination of contexts are harder to detect and to eliminate. We believe that the lack of coherency of data sets from single loci or even inversions of ^{14}C age in stratified loci as observed in previous large-scale dating projects (Sharon et al. 2007; Mazar and Bronk Ramsey 2008) can be attributed to taphonomic factors caused by undetected site-formation processes. The subsequent identification of "misfits" and "outliers" pose severs methodological problems. Moreover, most of the previous Iron Age dating projects focused on tell sites characterized by long occupational histories with complex site-formation processes. Khirbet Qeiyafa, on the other hand, offers a unique opportunity for more reliable ^{14}C dates. As discussed below, Khirbeth Qeiyafa shows an occupational gap from the Middle Bronze to the beginning of its short Iron Age episode and then again from its destruction to its Hellenistic resettlement. With this gap of ~700 yr before and after the destruction event that we are attempting to date, intrusions should be clearly identifiable among the ^{14}C dates. This would also provide an objective assessment of intermixing of datable material in an archaeological site and thus help to quantify this previously unknown factor.

THE RADIOMETRIC SAMPLES

Short-lived samples of olive pits and grape seeds were submitted in several stages for dating to the Research Laboratory for Archaeology and the History of Art at Oxford University. In 2008, 8 dates were obtained. Since then, 6 additional samples have been analyzed, for a total of 14 samples, 10 of which date to the Iron Age (Table 1). This list presents the dates produced by all the samples sent for analysis so far. Four of the dates were published previously (Garfinkel and Ganor 2009) and the rest are published here for the first time.

Pretreatment

All samples underwent acid-base-acid (ABA) pretreatment, following the Oxford protocol for charred plant remains (Brock et al. 2010), with the exception of sample OxA-23322, which was not fully carbonized and thus pretreated as woody material with bleach at the end of the ABA treatment.

The 14 Individual Dates

Of the 14 analyzed samples originating from loci ascribed to the Iron Age occupation, 10 samples dated indeed to the Iron Age (Table 1). The very tight clustering of these 10 dates suggests that they reflect the same destruction event. Two samples date to the Middle Bronze, one to the Hellenistic period, and one was of modern age (after AD 1950). They represent, respectively, redepositions and intrusions that are compatible with the occupational history of the site, as known from the architectural remains and pottery analysis. Altogether, 4 out of 14 (28.57%) of the samples were intrusions. As not particularly high rodent activity was observed on the site, this number might be representative for other sites of the southern Levant as well and thus allows to tentatively quantify a previously underestimated factor.

Weighted Averages of Khirbet Qeiyafa

Figure 3 presents a multiplot of the calibrated individual dates in calendrical years BC. All samples were taken from loci that the excavators considered undisturbed Iron Age contexts. Nevertheless, 4 of the 14 samples did not date to the Iron Age, but to the Middle Bronze Age or the Hellenistic era,

Table 1 Radiometric datings from the Iron Age IIA city of Khirbet Qeiyafa. The letter B or C before the locus number indicates the excavation area.

			Year		Age range cal BC	
OxA nr	Locus	Sample code	taken	Age (BP)	68.2%	95.4%
OxA-19127	B214	Qeiyafa 3	2008	2910 ± 26	1189 (3.6%) 1181 1156 (5.0%) 1145 1130 (59.6%) 1146	1211 (95.4%) 1011
OxA-19589	B214	Qeiyafa 1b	2008	2883 ± 29	1114 (68.2%) 1014	1192 (2.5%) 1174 1164 (3.0%) 1142 1132 (88.6%) 974 954 (1.3%) 942
OxA-22044	B383	Qeiyafa 9	2009	2858 ± 33	1111 (3.4%) 1103 1082 (7.0%) 1064 1056 (53.0%) 974 954 (4.8%) 943	1126 (95.4%) 922
OxA-23505	C6155	Qeiyafa E	2010	2852 ± 26	1052 (61.6%) 974 954 (6.6%) 942	1116 (95.4%) 928
OxA-19425	B284	Qeiyafa 5	2008	2851 ± 31	1055 (56.5%) 972 960 (11.7%) 936	1117 (95.4%) 925
OxA-23506	C6160	Qeiyafa D	2010	2843 ± 26	1041 (56.3%) 974 956 (11.9%) 940	1112 (1.7%) 1102 1086 (4.1%) 1063 1058 (89.5%) 920
OxA-19426	B232	Qeiyafa 6	2008	2837 ± 29	1026 (46.9%) 970 961 (21.3%) 932	1112 (1.5%) 1102 1087 (93.9%) 914
OxA-22045	B383	Qeiyafa 10	2009	2830 ± 30	1016 (68.2%) 927	1111 (0.9%) 1103 1084 (2.2%) 1064 1056 (92.3%) 906
OxA-23504	C6160	Qeiyafa C	2010	2827 ± 27	1011 (39.9%) 969 962 (28.3%) 930	1054 (95.4%) 905
OxA-19588	B277	Qeiyafa 7	2008	2799 ± 31	996 (68.2%) 914	1026 (90.2%) 891 880 (5.2%) 846
R_Combine				2851 ± 10	1046 (68.2%) 996	1052 (89.2%) 974 956 (6.2%) 940 χ^2 test: $df = 9$; $T = 10.9$ (5% 16.9)
Start single-phase boundary					1064 (68.2%) 1010	1126 (95.4%) 1002
End single-phase boundary					1010 (65.9%) 955 948 (2.3%) 945	1021 (95.4%) 896
Interval single phase					6–102	0–193
Start Tau Boundary					1034 (68.2%) 996	1068 (95.4%) 972
End Tau Boundary					1012 (68.2%) 967	1024 (95.4%) 920
Interval Tau					0–5	0–5
OxA-19125	B214	Qeiyafa 2a	2008	3300 ± 28	1612 (68.2%) 1531	1663 (1.7%) 1652 1641 (93.7%)
OxA-19126	B214	Qeiyafa 2b	2008	3302 ± 28	1613 (68.2%) 1531	1664 (2.2%) 1651 1641 (93.2%) 1504
OxA-19128	B302	Qeiyafa 4	2008	2182 ± 26	354 (46.9%) 291 231 (21.3%) 196	361 (55.9%) 271 264 (39.5%) 172
OxA-23322		Qeiyafa 3A1	2010	Modern	post AD 1950	

which points to on-site taphonomic processes, inconspicuous to the eye. Migration of dated material within the stratigraphic sequence at Khirbet Qeiyafa is easily discernible because the intrusive samples pre- or postdate the 10 consistent dates by several centuries. This is in contrast to multilayered tell sites, such as Megiddo, Dor, Hazor, or Rehov, with a complex stratigraphy and a dense sequential occupation of Iron Age layers. In such sites, it is much more difficult to exclude intrusive elements from the immediate layer above or redeposited elements from the immediate layer below, as sometimes only 50 or 60 yr differentiate between the layers. The case study of Khirbet Qeiyafa clearly indicates the advantage of dating a single-phase, short-lived site. Figure 4 plots the weighted average of the 10 Iron Age dates. The average places the end of the city at 1σ probability (68.2%) during 1046–996 BC; at 2σ probability to 1052–974 BC at 89.2% and 957–940 BC at 6.2%. This means that the city most likely came to its end before 974 BC. The authors accept that the city may have come to an end as late as 940 BC; however, at 6.2% probability, this does not appear very likely. Calibration was done using OxCal v 4.1.7 (Bronk Ramsey 2009a,b) and IntCal09 calibration curve data (Reimer et al. 2009).

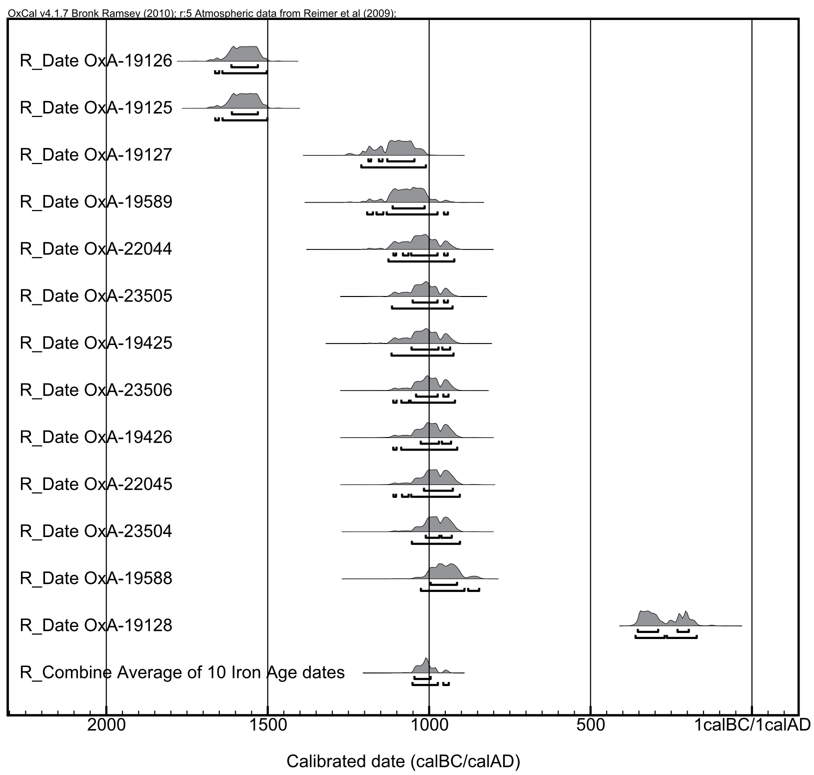

Figure 3 Multiplot of radiometric measurements of Khirbet Qeiyafa

The combining of Khirbet Qeiyafa dates has been criticized in the past (Finkelstein and Piasetzky 2010). Indeed, past attempts to average several dates from the same stratum display a severe lack of coherence, as reflected by failed statistical tests such as the χ^2 test (Bronk Ramsey 2009a). But the combination of data to create a weighted average is premised if all the individual samples are roughly coeval. In the case of Khirbet Qeiyafa, it is clear that the city was destroyed a very short time after its construction as no subphases were noticed in the excavations. When people dwell in a place for a long period of time, various changes can be observed, like raising floors, building installations one on top of the other, canceling walls, adding rooms, and the like. However, none of these were found in the very large horizontal exposure of over 4000 m^2 uncovered during 6 excavation seasons. In addition, the radiometric results support this observation. The 10 samples, when averaged, pass the χ^2 test, indicating that the Khirbet Qeiyafa dates are statistically likely to be of the same period.

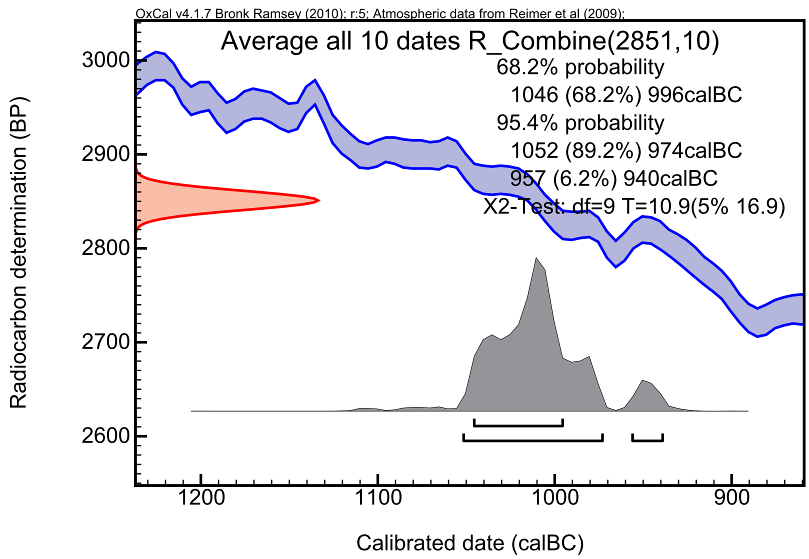

Figure 4 Weighted average of all 10 Iron Age dates

Single-Phase Model

Noting the difficulty of averaging dates, and respecting the call that the samples "should be interpreted as reflecting the length of activity at the site" (Finkelstein and Piasetzky 2010), Figure 5 presents a single-phase model of the 10 dates. These dates were additionally analyzed with an outlier analysis (Bronk Ramsey 2009b) and were found to be in good consistency with each other. As ^{14}C results are most likely to represent the last years of the city rather than the length of activity at the site, the phase was restricted with a Tau boundary at its start and a regular boundary at its end.

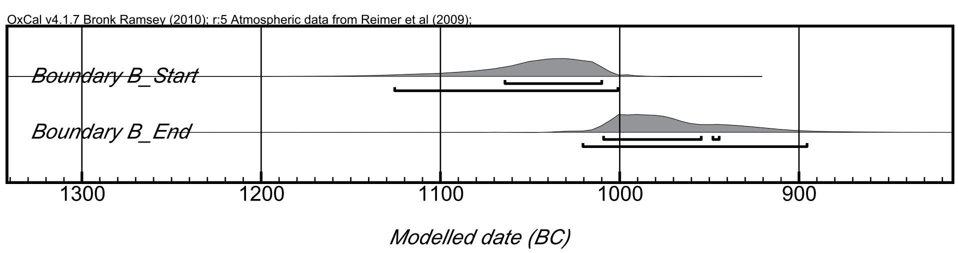

Figure 5 Single-phase model of the 10 Iron Age dates

Tau Boundary Model

This model fits a "group of events that is assumed to be exponentially distributed rising to a maximum event probability at the end event," which is fulfilled as stated above (http://c14.arch.ox.ac.uk/oxcalhelp/hlp_analysis_oper.html). Figure 6 presents the calculated start and end boundary as well as the modeled dates depicted in dark gray. The modeled start boundary has been calculated at 1034–996 BC at 68.2% and 1068–972 BC at 95.4%. The end of the phase was modeled for 1012–967 BC at 68.2% and 1024–920 BC at 95.4%. This considerable overlap of start and end boundary points to a single event rather than a long phase, which supports the field observations that the site existed for a very short period of time.

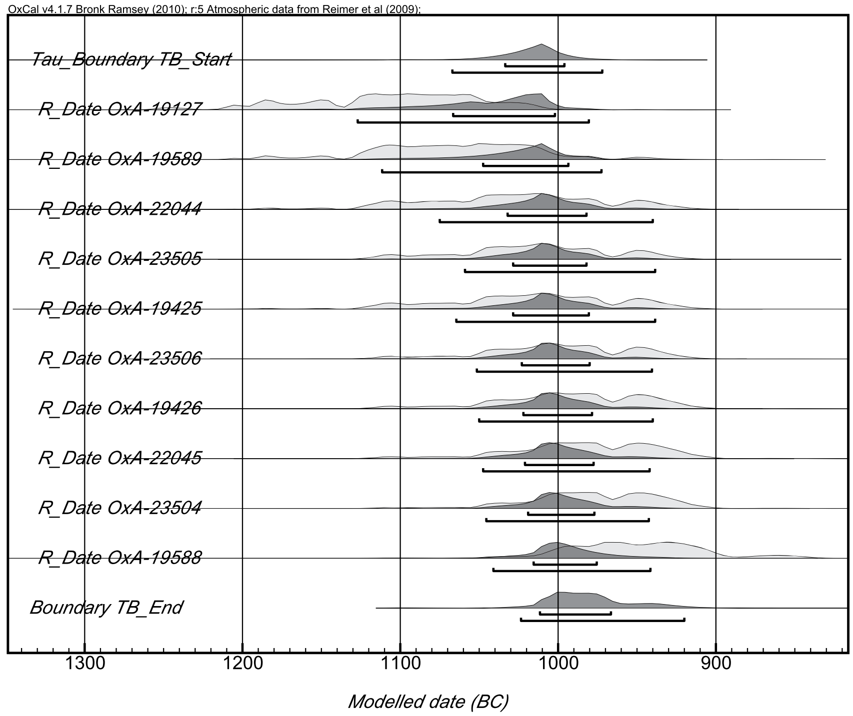

Figure 6 Tau boundary model of the 10 Iron Age dates

The dates covered the late 11th and early 10th centuries BC. These results indicate that urbanism started in Judah around 1000 BC, and not only toward the late 8th century BC. Therefore, the radiometric dating is in accordance with the biblical narrative.

How do these new dates correlate with the hundreds of already published dates from Iron Age southern Levant, which are claimed to support the Low Chronology (Sharon et al. 2007)? Here, the geography of the sites producing these dates should be taken into consideration. These dates were obtained from sites located in the northern Kingdom of Israel. Thus, the urbanization process in northern Israel started about a century after its beginning in southern Judah. Indeed, the biblical tradition itself suggests that the northern Kingdom of Israel was established about a century later then the Davidic kingdom in Judah. Nevertheless, it should be emphasized that the radiometric datings from Khirbet Qeiyafa cannot help in solving the historical debate concerning the biblical tradition of the golden era of the United Monarchy. If indeed urbanism in the northern part of Israel started during the early and middle of the 10th century BC, these early cities should be found and dated at the relevant sites, particularly Megiddo and Hazor.

Besides the chronological question of when the Judean Kingdom was founded, the radiometric datings support 2 field observations: (a) The buildings in areas B and C are dated to exactly the same period. It was important to support this observation by radiometric datings, as a pottery shape considered to be a later type (the Black Juglet) was found only in Area C. (b) The beginning and end of the city are very close to each other. Throughout Khirbet Qeiyafa, we never observed any subphases, modifications or rebuilding of floors, installations, or walls. This is a unique situation as most excavated buildings, even the simplest Neolithic huts, present modifications. Thus, Khirbet Qeiyafa existed for less than 1 generation (20–30 yr).

DISCUSSION

It is possible to argue that the city at Khirbet Qeiyafa existed for not more than 30 yr, or that it flourished for nearly 135 yr. Nevertheless, it is clear that the typical Judean urban planning, known at the 9–8th century BC sites of Beersheba, Tell Beit Mirsim, Tell en-Nasbeh, and Tell Beth-Shemesh, was already in practice in late 11th and early 10th century BC Khirbet Qeiyafa. The existence of fortified cities in this region and in this time period bears direct implications for the debate concerning state formation in biblical Judah.

Khirbet Qeiyafa's physical components are well organized in a distinct spatial pattern, suggesting advance planning. Indeed, cities can be built and enlarged over time without being planned, but planning is indicative of a higher level of social organization. If the same urban planning occurs in the Iron II over a sizeable territory (Khirbet Qeiyafa, Beit Shemesh, Tell en-Nasbeh, Tell Beth Mirsim, and Beersheba), such standardization can be regarded as an indicator of planning by a central authority, such as a state. This particular urban plan is typical of Judah and is not associated with any of the neighboring cultures—Canaanite, Philistine, or even the Kingdom of Israel.

"Minimalist" approaches flourished over the past 30 yr, claiming that as there is no archaeological data for fortified urban centers in Judah from the 10th–9th centuries BC, and thus the Judahite monarchy could have developed only by the late 8th century BC. However, the radiometric data from Khirbet Qeiyafa clearly indicate that the process of state formation and urbanization started in the Kingdom of Judah as early as the late 11th century BC. Even if one hesitates to unequivocally accept the historicity of the golden age of the United Monarchy as portrayed in the biblical narrative, it does appear that a kingdom was established at that time in Judah.

The data accumulated from the Khirbet Qeiyafa excavations portray a material culture, mainly the assemblage of pottery vessels, from the time associated with the first phase of the establishment of the Kingdom of Judah (Kang and Garfinkel 2009a,b; Garfinkel 2011; Garfinkel and Kang 2011). At what sites, and in which settlement strata, were similar pottery vessels found? Detailed ceramic discussions would exceed the purview of this article; the main conclusions from such a study are presented in Table 2. Despite the archaeological excavations that have been conducted at numerous sites in Judea over the decades, very little is known about the early phases from data of the 10th–9th centuries BC, and modern research is still in its infancy.

Table 2 Division of Iron Age IIA in Judah and in the Shephelah into 3 chronological phases, and the prominent characteristics of each phase.

Cultural phase within Iron Age IIA	Cultural characteristics	Sites
Late 11th–early 10th centuries BC	Red slip and irregular hand burnishing are rare; archaic (Canaanite) script; Cypriot import of "painted white" vessels; early Ashdod Ware	Khirbet Qeiyafa, Khirbet ed-Dawwara, Beth-Shemesh stratum 4, Arad stratum XII, Beersheva stratum VII
Second half of 10th century–early 9th century BC	Irregular burnishing on bowls, sometimes in geometric patterns; early Phoenician-Hebrew script; Cypriot import of vessels in "black-on-red" style	Beth-Shemesh stratum 3, Lachish stratum V, Tel Zayit
Middle and late 9th century BC	Very common irregular burnishing and red slip; late Ashdod ware	Tell es-Safi stratum IV, Lachish stratum IV

The excavations at Khirbet ed-Dawwara made it possible to clearly date the fortified settlement at the site, which covered an area of 0.5 ha. The 3 excavation seasons at the site uncovered a single phase of settlement with "four-room houses" and fortified by a double wall (Finkelstein 1990); however, the excavators misdated the site and suggested that it existed for several hundred years. But now, the excavations at Khirbet Qeiyafa, and the appearance of similar pottery vessels at both sites, reveal that the 2 sites plainly existed in tandem. Significantly, both were built on bedrock, and not over the ruins of a Canaanite city. Both mark the beginning of a new period in the history of the Land of Israel: the appearance of the Kingdom of Judah. The location of the 2 sites seems significant: Khirbet ed-Dawwara is about half a day's walk from Jerusalem to the northeast, and Khirbet Qeiyafa is about a day's walk to the southwest. These 2 sites might mark the boundaries of the Kingdom of Judah: Khirbet Qeiyafa in the west and Khirbet ed-Dawwara to the northeast.

The pottery vessel assemblages clearly demonstrate that concurrent with the fortified settlements in Khirbet Qeiyafa and Khirbet ed-Dawwara, other sites in the Judean Shephelah or in the hill country were still unwalled villages, such as stratum 4 at Tell Beth-Shemesh, stratum 12 at Arad, or stratum VII at Beersheva. An analysis of the pottery vessels also reveals that many sites, such as Lachish or Tell Beit Mirsim, were completely uninhabited in this phase.

Khirbet Qeiyafa most probably marks the southwestern boundary of the urban core of the Judean kingdom. This conclusion suggests that in its early days, this urban core, which may be regarded as the early historical nucleus of the nascent monarchy, was relatively limited geographically to the hill country and a small part of the Shephelah. In later phases, in the second half of the 10th century BC and during the 9th and 8th centuries BC, fortified cities were gradually established in more southerly sites as well, such as Lachish, Tell Beit Mirsim, Beersheva, Tell 'Ira, and Arad.

Clearly, then, the Kingdom of Judah developed in a gradual manner over the course of centuries rather than appearing suddenly as an urban society. The major challenge facing archaeological research is to precisely determine when the first fortified settlements were established at Lachish, Tell Beit Mirsim, Beersheva, and Arad. Only then will scholars be able to reconstruct with certainty the settlement, demographic, and economic history of the monarchy.

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