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A Bayesian Statistical Reassessment of Levantine Late Iron Age I Radiocarbon Data

Una reevaluación estadística bayesiana de las fechas ^{14}C de la Edad del Hierro I tardío levantino

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Abstract

The Levantine Iron Age I represents a crucial period, defined by the persistence of local Canaanite ware with few local and regional changes and the proliferation of Philistine Bichrome pottery after a ending period of the Late Bronze Age where Philistine Monochrome pottery and LH IIIC developed. Usually, scholars place its beginning in the 12th century BC, coinciding with the upheaval caused by the Egyptian withdrawal and the collapse of the Late Bronze Age palatial system, among other historical events. However, the conclusion of this era is a subject of disagreement. Archaeological evidence suggests a transitional phase towards the later Iron Age IIA, usually known as Late Iron Age I or Iron Age IB, marked by the early introduction of new features in pottery, announcing the subsequent revolution of the Iron Age IIA, while traditional ware kept predominant. Discrepancies arise from diverse interpretations of historical sources and methodological approaches to the archaeological record. Traditional perspectives often associate the end of this period with the rise of the Unified Kingdom of David and Solomon around 1000 BC — adherents to the High Chronology view — (Yadin, 1972) or the establishment of the later Israelite Samarian kingdom following Pharaoh Sheshonq's military campaign around 930 BC — proponents of the Low Chronology view — (Finkelstein, 1996; Finkelstein and Silberman, 2001; Fantalkin and Finkelstein, 2006). Our research aims to illuminate this chronological debate using a robust Bayesian statistical approach. We meticulously gather radiocarbon data from stratified contexts spanning the Iron Age IB and adjacent periods to construct Bayesian models and average determinations. Our findings reveal that the transition to the Iron Age II was not uniform but rather heterogeneous, occurring between approximately 1050 and 930 BC. This challenges conventional interpretations that link the transition towards the Iron Age IIA to political incidents such as Davidic conquests or Sheshonq's campaign. Instead, the adoption of new pottery styles reflects nuanced regional dynamics, suggesting a complex cultural evolution beyond the influence of centralized administration from Jerusalem or Samaria.

Key words: Radiocarbon, Chronology, Bayesian model, Levant, Canaan, Israel, David, Solomon, Sheshonq, Biblical archaeology

Resumen

La Edad del Hierro I en el Levante es un período crucial, caracterizado por la persistencia de la cerámica cananea tradicional y la proliferación de la cerámica filistea bícroma tras la fase final del Bronce Tardío. Generalmente, se sitúa su inicio en el siglo XII a. C., coincidiendo con la crisis del imperialismo egipcio y el colapso del sistema palacial. Sin embargo, existe desacuerdo respecto al final de este período. La evidencia arqueológica sugiere una fase de transición hacia la posterior Edad del Hierro IIA, conocida como Edad del Hierro I Tardía o Edad del Hierro IB, marcada por la temprana introducción de nuevas características cerámicas que anunciaban la revolución

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de la Edad del Hierro IIA, mientras la cerámica local tradicional seguía predominando. Las discrepancias surgen de diversas interpretaciones de fuentes históricas y enfoques metodológicos hacia el registro arqueológico. Las perspectivas tradicionales a menudo asocian el fin de este período crucial con el surgimiento del Reino Unido de David y Salomón alrededor del 1000 a. C. —los defensores de la alta cronología (Yadin, 1972)— o con el establecimiento del reino israelita de Samaria tras la campaña militar del faraón Sheshonq alrededor del 930 a. C. —defensores de la baja cronología— (Finkelstein, 1996; Finkelstein y Silberman, 2001; Fantalkin y Finkelstein, 2006). Nuestra investigación pretende esclarecer este debate cronológico utilizando un enfoque estadístico bayesiano. Recopilamos meticulosamente datos de radiocarbono de contextos estratificados representativos de la Edad del Hierro IB y de los períodos inmediatamente anteriores y posteriores para construir modelos bayesianos y/o promediar determinaciones. Nuestros hallazgos revelan que la transición a la Edad del Hierro II no fue uniforme, sino heterogénea, ocurriendo aproximadamente entre 1050 y 930 a. C. según el enclave en concreto. Estos resultados desafían las interpretaciones convencionales que vinculan la transición hacia la Edad del Hierro IIA con eventos históricos concretos como las conquistas de David o la campaña de Sheshonq. En contraste con estas perspectivas historicistas, observamos que la adopción de los nuevos estilos cerámicos característicos de la Edad del Hierro IB y IIA refleja más bien la existencia de dinámicas descentralizadas, sugiriendo una evolución cultural compleja que va más allá de la influencia ejercida por parte de una administración palacial desde Jerusalén o Samaria.

Palabras clave: Radiocarbono, cronología, modelación bayesiana, Levante, Canaán, Israel, David, Salomón, Sheshonq, Arqueología Bíblica

1. Introduction[1]

We recognize the Levantine Early Iron Age or Iron Age I as an archaeological period determined by the rough continuity in the local Canaanite ware together with a general spread of Philistine Bichrome pottery and the absence of Greek and/or Cypriot imports which were more popular during the Late Bronze Age. Its beginning has been usually determined in the 12th century BC coinciding with the Egyptian imperial crisis and the arrival of Philistines — also likely of Israelite tribes in the high lands —, after a transitional period marked by the Philistine Monochrome and the Late Helladic IIIC wares (Cline 2021).

After a long period — Iron Age IA[2] — characterized by the described diagnostic artifacts — Canaanite local pottery, Philistine Bichrome pottery and a few

1 This paper is result of the author's pre-doctoral research which was developed thanks to a *Gerty Cori* pre-doctoral contract with the University of Almeria from 2019 to 2023. This paper is also result of the project PID2021-123734NB-I00 *Utica fenicia en el I milenio a.C. Su rol histórico desde su fundación hasta época romana*, funded by the Ministry of Science and Innovation of Spain. It is also the result of two research stays at the Biblical Archeology Institute of the University of Tübingen in 2021, and the Faculty of Classics at the University of Oxford in 2023. We take this opportunity to express our gratitude to Professors Jens Kamlah and Josephine Crawley Quinn for allowing the author to utilize the facilities at these esteemed institutions. Additionally, we extend our thanks to Professors Irene Lemos and Christopher Bronk Ramsey, who provided valuable insights and suggestions regarding Greek chronology and the use of radiocarbon data with the OxCal program.

2 To avoid potential misunderstandings, it is important to clarify that what we identify here as Iron Age IA is that referred to as 'Early Iron I' by the Megiddo team (Toffolo et al., 2014). However, other scholars (Mazar 2006; Mazar and Panitz-Cohen 2020) use different terminology in Beth-Shean and Tel Rehov. They consider Iron Age IA to be an earlier phase characterized by the presence of Philistine Monochrome pottery, Late Helladic IIIC pottery, and traditional Canaanite pottery. At key sites like Megiddo, this phase corresponds to Stratum VIIA, while it has not been identified at Tel Dor (area G) (Gilboa et al., 2018) or Lachish VI (Ussishkin, 2004).
In our view, aligning with I. Finkelstein and colleagues' approach, we refer to that earlier period as Late Bronze Age III. The subsequent period, marked by Philistine Bichrome pottery, is what we term Iron Age IA. Some other scholars refer to this period as Iron Age IB (Mazar, 2006; Mazar and Panitz-Cohen, 2020), so readers should be aware of these terminological differences. To avoid confusion, we emphasize that we are discussing now the sequential phase identified in Megiddo VIB and levels 10-8 in area G of Tel Dor, which is known in each one of that sites as 'Early Iron I' (Toffolo et al., 2014) and as Iron Age 1a (Gilboa et al., 2018), coinciding with the Iron Age IB in Beth-Shean and Tel Rehov (Mazar, 2006; Mazar and Panitz-Cohen, 2020). However, this paper focuses on a later stage of Iron Age I, referred to here as Iron Age IB — Iron Age 1b by A. Gilboa et al., (2018) and 'Late Iron I' by I. Finkelstein and colleagues —. Therefore, we will not normally address earlier phases, including that characterized by the presence of Philistine Monochrome ware, as they are beyond the scope of this paper.
Regarding the Phoenician chronology, our Iron Age IA corresponds with the XIV Stratum of Tyre, while our Iron Age IB fits with the Stratum XIII where Bichrome Phoenician pottery firstly appears among other new forms, types and styles of decoration (Núñez Calvo, 2008).

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recycled Late Helladic IIIC and Late Cypriot pottery — different hints in the archaeological record reflect the development of a new period which can be named as Iron Age IB — with the occurrence of new Phoenician Bichrome pottery together with some Cypro-Geometric imported vessels and the first appearances of local red-slipped decorated pottery as the Late Philistine Decorated Ware — LPDW —. Even some Aegean Proto-Geometric bowls may appear in Tel Hadar (Kochavi, 1997, 1998, 1999) and Tell es-Safi (Zukerman, 2012: pl. 13.12.15), as well as an Early Geometric skyphos in Sidon (Doumet-Serhal et al., 2023: fig. 28). The development of this series of changes in pottery together with other signs of economic recovery and architectural constructions determine a new phase towards the subsequent period of Iron Age IIA.

The chronology of this new period has not been usually agreed (Boaretto et al., 2005; Finkelstein, 2005; Mazar, 2005; Mazar et al., 2005; Sharon et al., 2007; Mazar and Bronk Ramsey, 2008; Finkelstein and Piasetzky, 2009, 2010 and 2015).

One of the main reasons that explains the inexistence of agreement about this issue is the different theoretical assumptions about the reliability of Biblical accounts as historical sources, the interpretation of the archaeological record regarding the Biblical accounts, and the methodology using radiocarbon data and statistical approaches.

Most of the archaeological contexts linked with this period — Tell Qasile X, Megiddo VIA, Tell Keisan 9, Tel Kinrot VI-V and Tel Hadar IV —, suffered an episode of destruction and abandonment which has been historically interpreted as representative of different Biblical episodes. Traditional views use to understand these episodes as linked with Davidic conquest, considering posterior "monumental" levels of the Iron Age IIA as representative of the Solomonic period (Yadin, 1958 and 1972), as other scholars use to correlate the Iron Age IB with the Egyptian campaign of Pharaoh Sheshonq in the late 10th century BC as the most probable historical background. This "Low Chronology" paradigm specially theorized by I. Finkelstein and E. Piasetzky (2003, 2006, 2009) is sustained upon the theoretical assumption that the Unified Monarchy of David and Salomon was a legendary account, and that the archaeological "monumental" levels of the Iron Age IIA should be considered as rather representative of the Israelite Omrite dynasty during the 9th century BC.

On methodological issue, different approaches have also been developed. High chronological view (Mazar, 2005, Mazar et al., 2005; Mazar and Bronk Ramsey, 2008) has usually include measurements from charcoal samples that could lead to an "old wood effect" biasing the modeled results. The Low Chronological view (Boaretto et al., 2005; Sharon et al., 2007; Finkelstein et al., 2010) has usually relied on the other hand upon short lived samples, the use of a bigger dataset of radiocarbon measurements from a major quantity of sites and the creation Bayesian models based on results from not-stratigraphically linked levels from different sites which have been assumed to be contemporary because of having the similar pottery associated.

These efforts then often relied on incomplete biased datasets and preconceived notions about pottery and diagnostic artifacts, as well as about the historical background. Traditionally, scholars have examined ancient pottery and artifacts through the perspective of historical and Biblical events, presuming that alterations in material culture closely related with concrete historical events and periods as its main source.[3] Researchers have usually then assumed that artifacts, like the red-slipped pottery of the Iron Age IIA, unanimously developed from a specific instant onward. That is, understanding the emergence of the Iron Age IIA monuments and pottery types as closely linked with the Solomonic or the Omrite dynasties' administration.

These assumptions have made it difficult for scholars to reconcile with earlier or later developments of this archaeological period revealed in certain radiocarbon datasets. An illustrating example of this challenge is the endeavor by I. Finkelstein and E. Piasetzky (2010 and 2015) to interpret the elevated radiocarbon results from Khirbet Qeiyafa.

3 Some researchers have pointed out before this kind of bias (Núñez Calvo, 2008, 2015 and 2020).

However, the assumption that changes in material culture were solely driven by recorded historical-Biblical events may be oversimplified. The cultural evolution of the Canaanite region likely involved more complexity than our current understanding suggests based on available historical accounts. It's conceivable that each enclave or site autonomously progressed in developing different stages of material culture, with central palatial administrations potentially playing a less significant role in that sense. The transition to the Iron Age IIA cultural stage may not have been solely influenced by historical-Biblical figures like David, Solomon, or Omri from Jerusalem or Samaria. Instead, these changes may have unfolded over varying durations and with uneven distribution across the region. Local powers and administrations during the 11th and 10th centuries BC may have played a substantial role in the material culture development, an intricate perspective not fully explored in Biblical accounts of the early Israelite kings' period.

2. Methodology

To tackle this challenge and check our hypothesis and proposing a new chronological framework for the Iron Age IB, several methodological steps are indispensable. Initially, a precise and well-defined characterization of this period, relying on diagnostic artifacts and closely associated elements, is of chief importance. This step aids in determining key archaeological contexts that can serve as direct evidence. Additionally, it is crucial that all chosen contexts incorporate available absolute chronological determinations in literature, especially radiocarbon determinations, enabling the exploration of their diachronic and synchronic connections.

Given the potential applications of Bayesian models for calibrated radiometric determinations, previously unmodeled dates (Sharon et al., 2007) can now be incorporated into a more sophisticated approach using Oxcal v.4.4.4 program. This advancement has the potential to significantly enhance accuracy in dating analyses. More than that, in instances where archaeological levels from the Iron Age IB lack radiocarbon values, adjacent layers from the same sites corresponding to the preceding — Iron Age IA — and succeeding — Iron Age IIA — periods may yield radiocarbon determinations, acting as valuable supplementary references. Therefore, it is also crucial to precisely define these preceding and succeeding archaeological stages, establishing *termini post quem* and *termini ante quem* based on their key diagnostic artifacts. This approach broadens the analytical scope and allows for a more in-depth exploration of the diachronic and synchronic relationships between the different periods, contributing to a more robust chronological framework for the Levantine Iron Age.

2.1. Defining archaeological horizons

Firstly, let us explicitly define what we aim to establish in terms of chronology — the Iron Age IB — and how we interpret its diagnostic artifacts in the Levantine archaeological record.

Iron Age IB is roughly similar to Iron Age IA with the introduction of few changing features in imported pottery — It is different in the case of 'Phoenician' sites as Tyre and Sidon, where the local pottery also undergoes notable changes —. Earlier, during the Iron Age I, Canaanite traditional pottery from the Late Bronze Age — collared painted pithoi, carinated and hemispherical bowls, pyxis, strainer jugs, juglets, carinated cooking pots, baking trays, chalices, and lamps — together with the spread of Philistine Bichrome pottery was the general picture (Mazar, 2015). Other types of imported pottery as Aegean and Cypriot were usually absent. This shift, following the Late Bronze Age collapse, has been usually interpreted as a decline in long-distance maritime trade after the previous administrative system that facilitated such trading networks. Instead, it seems that Philistine pottery took over as the main regional trading artifact.

A series of changes slowly introduced in pottery represent the promotion of the Iron Age IB, an advanced stage of the Levantine Early Iron Age expressed diversely across the Levantine corridor.

The seemingly isolated situation from Mediterranean trade that characterized the early stages of the Iron Age IA gradually began to change,

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evident in various socio-cultural features and reflected in the archaeological record. The twilight of this period can be characterized by new features in pottery and the resurgence of maritime connections with Cyprus, Greece, and Phoenicia — obviously, referring to the 'non-Phoenician' Levant in this last case —. This is notably evident with the introduction of new Cypro-Geometric pottery, Phoenician bichrome-decorated globular jugs, some Aegean Proto-Geometric and Early Geometric vessels, as well as the early development of the "Late Philistine Decorated Ware" (LPDW) adorned with red-slip and black and white painting in the Southern coastal sites and the region of Shephelah.

Regarding the subsequent period traditionally understood as "Solomonic" — Iron Age IIA —, a series of contexts representing its earlier stage counts with the continuation of Phoenician bichrome imports, Cypro-Geometric pottery and some Aegean vessels together with new features in local Canaanite pottery, especially with the introduction of new types and forms — ovoid, holemouth, piriform, bag-shaped and Hippo storage jars —, as well as the generalization of the red-slipped hand irregular burnishing in bowls and cups. To obtain deeper descriptions of these phases, some of the chapters included in the book edited by S. Gitin (2015) are valuable references (Ben-Tor and Zarzecki-Peleg, 2015; Lehmann, 2015; Herzog and Singer-Avitz, 2015).

2.2. Radiocarbon dating and Bayesian models

To tackle the challenge of establishing the chronology of the Levantine Iron Age IB, radiocarbon dating, and Bayesian models emerge as crucial tools. Leveraging the abundance of radiocarbon datasets available in literature from various Levantine archaeological sites and stratigraphic levels, a statistical approach is employed to generate Bayesian models of radiocarbon determinations. This process is facilitated using the OxCal v.4.4 software, accessible online.

To refine the precision of the obtained models, measures are taken to address potential interferences. Outlier analysis models, including "General" and "Charcoal", are introduced to handle outlier values and accommodate the observed old effect in charcoal and wood samples. In cases where multiple contemporary samples are assumed to be collected from the same archaeological context, average determinations are submitted, following a "SSimple" outlier analysis (Bronk Ramsey, 2009).

The introduction of the "Charcoal" analysis model should be adapting the results to the theoretical "old wood effect" that I. Finkelstein and E. Piasetzky (2010) has usually determined as biased factor. Contrary to the defenders of the Low Chronology paradigm, nonetheless, a "single-site" approach is developed in this study not considering as necessarily contemporary different contexts with similar associated artifacts, as we assume here as hypothesis that local factors determined different cultural development in each site.

The calibrated individual results of each measurement as well as the modeled results are available in tables 2-34, figures, 2-9 and appendices 1-35. The Oxcal codes are also available in the appendix 36 to let the study to be replicable.

2.3. Selected sites

Having in mind the availability of radiocarbon data associated with key context that can provide interesting data to obtain direct or indirect chronologies of the Iron Age IB period, the next Levantine sites have been chosen (table 1,[4] figure 1).

4 This table has been performed by the author after checking each one of the levels and the associated materials, paying attention to the presence and/or absence of the key diagnostic artifacts of each period in order to determine the sequential chronology of each one of the local phases, following illustrations and notes in the scientific literature. That is, the presence of Cypro-Geometric and/or Phoenician Bichrome pottery is crucial at time of labelling a local phase in the period Iron Age IB, as well as the presence of red-slipped pottery, Samarian and Black-on-Red Cypriot ware among other key elements is crucial at the time of labelling other phases in the Iron Age IIA period. The absence of this kind of potteries and the predominance of traditional local Canaanite ware together with Bichrome Philistine imported pottery — as in Tell el-Ahwat II, Tell Shiloh V or Tel Rumeida VII — is the stage labelled as Iron Age IA.

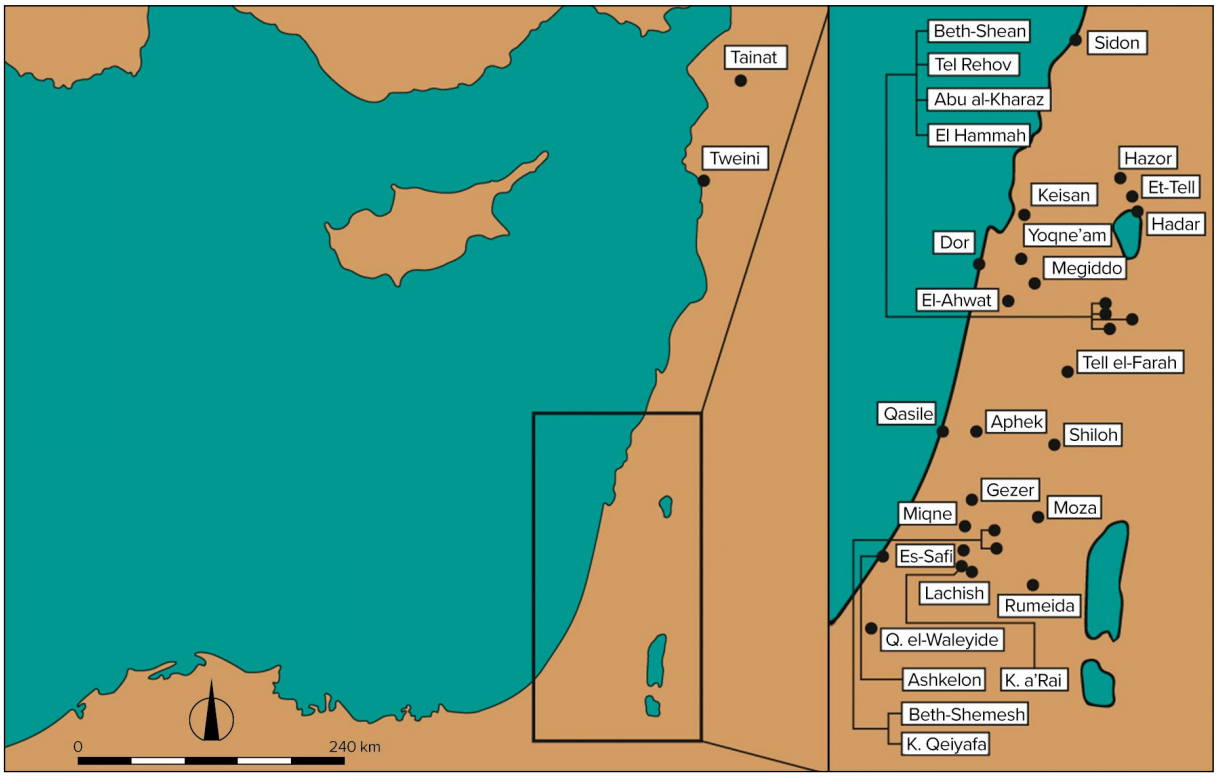

Figure 1. Geographical location of the selected sites

Figura 1. Ubicación geográfica de los yacimientos seleccionados

3. Sites, results and comments

3.1. Tell Tayinat

Recent excavations in this site uncovered stratified remains above Early Bronze Age levels, expanding our knowledge of Iron Age I settlements. The excavation areas depict a comprehensive occupational sequence, showing reoccupation on Middle and Late Bronze Age levels, marked by pits (Level 6c, Field I) leading to the construction of domestic units during Iron Age I (Levels 6b, 6a, 5b, 5a, 4, and 3). Subsequent developments include the construction of buildings (Field 2) and the initiation of a temple, signifying the end of the local Iron Age II (Braidwood and Braidwood, 1960; Haines, 1971; Harrison, 2005; Batiuk et al., 2005; Harrison, 2009a, 2009b, 2010 and 2013; Welton, 2011, 2014, 2019; Welton et al., 2011 and 2019; Osborne, 2012; Janeway, 2017; Osborne et al., 2019; Welton, 2019).

The stratigraphic sequence from up to four areas — Fields 1, 2, 3, and 7 — at Tell Tayinat has yielded a significant collection of organic samples, including woody charcoal and seeds, measured using the Oxford Accelerator Mass Spectrometer (AMS). S.W. Manning et al., (2020) constructed two distinct Bayesian models. The assumption was that, despite belonging to different trenches without direct stratigraphic connection, the contemporaneity among the various levels was at least apparent regarding the pottery features.

According to Manning et al., (2020: tab. 1), a local transitional phase between Iron Age I and II, predating the emergence of Red-Slipped burnished pottery, is discerned in level 2d of Field 1 and 4a in Field 2.[5]

5 Besides the numerous associated radiocarbon data, this is why it has been decided to include this site, as well as Tell Tweini, in this paper. Despite the geographic distance between these sites and the rest of the Southern Levantine sites, it is important to note that they share common steps in the pottery sequence. Notably, the development of red-slipped pottery allows us to distinguish the local Iron Age II period — which likely developed during the 10th and 9th centuries BC, similar to the Southern Levant, based on ^{14}C data (see below) — from the earlier Iron Age I. These key common elements suggest that these sites are not as different as they might seem and can provide useful complementary data.

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Iron Age IA	Iron Age IB	Early Iron Age IIA
Tell Tayinat Field 1 6c-3 Tell Tayinat Field 2 5b-4b	Tel Tayinat Field 1 2d Tell Tayinat Field 2 4a	Tell Tayinat Field 1 2c-b Tell Tayinat Field 2 3-2
Tell Tweini 6F	Tell Tweini 6E	
Sidon *College site* A	Sidon *College site* B-E	Sidon *College site* F-H
Tel Hazor XII/XI		Tel Hazor X-IX
		Et-Tell VI
	Tel Hadar IV	
Tell Keisan 12-9c	Tell Keisan 9b-9a	
Tel Dor D2 13-11	Tel Dor D2 10-9	Tel Dor D2 8c
Tell el-Ahwat II		
	Yoqne'am XVIIb-XVIIa	Yoqne'am XVI-XV
Megiddo H12-10 Megiddo K5 Megiddo Q8	Megiddo H9 Megiddo K4 Megiddo Q7	Megiddo H7 Megiddo Q6
Beth-Shean S3a	Beth-Shean S3a-S2	Beth-Shean S1
Tel Rehov D5-4	Tel Rehov D3	Tel Rehov D2-1
	Tell el-Hammah locus 384	
		Tell el-Farah VIIb
	Tell Abu al-Kharaz IX-X	Tell Abu al-Kharaz XI
	Tel Qasile X	
Tell Aphek X11-9		Tel Aphek X-8
Tell Shiloh V		
Gezer Field West 10	Gezer Field West 9	Gezer Field West 8
	Tel Moza VII	
Beth Shemesh 6-5	Beth Shemesh 4	Beth Shemesh 3
		Khirbet Qeiyafa IV
Tel Rumeida VII		
Tel Miqne V	Tel Miqne IV	
Tell es-Safi A5	Tell es-Safi A4	
Khirbet a'Rai VIII	Khirbet a'Rai VIII-VII Transition	Khirbet a'Rai VII
		Lachish V
Ashkelon Grid 38 19-18	Ashkelon Grid 38 17B	
Qubur el-Waleyide 14		

Table 1. Selected sites and periodization

Tabla 1. Sitios elegidos y periodización

Our analysis (tables 2-3, appendix 1-2, figure 2) delves into the distinct excavation areas of Tell Tayinat, each presenting its unique stratigraphic sequences, with a specific focus on the Iron Age sequences within Fields 1 and 2. Bayesian modelling of woody samples incorporates a standardized outlier analysis model (Exp(1, -10, 0), U(0, 3) "t"), while seed samples are subjected to a general model (T(5), U(0, 4), "t").

Sampling from Field 1 encompasses levels 6c to 5a, supplemented by some samples from levels 2c and 2b of the Iron Age II. The Bayesian model for Field 1 requires establishing a chronological framework for phases 4, 3 — local Iron Age I —, and 2d — local Iron Age I/II —. Our model shows a chronology of all these phases around the mid-10th century BC with noteworthy consistency and coherence. It also reflects a local cultural continuity of the Iron Age I during the first half of the 10th century BC.

Phase 4a of Field 2 lacks samples specifically from it, yet earlier samples from levels 4b-5a-5b

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
6c Start	1252	1342-1125	1479-991
6b-6c Transition	1129	1204-1046	1253-997
6a-6b Transition	1047	1083-1004	1115-981
5b-6a Transition	1001	1017-987	1041-965
5a-5b Transition	977	999-967	1006-939
5a End	960	983-943	996-922
4-2d Phases			
2c Start	942	962-921	982-909
2b-2c Transition	898	947-881	968-791
2b End	708	790-653	973-446

Table 2. Tell Tayinat Field 1 Modeled Chronology

Tabla 2. Cronología modelada de Tell Tayinat (Field 1)

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
5b Start	1111	1304-926	1446-911
4b End	964	1006-906	1076-866
4a Phase			
3 Start	899	925-849	986-827
3-2b3 Transition	855	871-826	903-815
2b3-2b2 Transition	773	808-758	845-623
2b1 End	692	770-586	773-529
2c Start	942	962-921	982-909
2b-2c Transition	898	947-881	968-791
2b End	708	790-653	973-446

Table 3. Tell Tayinat Field 2 Modeled Chronology

Tabla 3. Cronología modelada de Tell Tayinat (Field 2)

— Iron Age I — and later levels 3, 2b3, and 2b1-2 — Iron Age II — serve to establish its modeled chronological framework. Our findings place level 4a between approximately 1000 BC and 850 BC. Although the probability distribution for this period is broader than that of Field 1, mean values of the "4b End" and "3 Start" distributions also suggest a placement of the period as early as in the mid-10th century BC. Possibly the samples coming from the phase 3 represent a more advanced stage of the Iron Age II period, lowering the modeled results.

In any case, given there is a notable gap affecting accuracy, greater reliance may be placed on the chronology derived from a larger sample size in Field 1, which also offers greater precision, placing the local transition in the mid-10th century BC.

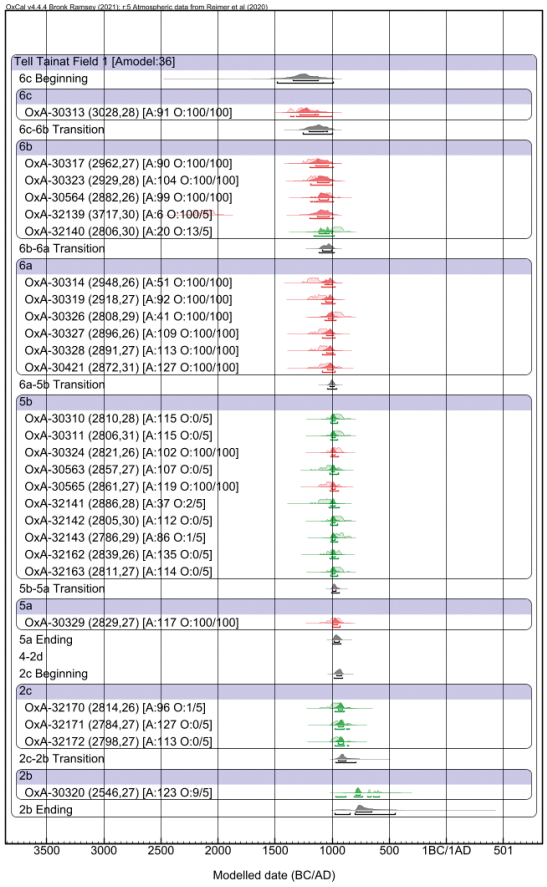

Figure 2. Tell Tayinat (Field 1) Modeled Chronology

Figura 2. Cronología modelada de Tell Tayinat (Field 1)

3.2. Tell Tweini

Tell Tweini, located in the Gabla plain, 28 kilometers south of Latakia, has recently undergone excavation by a Syrian-Belgian team, revealing an uninterrupted occupational sequence from the 3rd millennium BCE to the Byzantine period. The Bronze Age destruction levels (Level 7A) have been dated to the 12th century BCE, associating it with the 'Sea Peoples' and modeled using Bayesian analysis by the excavators (Bretschneider and van Lerberghe, 2008; Al-Maqdissi et al., 2010, 2016; Bretschneider et al., 2010, 2011; Kaniewski et al., 2011; Bretschneider and Jans, 2019). This destructive event is placed between the 12th and 11th centuries BCE.

Following this destruction, a reoccupation during the Iron Age I is marked by local and imported ceramics, including Late Helladic IIIC.1b and 'Trojan' styles. This phase is succeeded by another level of occupation, where existing structures

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are reused, and new units are constructed. The subsequent destruction event — Level 6E — preserves numerous in-situ contexts with artifacts, including a Cypriot White Painted I bowl and large pithoi with carbonized seeds, dated through 10 associated radiocarbon dates. Another destruction level was documented in a residential unit, providing at least 20 Cypriot imports of Cypro-Geometric I and II styles[6] (Kaniewski et al., 2011). The radiocarbon dates from this destruction level over samples mainly of charcoal (Kaniewski et al., 2011) are crucial, indicating the end of the Iron Age I horizon followed by urbanization during the Iron Age IIA — Level 6D —.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
7A Start	1201	1233-1137	1288-1127
7A-6H Transition	1136	1172-1106	1209-1065
6F-6E Transition	**1052**	**1075-1010**	**1127-992**
6E End	**981**	**1027-956**	**1045-900**

Table 4. Tell Tweini Modeled Chronology

Tabla 4. Cronología modelada de Tell Tweini

The destruction of Tell Tweini's level 6E, marked by Cypro-Geometric imports alongside local traditional ware, followed by the subsequent rebuilding during the Middle Iron Age, appears to have occurred in the early 10th century BC in our findings, with a mean value around 981 BC (table 4, appendix 3). One could argue that old wood effect is likely in this assemblage of dates even after introducing the "Charcoal" outlier analysis model. The only sample of *Olea europaea* from this context has provided a lightly lower calibrated result than the Bayesian model, indicating a wide range from 1050 to 931 BC (68.3%) — mean value in 1008 BC —. Many possibilities remain open, but an ending of this level of occupation from around 1000 BC to the mid-10th century is especially likely.

3.3. Sidon

Recent excavations at the College Site of Sidon have revealed a sequence of twelve distinct main Iron Age phases (A to L). The excavation uncovered a monumental architectural complex dating back to the Late Bronze Age or Early Iron Age, featuring up to 10 internal quadrangular rooms (Doumet-Serhal et al., 2023). This complex continued in use throughout the Iron Age with internal plan changes in phases E and G, indicative of cultural and architectural evolution.

The material culture included both imported Greek and Cypriot pottery as well as local pottery. Different cultural horizons were identified, with a shift in the frequency of local pottery forms and the emergence of the bichrome painting style on plates and bowls in phase E. This phase marked a local version of the transition towards the Early Iron Age IIA, distinguishing it from other sequences in the Levant. Nonetheless, Cypro-Geometric pottery is registered from the phase B. More than that, another interesting presence is a sherd of a Atticizing skyphos decorated with a tight-packed multiple zigzag displayed in a window which seems to correspond with the Early Geometric II and the Sub-ProtoGeometric II periods in Greece, which has been found in the level D.[7] Other sherds of Greek pottery are present in later levels that remain out of the scope of this paper.

A series of radiocarbon data from numerous organic samples collected from different sequenced contexts of the site let us to obtain a modeled chronology for the levels B, C, D and E where Cypro-Geometric and Phoenician Bichrome pottery start to appear.

The series of dates from Sidon (table 5, appendix 4) stands out among the collected data, offering intriguing insights. While one might initially consider the Late Iron Age I period to be represented by level E, characterized by the first appearance of Phoenician Bichrome style, the presence of Cypro-Geometric ware in level B as well as that of Early Geometric Greek pottery in the level D, complicate this issue.

6 This important layer associated with radiocarbon data and with this assemblage of Cypro-Geometric pottery which is, furthermore, one of the key diagnostic artifacts of the Iron Age IB period, especially justify the inclusion of this site in this paper.

7 "This sherd was found on the floor of a conspicuous installation comprising two shallow joint plastered circular pits that were used during Phase D in room 7 of the building excavated at the College Site" (Doumet-Serhal et al., 2023).

The study of these presences requires cautious treatment, suggesting the need to reconsider Cypriot and Greek chronologies. This are, nonetheless, questions that deserve another paper more focused taking into account also the arguments and reasons yielded by A. Fantalkin (2001) and M.B. Toffolo et al. (2013). For the moment, it is worth noting that the modeled radiocarbon data of the Sidonian level D determine a similar chronology for the Early Geometric Greek period than that determined by the ^{14}C coming from Sindos, in the 11th century BC (Gimatzidis and Weninger, 2020). As for the Cypriot pottery in the level B, it's could be it represents an early local manifestation preceding the broader dissemination of similar Cypriot pottery in the Levant. In any case, at least in the Lebanese Phoenician sphere, it seems quite likely attending the radiocarbon data from Sidon that Cypro-Geometric and Early Geometric Greek pottery could start arriving much before the deposition of other detected pieces in Southern Levantine sites (*vid. infra*).

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
A Start	1139	1168-1086	1213-1065
A-B Transition	1118	1151-1078	1181-1061
B-C Transition	1101	1129-1063	1150-1056
C-C1 Transition	1085	1113-1056	1120-1053
C1-D Transition	1069	1078-1050	1107-1044
D-D1 Transition	1045	1054-1036	1068-1016
D1-D2 Transition	1033	1046-1026	1051-1006
D2-E Transition	**1025**	**1039-1018**	**1045-997**
E-F Transition	**1008**	**1026-996**	**1036-976**
H-I Transition	987	1010-972	1021-944
I-J Transition	966	999-952	1006-916
J-K Transition	948	992-931	1003-880
K End	930	985-905	999-841

Table 5. Sidon College Site Modeled Chronology

Tabla 5. Cronología modelada de Sidon College Site

Regarding local sequence, notably, phase E not only introduced new local pottery features but also influenced the architectural layout of the site, indicating a significant cultural advancement towards the Iron Age II, likely occurring in the late 11th century BC. A similar cultural transformation appears to have occurred concurrently in Tell Tweini with the introduction of Cypro-Geometric pottery before the destruction of the level 6E.

3.4. Tel Hazor

Tel Hazor, situated in the southwestern part of the Huleh Valley, emerges as a crucial archaeological site representing the Levantine Iron Age. With a focus on the acropolis, the primary excavation area, Tel Hazor reveals a sequence of twenty-one strata spanning from the Early Bronze Age to the Hellenistic period. Recent excavations aimed to reassess the stratigraphy and chronology, particularly concerning Iron Age remains, after the excavations leaded by Y. Yadin (Yadin et al., 1958, 1960 and 1961; Ben-Tor et al., 1997, 2012, 2017; Ben-Tor, 2013, 2016; Ben-Ami, 2013).

Stratum XII/XI represents an initial phase characterized by signs of semi-nomadic societies, featuring shallow walls and settlement pits. The subsequent phase, Early Iron Age IIA — Strata X-IX —, marks a transition to a more sedentary settlement during the Early Iron Age IIA. Notable features include the construction of fortifications, particularly the casemate wall with a reinforced six-chambered gate. Recent excavations beneath this building uncovered distinct phases — Strata Xb-Xa-IXb-IXa — with a diverse ceramic assemblage, comprising local and Phoenician imports such as 'Samarian' or 'Achziv' ware, bichrome pottery, and Cypriot Black-on-Red pottery.

A series of radiocarbon data were produced from organic samples — charcoal and seeds — recovered from phase XII/XI to IX of Tel Hazor (Boaretto et al., 2005; Sharon et al., 2007). The high results of the XII/XI phase could be caused by the old wood effect of the measured samples as well as a possible destruction of the Bronze Age site during the 13th century BC (Bechar et al., 2021, Runjajić et al., 2022). However, the low results of phases X-IX,[8]

8 The five samples were collected from a stratigraphic sequence in a building located in Area A — identified as building 8158 in Substratum Xb, 8147 in Substratum Xa, and 8087 in Substratum IXa —. Two short-lived samples, olive stones 3786 (Xb) and 3784 (Xa), were taken from the same room in the southwestern part of the building (loci L8595 and L8579). The third olive stone (locus 3785; Substratum IXa) came from an adjacent room. The two charcoal samples (3782 and 3783) were extracted from Courtyard 8034 of Substratum Xa (Shochat and Gilboa 2019: 378).

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dated in the 9th century BC, have been considered as unreliable because of possible contamination and stratigraphic alterations[9] (Mazar and Bronk Ramsey, 2008). Another possibility could concern occupation discontinuity in the site between the levels XI and X, with a 'cultural continuity' of the Early Iron Age IIA during the 9th century BC — which is not usual in other sites —. In fact, regarding the consideration of the X-IX levels as belonging to the Early Iron Age IIA period, some concerns have been recently raised (Shochat and Gilboa, 2019). Although, some researchers have tried to clearly differentiate the sequential stages of Early and Late Iron Age IIA (Herzog and Singer-Avitz, 2006), considering local characteristics of each site, there is still work to be done. In fact, there is some pieces present in Tel Hazor X-IX which are especially characteristic of the Late Iron Age IIA period, as Black juglets and Black-on-Red Cypriot war (Yadin et al., 1960: pls. 51.14 and 52.17; 1961: pls. 172.1 and 177.14; Ben-Ami, 2012: fig. 2.8.27), as H. Shochat and A. Gilboa (2019: 378) recently let know.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
XII/XI Start	1336	1379-1265	1501-1179
XII/XI-XB Transition	**915**	**937-816**	**1126-810**
XB-XA Transition	847	892-812	896-806
XA-IXB Transition	836	882-807	888-803
IXB-IXA Transition	824	830-805	866-801
IXA End	809	819-799	841-780

Table 6. Tel Hazor Modeled Chronology

Tabla 6. Cronología modelada de Tel Hazor

The radiocarbon data from Tel Hazor (table 6, appendix 5, figure 3) present several noteworthy circumstances that must be considered. The occupation phase XII/XI, which likely occurred following the site's destruction in the 13th century BC (Bechar et al., 2021, Runjajić et al., 2022), suffers from poor

9 In fact, as H. Shochat and A. Gilboa (2019: 378) noted, the results "do not fit the stratigraphic order within the Substrata X–IX range: no. 3786, for example, with the youngest distribution, is stratigraphically the oldest."

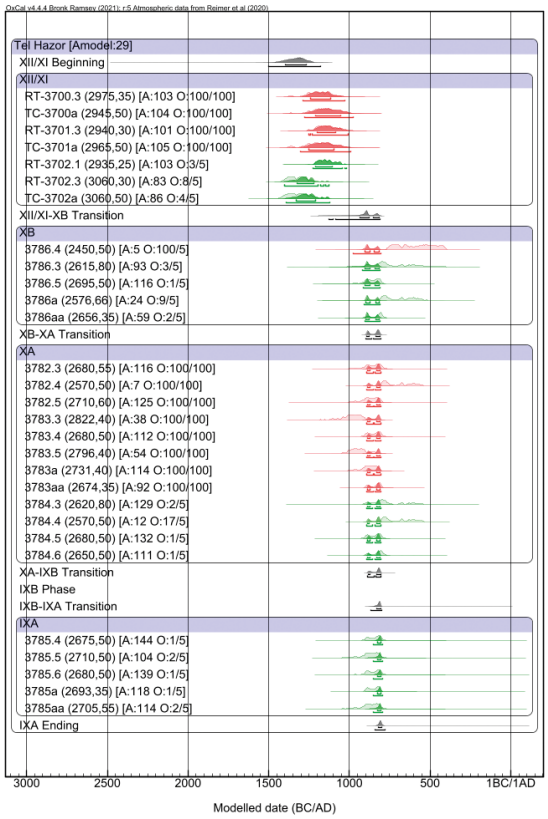

Figure 3. Tell Hazor Modeled Chronology

Figura 3. Cronología modelada de Tell Hazor

stratigraphic definition, raising concerns about potential migration of the collected charcoal samples associated with it.

Furthermore, there is a notable concentration of samples from levels X-IX — Early Iron Age IIA — dating mainly to the second half of the 9th century BC, a distribution that appears unusually low even from the perspective of the Low Chronology. These concerns regarding the reliability of Tel Hazor's dates were raised by A. Mazar and C. Bronk Ramsey (2008).

Despite these challenges, the Bayesian model introduces a higher probability distribution for the transition from phase XII/XI to XB, suggesting a starting around 937 BC (68.3%) and a mean value of 915 BC for the entire distribution. While these dates are intriguing, they must be interpreted with caution because of the problematic contextual uncertainties. Therefore, the Tel Hazor data should not be considered as a solid reference without further verification and contextual analysis.

3.5. Et-Tell — Bethsaida —

Et-Tell (Arav, 1995, 1999, 2009, 2014) is situated north of the Sea of Galilee in the northern part of the Beteiha alluvial plain. Excavations conducted by R. Arav between 1987 and 1993 in three different areas (A, B, and C) revealed deposits from the Iron Age IIA in Stratum VI, overlaying an Early Bronze Age settlement.

Renewed excavations between 1994 and 1996 provided new insights and a better understanding of the site's material culture. Both the upper and lower cities shared a wall with a monumental four-chambered gateway beneath the upper city during the Iron Age II. Strata VI and V represented the Iron Age II period preceding the Assyrian conquest by Tiglath-Pileser III in 732 BCE. Nonetheless, the Hellenistic city, built atop Iron Age remains, slightly disrupted the stratigraphy.

While Iron Age II remains are clearly present, stratigraphic correlation is often challenging distinguishing the levels VI and V. Area B, north of Area A, preserves the remains of a Bit Hilani-type palace. Excavations demonstrated that the southern entrance to the palace court connected the city entrance to the palace. The palace, constructed with durable basalt walls, exhibited signs of centuries-long reuse. The ceramic assemblage, while generally like Tel Hazor's Strata X-IX, featured fewer imports although included red-slipped pottery, potentially dating back to Early Iron Age IIA.

Six organic samples of seeds were recovered from one of the theoretically associated contexts with the Stratum VI — *locus* B16426 — (Sharon et al., 2007), which was a granary under the monumental gate of the Stratum V. Nonetheless, this context did not yield any sherd of pottery that let us to definitively claim it is representative of the Early Iron Age IIA or the Stratum VI.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
B16426 Start	1013	1037-948	1132-923
B16426 End	914	977-892	1005-798
B16426 Average date	964	990-930	1014-908

Table 7. Et-Tell Modeled Chronology

Tabla 7. Cronología modelada de Et-Tell

Our findings from granary B16426 (table 7, appendix 6), yielding an average result of 990 [964] 930 BC (68.3%), located beneath the chambered gate of Stratum V, present intriguing possibilities. If these findings could be conclusively linked to pottery vessels from the Iron Age IIA period, they would align with results from nearby sites such as Tel Hadar or Tell Abu al-Kharaz, which suggest a transitional phase between the Iron Age I and II dating from the late 11th century BC.

However, it's important to note that the confirmation of its association with the Iron Age IIA is still pending. Consequently, this data cannot yet be considered a sounding reference point for chronological analysis.

3.6. Tel Hadar

This archaeological site, situated along the shores of the Sea of Galilee, has revealed evidence of the destruction of a Late Bronze Age center, specifically in Level VI. Following this destruction, a new occupation emerged during the Iron Age I — Level V —, characterized by the presence of stone-lined pits. Subsequently, in the Iron Age IB, a fortified center was established, featuring a tripartite building with two rows of columns in Level IV. This center experienced a destructive event, marked by a significant collection of pottery and seeds sealed by debris (Kochavi, 1997, 1998, 1999; Scott et al., 2007; Sharon et al., 2007; Finkelstein and Piasetzky, 2003, 2010). Among the recovered artifacts were Phoenician Bichrome jugs and a Proto-Geometric Aegean bowl — which seems to have been arrived later than the Early Geometric skyphos documented in Sidon's level D —.

Researchers have dated numerous seeds from this context of conflagration, treating it as an isolated context with all short-lived samples assumed to be contemporary. Notably, the series of radiocarbon dates presented by I. Finkelstein and E. Piasetzky (2003: 775; 2010: 1672, tab. 2) stands out. These dates yield significantly rejuvenated radiometric results, contrasting with other findings (Scott et al., 2007 and Sharon et al., 2007). This discrepancy can be attributed to the presence of seemingly

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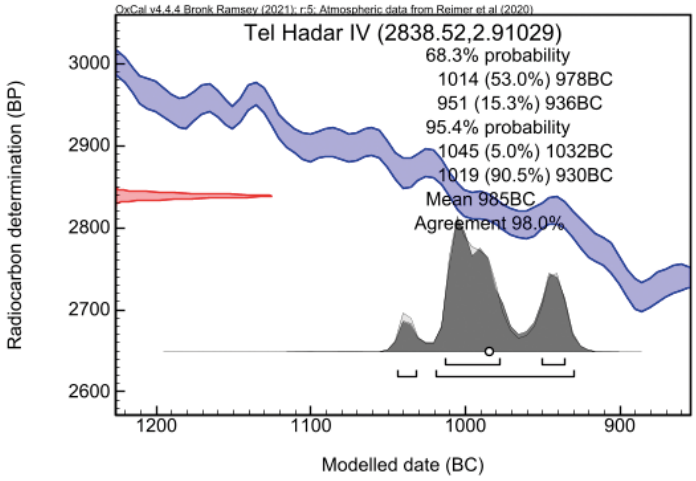

Figure 4. Tel Hadar IV Modeled Chronology

Figura 4. Cronología modelada de Tel Hadar IV

contaminated samples, as their calibrated results fall between the 12th and 8th centuries BC. In contrast, most samples provided by Scott et al., (2007) and those published by Sharon et al., (2007) from a singular context — L334 — seem to better reflect the chronology of the destruction event.

To establish a proper chronological framework, an outlier analysis model (SSimple: N(0,2),0,"s") can be applied here (table 8, appendix 7, figure 4), following the recommendations of C. Bronk Ramsey (2009).

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
IV Average date	985	1014-936	1045-930

Table 8. Tel Hadar Modeled Chronology

Tabla 8. Cronología modelada de Tel Hadar

The destruction of Stratum IV at Tel Hadar appears to have occurred in an uncertain time from the late 11th century to around 936-930 BC — mean value in 985 BC —, coinciding with the evaluation made by A. Fantalkin et al. (2015: tab. 2). This wide range of possibilities finds parallels in contemporaneous cases, from the Sidonian phase E to phase 9 of Tell Keisan. The most incidental cross between radiocarbon date and the calibration curve falls nonetheless, between 1014-978 BC (53.00%), when most probable the event of destruction could happen. This is roughly — lightly lower in the earlier part of the distribution — the same that A. Mazar and C. Bronk Ramsey (2008: 167 and 176) found. It also roughly coincides with the proposed chronology for the Late Protogeometric Greek period by A. Mederos Martín (2020) based in the same radiocarbon data from Tel Hadar and the Greek bowl registered in the same context of destruction[10] — which is nonetheless considered to be from a transitional phase between the Middle and the Late Protogeometric style by the same author —.

3.7. Tell Keisan

Located in the plain of Acco, this archaeological site has revealed a significant sequence of occupations.

Level 13 is particularly significant as it marks the transition from the Late Bronze Age to the Iron Age, characterized by the presence of Late Helladic IIIC pottery, which indicates the cultural and chronological continuity between these periods (Burdajewicz, 1994). This level also provides evidence of the gradual shift in material culture

10 It is a question that deserves further and deeper discussion taking into account the new data coming from Sidon and Sindos (*vid. supra*) that move the chronology of the Early Geometric period to the late 11th century BC and that of the Protogeometric period even earlier. In our view, however, it has not to be necessarily contradictory, as the remain of 'ancient' styles being produced and consumed by pottery makers and consumers in the Mediterranean exchanges could likely happen. As well as the continuation of use of 'old' objects.

and settlement patterns typical of this transitional phase. The archaeological sequence continues with Levels 12 to 9c, which are firmly placed within the Iron Age I (Briend and Humbert, 1980). These levels are marked by a notable destruction layer (Level 11), suggesting a significant event that led to widespread damage. Following this, the site saw the construction of new structures made from mud bricks (Level 9c). All these levels of occupation also feature numerous pits filled with artifacts, including Canaanite pottery and the distinct Bichrome Philistine pottery, indicative of the complex interactions and cultural exchanges occurring during this period.

The sequence progresses with Levels 9b and 9a, where a substantial building, referred to as the "maison du XIe siècle," emerges. This building signifies a period of architectural and possibly socio-political development. Accompanying this architectural phase is the introduction of new pottery styles, such as Phoenician Bichrome pottery and new triangular shoulder-pronounced storage jars (Briend and Humbert, 1980: pls. 59-60 and 62). Levels 9b and 9a also show signs of economic recovery, with increased activity and prosperity evident in the archaeological record. However, this period of recovery ultimately culminates in another general destruction event, indicating continued instability and conflict during the Iron Age.

Utilizing published radiocarbon data mainly from charcoal and wood samples in levels 13, 9b, and 9a (Sharon et al., 2007), a Bayesian model is introduced here to establish the chronology from the last levels as representative of the Iron Age IB period.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
13 Start	1162	1237-1107	1301-962
13 End	1091	1160-1034	1201-966
12-9c Phases			
9b Start	**981**	**994-950**	**1046-936**
9b-9a/b Transition	**957**	**969-939**	**993-927**
9a/b-9a Transition	**948**	**960-931**	**9855-918**
9a End	**933**	**949-917**	**976-894**

Table 9. Tell Keisan Modeled Chronology

Tabla 9. Cronología modelada de Tell Keisan

Most samples collected at Tell Keisan consisted of charcoal, and an outlier model of analysis — labeled "Charcoal" — has been implemented to mitigate a potential old wood effect in our Bayesian findings (table 9, appendix 8). The modeled results indicate a most likely chronology for levels 9b and 9a in the 10th century, with an end point situated between 949 [933] 917 BC (68.3%).

However, due to the disparity of calibrated results among the collected samples throughout the entire sequence — for instance, the most recent results are obtained from samples collected in level 9b: RT-3801.3, RT-3801.4, and RT-3801.5 — there is a possibility of disruptions in the stratigraphy, potentially involving the migration of material from its original context or contamination. Therefore, while the findings align with many others, suggesting a chronology for the period during the 10th century and a destruction event in the second half of the same century, alternative explanations could also be considered.

3.8. Tel Dor

Tel Dor, an ancient town on the coastal slopes of Mount Carmel, has revealed a detailed sequence of Iron Age I occupation, particularly in area G — levels 10-8 —. Philistine Bichrome pottery makes its initial appearance in the remnants atop the last occupation layer of the Late Bronze Age — level 11 —. The Iron Age I occupation includes a notable metallurgical workshop featuring Egyptian storage vessels alongside Philistine pottery in level 10. Subsequently, a domestic complex structure emerges in level 9, concluding with a layer of conflagration and debris, encompassing Egyptian and Philistine pottery. Another domestic structure — level 8 — follows, undergoing later repairs and modifications in levels 7-6 during the Iron Age IB and IIA (Gilboa et al., 2018, Sharon, 2018).

In area D2, a similar occupational sequence has been identified, although detailed stratigraphy and material publications are pending. However, radiocarbon determinations from seeds and charcoal samples have been obtained from Iron Age IA — levels 13-11 —, Iron Age IB — levels 9-10 —, and

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Iron Age IIA — 8c and 8b — ascribed levels (Sharon et al., 2005, 2007; Gilboa et al., 2008). Introducing the known stratigraphic information together with a "General" outlier model, we obtained a Bayesian model with the following findings (table 10, appendix 9, figure 5).

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
13 Start	1088	1108-1024	1198-1012
13-12 Transition	1039	1056-1011	1096-991
12-11 Transition	997	1024-972	1045-943
11-9/10 Transition	**958**	**980-926**	**1006-916**
9/10-8c Transition	**917**	**928-903**	**960-890**
8c-8b Transition	878	904-864	908-841
8b End	851	878-824	900-804

Table 10. Tel Dor D2 Modeled Chronology

Tabla 10. Cronología modelada de Tel Dor D2

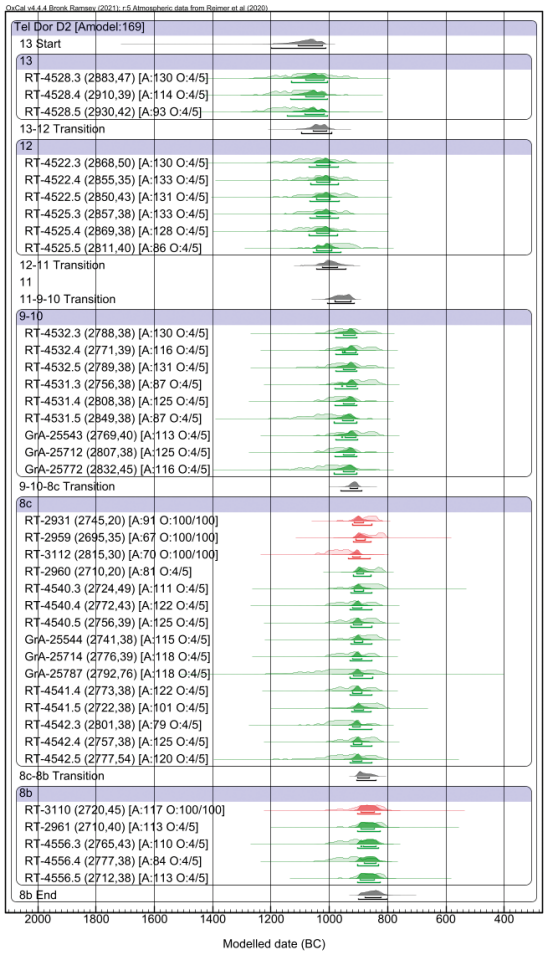

Figure 5. Tel Dor D2 Modeled Chronology

Figura 5. Cronología modelada Tel Dor D2

Following our findings, if levels 10 and 9 are indeed associated with the appearance of Phoenician Bichrome and Cypro-Geometric pottery, as evidenced in phase 7 of area G, it appears that this period mainly unfolded during the middle 10th century BC, with its transitional phase towards the Iron Age II the late 10th century. This timeframe aligns with information obtained from the nearby site of Tell Keisan.

3.9. Tell el-Ahwat

Located in the Manasseh heights, this site revealed the remnants of a fortified enclosure — Level II —, assumed to be inhabited during the Early Iron Age, eventually meeting its destruction. The enclave featured various structures, including a metallurgical workshop and an oil press, along with a substantial amount of local pottery resembling that of Tell Keisan 12-9c, Yoqne'am XVIII, and Megiddo VIB. The pottery included bowls, craters, cooking pots, baking trays, chalices, jugs, lamps, pithoi, pixydes, and pilgrim flasks, often adorned with monochrome local styles. Notably, no imported vessels of Philistine, Cypriot, or Phoenician pottery were found (Be'eri and Cohen, 2012; Zertal, 2012).

Olive seed samples were recovered and measured in Rehovot from at least four different loci — 4270, 4271, 4272, and 4273 — (Sharon et al., 2007). If these samples represent the same destruction event and share the same age, it would be reasonable to obtain an average determination using an "SSimple" outlier model (Bronk Ramsey, 2009), like the one presented for the Tel Hadar IV (table 11, appendix 10-11).

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
II Start	1032	1061-993	1118-941
II End	955	999-925	1011-890
II Average date	980	1011-934	1046-926

Table 11. Tell el-Ahwat Modeled Chronology

Tabla 11. Cronología modelada de Tell el-Ahwat

The measurements obtained from olive pits at the site of Tell el-Ahwat are intriguing, as they indicate a continuation of local Canaanite tradition, at

least until the early to middle 10th century BC when its destruction likely occurred. The average date distribution between 1011 [980] 934 BC (68.3%), along with the End limit of the Bayesian model at 999 [955] 925 BC (68.3%), supports this interpretation. It finding aligns well with the regional chronology, particularly considering the chronology of Tel Dor D2, which suggests the onset of the Iron Age IB period around the same time in the early to middle 10th century BC — 980 [958] 926 BC (68.3%) —. This suggests however a delay compared to sites like Tell Tweini, Sidon, or Tel Hadar, where data indicate an earlier development of this period.

3.10. Yoqne'am

Situated in the Jezreel Valley, near Tell Qashish, Tell Qiri, and Megiddo, this site underwent excavation from 1977 to 1988 revealing a minimum of eight Iron Age levels. The site saw the emergence of an occupation — XVIII — during the Iron Age IA, succeeding the destruction remains of the Late Bronze Age center — XIX —. The subsequent level — XVII — introduced notable pottery features, including Phoenician Bichrome-style jugs and flasks, a possible jug of LPDW style, and two bowls adorned with red slip. Signs of significant construction activity, comprising at least three sub-phases with overlapping or restored pavements and walls in area A4, were also evident (Ben-Tor et al., 2005: figs. 1.17.7-8, 28.1, 31.5-8, 32.9; Zarzecki-Peleg, 2005). Radiocarbon determinations were obtained from organic samples of olive pits and charcoal measured in Rehovot, Tucson, and Groningen labs (Sharon et al., 2007), from level XVIIb to XIVb. The results of the levels XVIIb and XVIIa obtained from olive pits are quite interesting to define the local chronology of the Iron Age IB period.

In contrast to sites like Tell Keisan, Tel Dor, and Tell el-Ahwat, our modeled chronology from Yoqne'am (table 12, appendix 12) suggests a broader time lap for the development of the Iron Age IB period, ranging from the mid-11th century to the mid-late 10th century BC. While this wide range aligns with datasets from other nearby sites in the Jezreel Valley, such as Megiddo, the wide probability distribution of many radiocarbon dates from Yoqne'am suggests the possibility of a tighter distribution for this period. If we consider Yoqne'am XVII as contemporaneous with the Stratum VIA of nearby Megiddo, it's conceivable that its chronology could span from the late 11th century to the early to middle 10th century BC. This places Yoqne'am XVII in close temporal proximity to destructive events at Tel Hadar IV, Megiddo VIA, and Tell el-Ahwat.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
XVIIb Start	**1053**	**1073-1014**	**1132-998**
XVIIb-XVIIa Transition	**971**	**1001-946**	**1035-912**
XVIIa End	**927**	**972-892**	**1002-847**
XVI-XV Phases			
XV-XIVb Start	856	893-823	920-792
XIVb End	808	843-767	886-741

Table 12. Yoqne'am Modeled Chronology

Tabla 12. Cronología modelada de Yoqne'am

However, relying on the modeled data alone, it appears probable that Yoqne'am XVII experienced a conflagration around 925 BC, which finds support in the apparently simultaneous destruction documented in Tel Keisan and Tell el-Hammah. It also aligns with the transitional phase towards the Iron Age II documented at Tel Dor D2 and Area D of Tel Rehov (*vid. infra*), where conversely no destruction layer is documented.

3.11. Megiddo

Megiddo, a site extensively investigated in recent decades by researchers from Tel Aviv University (Finkelstein et al., 2000, 2006, 2013, Finkelstein and Martin, 2022), has been a focal point of exploration in the Levant.

After the destruction of the Late Bronze Age settlement — Megiddo VIIA —, new layers of occupation have been documented and labelled as Megiddo VIB — Iron Age IA — and Megiddo VIA — Iron Age IB —, which appears to end up suffering a conflagration before a renovated occupation during the Early Iron Age IIA — Megiddo VB —. The period of Megiddo VIA has been documented

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and dated in areas H — H9 —, K — K4 — and Q — Q7 —, with one more isolated dated level in the area M — M4 —, resembling pottery found in Yoqne'am XVII and Tell Keisan 9b-9a. All these layers ended up with a general conflagration which has been understood as contemporary, indicating the end of the Iron Age IB local period (Arie, 2013; Toffolo et al., 2014: tab. 40.2; Kleiman et al., 2023).

Samples of seeds from numerous areas of excavation underwent radiocarbon dating in Rehovot and Tucson (Toffolo et al., 2014, 2022; Fantalkin et al., 2015; Martin et al., 2020; Boaretto, 2022). Numerous samples are coming from different layers of occupation in the areas H, K and Q, letting obtaining three different Bayesian models (tables 13-15, appendix 13-15). Besides that, an isolated date — RTT-5089: 2900 ± 16 BP — from the area M — level M4 — theoretically representative of the same general destruction of Megiddo VIA — Iron Age IB —, provided high calibrated results — 1119-1049 (68.3%) and 1192-1012 cal BC (95.4%) —.

Our findings present three distinct sequences of dates, each offering complementary insights into the same period. While the dataset from Area H suggests a chronology for Level H9 concentrated in the late 11th century BC, with an end around 1000 BC, the dataset from Area Q indicates a lower chronology for the same period, placing it in the early 10th century BC. On the other hand, the dataset from Area K is less precise, offering a broader range from the early to the middle 11th century to the mid-10th century BC.

Considering these three datasets together, Megiddo VIA appears to have developed from the late 11th century BC and to have finished in an uncertain moment between around 1000 BC and 925 BC.

The calibrated dates from the samples coming from the level of destruction of H9 — RTT-5496 and RTT-5497 — are lightly lower than the Bayesian modeled inference, falling each one between 1016 [986] 933 and 1014 [983] 933 BC (68.3%). It fits well with the modeled and calibrated data from area Q, as well as with the earliest span inside the modeled determination from area K. The destruction of Megiddo VIA taking place between around 986-983 BC is the more likely possibility in our view.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
H13 Start	1217	1438-1024	1544-1018
H13-H12 Transition	1095	1126-1075	1140-1024
H12-H11 Transition	1071	1102-1057	1108-1023
H11-H10 Transition	1050	1066-1020	1087-1015
H10-H9 Transition	**1027**	**1042-1009**	**1061-1000**
H9 End	**999**	**1015-981**	**1042-963**
H8 Phase			
H7 Start	977	1004-959	1017-929
H7 End	955	981-931	1003-908
H6 Phase			
H5 Start	932	961-907	992-863
H5 End	893	925-855	979-816

Table 13. Megiddo H Modeled Chronology

Tabla 13. Cronología modelada de Megiddo H

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
K10 Start	1640	1672-1568	1770-1541
K10-K9 Transition	1360	1417-1281	1474-1271
K9-K8 Transition	1232	1261-1200	1296-1165
K8-K7 Transition	1184	1206-1162	1224-1142
K7-K6 Transition	1160	1178-1136	1195-1130
K6-K5 Transition	1117	1139-1096	1171-1066
K5-K4 Transition	**1069**	**1100-1043**	**1116-1021**
K4 End	**948**	**998-925**	**1011-860**

Table 14. Megiddo K Modeled Chronology

Tabla 14. Cronología modelada de Megiddo K

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
Hoard 12/Q/76 Start	1049	1096-1018	1179-1008
Hoard 12/Q/76-Q9 Transition	1043	1060-1010	1111-996
Q9-Q8 Transition	1012	1024-993	1051-981
Q8-Q7b Transition	**995**	**1010-984**	**1028-954**
Q7b-Q7a Transition	**982**	**1002-972**	**1010-938**
Q7a-Q6b Transition	**966**	**992-954**	**1001-922**
Q6b End	951	978-935	992-910
Q6a Phase			
Q5 Start	938	962-916	986-902
Q5 End	915	962-888	976-851

Table 15. Megiddo Q Modeled Chronology

Tabla 15. Cronología modelada de Megiddo Q

3.12. Beth-Shean

Beth-Shean, an Egyptian stronghold in Canaan during the Late Bronze Age, holds archaeological significance for its insights into historical transitions across various Iron Age contexts. These transitions are elucidated through radiocarbon dating and stratigraphic analyses (Mazar and Carmi, 2001; Mazar, 2006; Carmi et al., 2006; Panitz-Cohen and Mazar, 2009). Specifically, contexts such as N4 and S3a shed light on the shift from the Late Bronze Age to Iron Age IA, showcasing a cultural amalgamation of Canaanite and Egyptian influences. The presence of charred seeds and artifacts like the Cypriot White Painted bowl in locus 18433 of N4 suggests a late Egyptian occupation in the 12th century BC, indicative of a blend of traditional Canaanite and Egyptian cultures. However, no direct stratigraphic relationship exists between areas N and S, although S4, identified as representative of general phase VI, could parallel N4 during the Late Bronze Age III.

Stratum S3 — Iron Age I —, an enhancement of S4, reveals residential buildings that likely housed an Egyptian garrison. These utilitarian structures, characterized by brick walls and ovens, suggest a functional rather than monumental purpose. The division of Stratum S3 into sub-phases S3b and S3a marks internal repairs and seismic activity, with S3a ending abruptly due to intense fire, indicating a violent event that concluded the Egyptian occupation — where astonishing Phoenician Bichrome pottery is attested (Panitz-Cohen and Mazar, 2009: pls. 55.7, 59.24, 68.8) —.

The emergence of Philistine and Phoenician Bichrome pottery in S3a and S2 during the Iron Age I underscores cultural shifts in the site. Furthermore, discoveries in Stratum S1a and P-7 provide insights into the Iron Age IIA and IIB periods, respectively. Bayesian modeling aids in understanding the chronological sequence of these phases, although challenges persist due to limited radiocarbon data and potential aging biases.

All the series of radiocarbon data from Beth-Shean allow for a Bayesian model for the entire sequence of phases. The assumption is made that level N4 — Late Bronze Age IIB — is older than S3a — Iron Age I —, introducing the intermediate phase represented by S4 and S3b — Late Bronze Age III —. We assume that the level S3b, where Late Helladic IIIC pottery is first present (Panitz-Cohen and Mazar, 2009: pls. 31.3-4, 31.7-8, 35.13), along with contemporaneous level N3 (Panitz-Cohen and Mazar, 2009: pl. 14.5), but not in N4 (Panitz-Cohen and Mazar, 2009: pls. 1-10), represent the Late Bronze Age III phase before the appearance of Philistine Bichrome pottery together with Phoenician Bichrome pottery in the level S3a and S2 — Iron Age I —.

The Bayesian model we can built relies on a limited radiocarbon dataset for a long sequence of phases, including wood samples in S1 that could introduce an aging bias despite the introduced outlier analysis models.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
N4 Star	1208	1233-1170	1284-1135
N4 End	1171	1201-1151	1217-1116
S4-S3b Phase			
S3a Start	**1148**	**1176-1125**	**1202-1084**
S3a End	**1107**	**1156-1077**	**1182-1025**
S2 Phase			
S1 Start	1026	1125-977	1156-858
S1 End	898	1007-801	1087-714
P7 Start	735	803-664	877-557
P7 End	616	745-528	753-405

Table 16. Beth-Shean Modeled Chronology

Tabla 16. Cronología modelada de Beth-Shean

The radiocarbon data from Beth-Shean have many problems in the modeled distributions of our findings (table 16, appendix 16). Because of a limited quantity of dates from the S1 phase — just two samples of olive tree wood —, the likely old wood effect suffered by them and the gaps between the different dated contexts, the entire Bayesian model find a high distribution that place the chronology of both phases S3a and S2 from the mid-12th century to the early 10th century BC, and that of the phase S1 — Iron Age IIA — from the late 12th century to the early 9th century BC. Lastly, the three dates coming from the level of destruction P7 are notably affected by the Hallstatt Plateau.

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This distribution for the Iron Age IB period — levels S3a and S2 — does not find a clear support in any other dataset. The calibrated results of two of the measured samples of seeds in the level S3a — RT-2323 and RT-2327 — show lower distributions — 1191 [1092] 1012 and 1192 [1117] 1053 BC (68.3%) — that could be more approximate with other early appearances of Phoenician Bichrome ware, as in Yoqne'am XVIIb and Tell Abu al-Kharaz IX (*vid. infra*). One of the wood samples of level S1 — RT-2733 — shows a low calibrated distribution — 1047 [997] 926 cal BC (68.3%) — that could better fit with the possible chronology of the phase S2 and the local Iron Age IB if that of Megiddo H9 or Tel Hadar are taken into account. These are nonetheless just hypothetical assumptions with no empirical basis. Therefore, the chronology of the phases S3a, S2 and S1 of Beth-Shean is still pending and its available radiocarbon results shall not be considered.

3.13. Tel Rehov

Tel Rehov, situated in the Jezreel Valley near Beth-Shean (Mazar and Panitz-Cohen, 2020), presents a notable sequence of Iron Age layers with associated radiocarbon determinations (Boaretto et al., 2005; Mazar et al., 2005; Sharon et al., 2007; Lee and Bronk Ramsey, 2013). Particularly, determinations from the excavated area D, a lengthy trench in the western part of the tell, offer insights into the Early Iron Age.

During the Iron Age I, levels D5 and D4 reveal significant urban planning, featuring local pottery alongside Philistine Bichrome pottery — Iron Age I — (Mazar and Panitz-Cohen, 2020: figs. 16.38.22-23, 41.31, 46.9-13, 48.24, 52.8-9) and residual LH IIIC and LH IIIB pottery (Mazar and Panitz-Cohen, 2020: figs. 16.40.7 and 9, 41.32-33, 52.10). The end of the D4 level was marked by partial destruction in one of its chambers (Mazar and Panitz-Cohen, 2020: fig. 16.54). A series of pits excavated on the surface of the D4 structures represent level D3 (Mazar, 2020), marking the end of Iron Age I with the continuation of Philistine Bichrome pottery (Mazar and Panitz-Cohen, 2020: fig. 16.58.12) and the initial appearance of Phoenician Bichrome pottery (Mazar and Panitz-Cohen, 2020: fig. 16.56.10 and 12), alongside local recipients. Later, brick structures were erected upon these pits during Iron Age IIA, corresponding to levels D2 and D1 (Mazar 2020).

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
D6 Start	1134	1116-1074	1227-1054
D6-D5 Transition	1096	1119-1054	1181-1037
D5-D4 Transition	1068	1089-1029	1130-1017
D4-D3 Transition	**998**	**1025-978**	**1043-946**
D3-D2-1 Transition	**926**	**941-904**	**976-868**
D2-1 End	896	923-885	965-825

Table 17. Tel Rehov D Modeled Chronology

Tabla 17. Cronología modelada Tel Rehov D

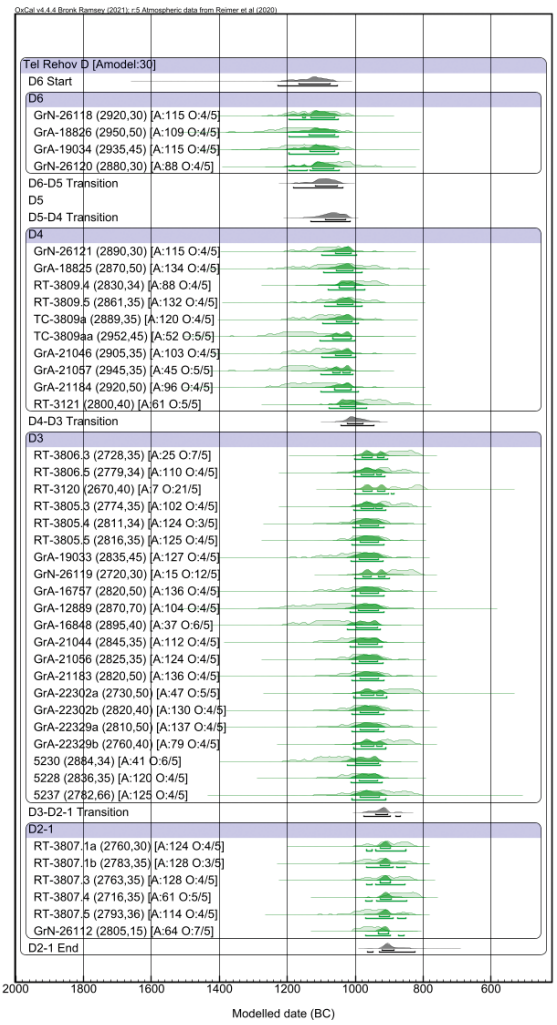

Figure 6. Tel Rehov D Modeled Chronology

Figura 6. Cronología modelada de Tel Rehov D

The radiocarbon dates from the area D of Tel Rehov (table 17, appendix 17, figure 6) constitute one of the datasets with higher quality, providing coherent and consistent distributions with clear modeling. Here, the local ending phase of the Iron Age I period, represented by level D3, seemingly developed during the early and middle 10th century BC before the construction of new mudbrick structures during the Iron Age IIA, apparently during the late 10th century BC.

During the early and middle 10th century BC, only a series of pits are documented at Tel Rehov D3, with no development of Iron Age II pottery. This contrasts with nearby sites such as Megiddo H8, Megiddo Q6 and Tell el-Farah (*vid. infra*), where Iron Age II pottery could emerge during that same time. Tel Rehov's developmental rhythm rather aligns with the evolution registered in other sites such as Tell Keisan, Tel Dor, and Tell el-Hammah (*vid. infra*).

Notably, no general destruction layer is documented in Tel Rehov — as in Beth-Shean — before the start of the Iron Age IIA period during the late 10th century BC. Other near sites as Tell Keisan, Yoqne'am, and Tell el-Hammah might have experienced such events during the same period, however, which reflects a heterogeneous evolution through the region.

3.14. Tell el-Hammah

Tell el-Hammah, situated a few kilometers south of Tel Rehov, underwent excavations led by G. Lipton, D. Tarler, and J. N. Cahill between 1985-1988 in area A (Cahill, 2006). These excavations documented a sequence of occupation spanning the Bronze Age and the Iron Age. Notably, collapsed mudbricks walls with masonry bases belonging to a rectangular building paved with rammed earth — locus 384 —, was revealed amidst the documented remains (Cahill, 2006: figs. 3-4). On its surface, beneath ash residues, various objects were recovered, such as flint percussion tools, basalt mills, and clay balls identified as loom weights or stoppers for storage containers. Additionally, an important ceramic assemblage was found (Cahill, 2006: fig. 4), including five nearly complete storage jars with ovoid bodies, two of which (Cahill, 2006: fig. 4.10-11) contained charred cereal remains. The material recovered was devoid of imports from Phoenicia, Cyprus, or Greece, but the storage jars can also be diagnostic artifacts of an advanced stage of the Iron Age I. They notably count with parallels in the level S2 of Beth-Shean, Tel Rehov VII and Megiddo VIA (Cahill, 2006: 434-435).

Organic samples of charcoal and semolina were recovered from the locus 384 and subjected to radiocarbon determinations in Rehovot (Sharon et al., 2007). Assuming the contemporaneity of the measured samples, a modeled average determination can be interesting to obtain a *terminus post quem* reference for the Iron Age IB period. It is important to note that the context could be also representative of the Iron Age IB period but with no importations registered, as posterior stratigraphic levels are associated with Iron Age IIA pottery. I. Sharon et al. (2007) also considered the context as representative of that transitional period.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
L384 average date	936	977-903	1004-850

Table 18. Tell el-Hammah locus 384 Modeled Chronology

Tabla 18. Cronología modelada de Tell el-Hammah locus 384

In our Bayesian model (table 18, appendix 18) it has not been introduced in the charcoal samples of the locus 384 of Tell el-Hammah the "Charcoal" outlier analysis model, as the calibrated distribution of its measurements — RT-4416.3, RT-4416.4 and RT-4416.5 — are the same of the semolina samples, suggesting that they do not suffer from old wood effect. All the samples have been treated instead with the "SSimple" outlier model adapted for average determinations. Our findings determine a chronology placed in the late 10th century BC for the destruction event of the rectangular building that sealed, among other objects, the five ovoid storage jars. The reference is interesting as representative of a local transitional phase towards the Iron Age II period from that moment onwards. It coincides with other series of radiocarbon data as that of Tell Keisan, Tel Dor, Yoqne'am and Tel Rehov.

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3.15. Tell el-Farah

Tell el-Farah is positioned 11 kilometers northeast of Nablus in the Tubas province. Roland de Vaux's extensive excavations from 1946 to 1960 provided a comprehensive sequence of occupation, covering the early Neolithic to the Iron Age, with a focus on levels 3-1. A. Chambon's subsequent publication detailed the Iron Age findings, proposing a stratigraphic division into five phases within period VII (Chambon, 1984). This chronology spans Early Iron Age IIA — phase VIIa — to the Assyrian occupation — phase VIIe —.

Phase VIIa, despite emerging from scant remains of Late Bronze Age destruction, challenges prior chronologies. Contrary to earlier proposals, the ceramic material suggests alignment with Early Iron Age IIA rather than Iron Age I (Herzog and Singer-Avitz, 2006; Finkelstein, 2012), signifying an occupational hiatus and a small, non-fortified settlement on the tell's upper platform (Chambon, 1984: plan 1).

The remnants of phase VIIb are notably more substantial, exhibiting superior preservation and correlating with a denser occupation that evolved gradually without an intervening destruction phase. This occupation layer, remarkably preserved beneath extensive destruction and collapse, has yielded a crucial ceramic assemblage indicative of an Iron Age IIA chronology (Chambon, 1984: pls. 45-62). In the contemporary excavations of probe A, the remnants of a dwelling have been excavated associated with this occupation level, with recently published radiocarbon dating over charcoal samples placing its chronology in the 11-10th century BCE (Montero Fenollós et al., 2020b: tab. 1).

The dwelling of the level VIIb features mudbrick walls approximately 40 centimeters wide and encompasses several internally compartmentalized rooms, a detail carrying implications for the chronology of this level (Herzog and Singer-Avitz, 2006; Finkelstein, 2012). Drawing parallels with contemporaneous levels at nearby Iron Age IIA sites, such as level Q5 at Megiddo or strata VI-V at Tel Rehov, where results are concentrated in the late 10th century BC, has sparked considerations of a potentially high chronology in the late 10th century BC (Kleiman, 2018; Finkelstein and Kleiman, 2019: 288 and 291). Nevertheless, the recent radiometric findings, which can be used here as a *terminus ante quem* for the Iron Age IB period, suggest an even more elevated chronology than initially anticipated (Montero Fenollós et al., 2019, 2020a, 2020b, 2021; Montero Fenollós, 2020; Montero Fenollós and Caramelo, 2021), although possible old wood effect of the samples should be taken into account.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
VIIb Start	1015	1041-931	1213-875
VIIb End	882	970-861	1000-694

Table 19. Tell el-Farah Modeled Chronology

Tabla 19. Cronología modelada de Tell el-Farah

The radiocarbon results from Tell el-Farah (table 19, appendix 19) appear to be influenced by the old wood effect of the measured samples, resulting in a high chronology distribution for the advanced stage of the local Iron Age IIA from the late 11th century BC or the middle-late 10th century BC. However, this finding lacks clear support from other datasets from nearby sites. Therefore, using this reference as a *terminus ante quem* for the earlier periods should not be considered at this time. New measurements over short-lived samples may provide complementary dates in the near future.

Scholars have noted the architectural features of the constructions associated with a high chronology placed in the late 10th century for this level (Kleiman, 2018; Kleiman and Finkelstein, 2019). The lower distributions of the Bayesian model, ranging from 931 to 861 BC (68.3%), could be more reliable, particularly if we consider the old wood effect over the measured samples.

It is noteworthy that earlier phases with Iron Age IIA pottery associated, such as level VIIa, should then be placed at least in the early-middle 10th century BC. This finding suggests that the transitional phase of the Iron Age IB occurred around 1025-975 BC, finding support in Tell Tweini, Sidon, Megiddo VIA, Tell Abu al-Kharaz X and Tel Hadar IV.

3.16. Tell Abu al-Kharaz

Near Tell el-Hammah, situated on the opposite bank of the Jordan River, Tell Abu al-Kharaz emerges as a significant archaeological site for the region, offering stratified evidence of occupation during the Iron Age through the meticulous excavations led by P.M. Fischer (Fischer, 2013). Area 9 reveals Phase IX, exposing a series of aligned rectangular structures believed to have served as storage units (Fischer, 2013: figs. 250-355). This phase concluded with a destructive event, marked by a thick layer of debris that sealed the area, accompanied by a noteworthy pottery assemblage characteristic of the Iron Age I (Fischer, 2013: figs. 280-354). Notable pieces include fragments of Late Cypriot pottery in the White Slip style (Fischer, 2013: fig. 255.1-3) and a singular globular Phoenician jug in the Bichrome style (Fischer, 2013: fig. 321.7), suggesting at least a transitional phase towards the subsequent Iron Age IB. Following this, a new set of less standardized structures emerged atop the debris of Phase IX, identified as Phase X (Fischer, 2013: figs. 356A-357F), which also witnessed a termination involving at least partial destruction. The pottery assemblage from Phase X closely resembles that of Phase IX, featuring a single fragment of a globular Phoenician jug in the Bichrome style and Late Cypriot pottery in the White Slip style (Fischer, 2013: figs. 355.4-6, 363.5-6). Both phases signify an advanced stage of the Early Iron Age, marked by the introduction of Phoenician globular jugs adorned with concentric black and red bands.

In-depth environmental analysis involved the recovery of organic samples, including branches, grains, seeds, and ashes from areas 3, 7, and 9. Radiocarbon determinations were conducted by the Vienna Environmental Research Accelerator and the Oxford Radiocarbon Accelerator Unit (Wild and Fischer 2013).

The modeled results from Tell Abu al-Kharaz (table 20, appendix 20), derived from a large quantity of seed samples, yield one of the highest distributions for the transitional phase of Iron Age IB. Remarkably, at least one example of a Phoenician Bichrome jug appeared in level XI, dating from the late 12th century to the mid-11th century BC, coinciding with Beth-Shean S3a. These instances raise doubts about the chronology of this diagnostic artifact of the Iron Age IB period.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
IX Start	1113	1136-1034	1184-1054
IX-X Transition	**1067**	**1091-1041**	**1118-1025**
X-XI Transition	1015	1074-979	1104-921
XI-XII Transition	821	835-781	889-775
XII-XIII Transition	784	789-774	807-766
XIII-XIV Transition	767	777-762	786-752
XIV End	738	766-737	775-581

Table 20. Tell Abu al-Kharaz Modeled Chronology

Tabla 20. Cronología modelada de Tell Abu al-Kharaz

Another Phoenician Bichrome pottery example from level X is dated around the second half of the 11th century BC, potentially aligning with Beth-Shean S3a-S2, the level E of the College Site at Sidon and Megiddo H9. However, there are only two measured samples from level X with disparate results between them, and many others from the subsequent level IX (Iron Age IIA) are notably contaminated, yielding very high results. Contamination or migration can affect the modeled distribution even after introducing the outlier analysis model. In this regard, only the lower distributions of the modeled results, ranging from 1041 to 979 BC (68.3%), could better align with other datasets from nearby sites.

3.17. Tel Qasile

Located within the modern confines of Tel Aviv near the Yarkon River's mouth, Tel Qasile stands as a significant Levantine coastal archaeological site, unfolding a stratigraphic sequence of the Iron Age with a consistent intensity of occupation (Mazar, 1980).

Stratum XII, identified in areas A and C, reveals remnants of apparent religious structures constructed with bricks and associated floors. This stratum is linked with Philistine Bichrome and traditional Canaanite pottery — Iron Age I — (Mazar, 1980: 9-10, 13-20, figs. 4-5, 48, fls. 3-5; 1985: figs 11-17); 1986: fig. 2). Subsequently, a new series of brick religious structures, Stratum XI, emerged,

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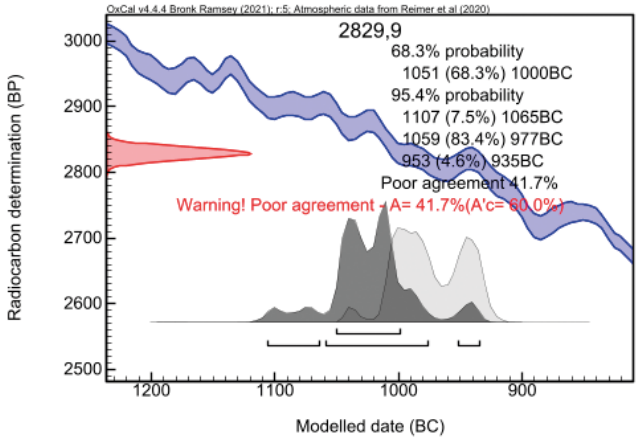

Figure 7. Tel Qasile X Modeled Chronology

Figura 7. Cronología modelada Tel Qasile X

accompanied by a similar assemblage of Iron Age I objects, particularly Philistine Bichrome pottery (Mazar, 1980: 10, 21-32, figs. 6-7, 49, pls. 5-7); 1985: figs. 18-32); 1986: figs. 2-3). Further constructions in brick were later established, concluding with a destructive event in Stratum X, sealed by debris containing a significant assemblage of pottery and artifacts. Notably, the excavation in area A by B. Maisler (1951) suggested a lack of Philistine pottery, with a prevalence of red-slipped vessels reminiscent of the Iron Age II, leading to the interpretation of this level as representative of the United Monarchy of David and Solomon. However, subsequent arguments by T. Dothan (Dothan, 1982) proposed recognizing it as a late Philistine culture or "Philistine 3."

In contrast, modern excavations in area C unearthed Stratum X with an extensive Philistine Bichrome pottery assemblage, alongside red-slipped pottery, Phoenician globular jugs with Bichrome decoration, and storage jars with pronounced shoulders (Mazar, 1985: figs. 32-51). These features typify the Late Iron Age I in the region, raising questions about chronological disparities between areas C and A or cultural continuity in certain areas. As the whole site apparently suffered a simultaneously destruction event sealing the objects under a thick debris level, this last hypothesis seems more reliable, indicating that Tel Qasile X could be considered as representative of the Late Iron I Age.

Radiocarbon determinations from seed samples in Rehovot, Tucson, and Groningen from various loci and contexts within Stratum X, specifically C653, L168, and temple 131, have been conducted (Boaretto et al., 2005; Sharon et al., 2005 and 2007; Mazar and Bronk Ramsey, 2008). The disparity between the dates coming from the different contexts suggests, nonetheless, that each one of them was sealed in different times, something which is added to the different features documented in pottery. Tel Qasile X could then apparently represent a long period of use.

The modeling of the entire ensemble of dates derived from seed samples collected from various contexts attributed to Tel Qasile X (table 21, appendix 21) indicates that this prolonged phase of use seemingly evolved from the early 11th century to the 9th century BC. This extended duration could account for the diverse assemblages of pottery recovered from different areas and contexts, encompassing Iron Age I and II pottery types and styles. Another possibility is to recognize a simple cultural continuity in certain areas due to a unique use of space, suggesting a singular episode of destruction where all measured samples came from.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
X Start	1093	1123-1052	1170-1023
X End	840	873-807	906-773
X Average date	**1023**	**1051-1000**	**1107-935**

Table 21. Tel Qasile Modeled Chronology

Tabla 21. Cronología modelada de Tel Qasile

Like other sites such as Tell el-Ahwat or Tell el-Hammah, posing that all measured samples share the exact same age, an average date incorporating an "SSimple" outlier analysis model for each sample can offer an intriguing reference for the transition towards the Iron Age IIA period. This is a procedure that C. Bronk Ramsey (2009: tab. 2) has previously undertaken. Repeating the same experiment under the IntCal20 calibration curve (table 22, appendix 22, figure 7) yields a new modeled distribution ranging from 1051 [1023] 1000 BC (68.3%), suggesting an early development of Iron Age IIA vessels from the late 11th century BC. This finding is supported in other datasets from the Southern Levant, although uncertainty about the contemporaneity between different *loci* of Tel Qasile X invites to be cautious with the dates from this site.

3.18. Tell Aphek

Situated near the Yarkon River in the Sharon plain, the archaeological site of Tel Aphek holds historical significance in the Levantine region's network of routes (Gadot and Yadin, 2009). At the mound's summit, excavations in area X revealed multiple layers featuring monumental constructions from the Late Bronze Age. The destruction level X12 — Late Bronze Age IIB —, locus 3507, provided seed samples measured in Rehovot, along with samples from level X8 representing the Iron Age IIA (Sharon et al., 2007). X12 signifies the final Egyptian presence at the site, evident in numerous imported pottery sherds (Gadot, 2009). Subsequent X11 reveals domestic houses constructed over the ruins of the former palatial center, lacking Egyptian imports. Over the brick domestic structures of X11, pits — X10 — and deposits of debris and ashes — X9 — were identified, accompanied by Canaanite and Philistine Bichrome pottery (Gadot, 2009: 93-99, 244-245, figs. 8.68-83). Stratigraphically linked structures, floors, and trenches indicative of a rural settlement were documented in X8-6, also found in area A (Kleiman, 2015). Pottery from X8-6 typifies the Iron Age II[11], including carinated, cylindric, and hippo storage jars, along with Cypriot Black-on-Red style jugs (Gadot, 2009: figs. 8.84-93). Seeds from a storage jar — L4015 —, hypothetically associated with stratum X8, underwent radiocarbon dating in Rehovot (Sharon et al., 2007). Thanks to that, a Bayesian chronological estimation can be made for levels X11-X9 that represent the local Iron Age I, although the less-defined layers X8-X6, particularly the isolated locus L4015, challenge a comprehensive representation of this period's chronology.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
X12 Start	1217	1261-1135	1380-1060
X12 End	1090	1177-1038	1220-921
X11-X9 Phases			
L4015 Start	872	905-809	1001-802
L4015 End	787	823-770	891-687

Table 22. Tel Aphek Modeled Chronology

Tabla 22. Cronología modelada de Tel Aphek

The radiocarbon results from Tel Aphek (table 22, appendix 23) do not significantly contribute to defining the chronology of the transition towards the Iron Age IIA after the end of the X9 level. There is a wide gap of time between the two contexts dated — X12 and L4015 —, leaving a wide range of possibilities for the period from the 12th to the 9th centuries BC.

3.19. Tell Shiloh

Situated in the Benjamin heights north of Bethel, the archaeological site, excavated by I. Finkelstein from 1981 to 1984 (Finkelstein, 1993), unveiled Iron Age I levels — stratum V — and Iron Age IIB levels — Stratum IV —. In stratum V, columned buildings in area C and pits in areas D, F, K, and M were discovered (Finkelstein, 1993; Bunimovitz, 1993; Lederman and Finkelstein, 1993; Finkelstein and Lederman, 1993). Area E revealed walls and pits on the virgin rock, while area H exhibited spoliation trenches upon an earlier defensive wall (Finkelstein, 1993: fig. 5.1-2, Finkelstein and Lederman, 1993: 49-55, fig. 4.6). Additionally, area J contained a dump deposit (Finkelstein, 1993: 69-70). This level of occupation ended with an episode of

11 See many more examples from the area A, level A6 of destruction (Kleiman, 2015).

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general destruction. Pottery associated with this stratum resembled that of Tel Aphek X11-X9 and 'Izbet Sartah (Finkelstein, 1986), featuring Canaanite traditional ware alongside Philistine Bichrome pottery (Bunimovitz and Finkelstein, 1993: 153-162, figs. 6.46-53). Radiocarbon determinations were conducted in Rehovot on seed assemblages collected from various contexts in areas C — loci 1301 and 335 — and D (Sharon et al., 2007; Finkelstein and Piasetzky, 2006: tab. 1). Bayesian modeled results can be used here as a *terminus post quem*.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
V Start	1141	1182-1062	1270-1028
V End	1025	1076-995	1109-935

Table 23. Tell Shiloh Modeled Chronology

Tabla 23. Cronología modelada de Tell Shiloh

The modeled radiocarbon analysis of seed samples recovered from areas C and D of Tel Shiloh (table 23, appendix 24) provides valuable insights into the chronology of the site's occupation phases. The Bayesian model derived from these dates serves as a *terminus post quem* for the Iron Age IB period in the central highlands of Benjamin. The results indicate that Tel Shiloh's level V was inhabited during the 12th-11th centuries BC, with a likely end around 1076 [1025] 995 BC, marked by a destruction event. This suggests that by the middle to late 11th century BC, there was no evidence of cultural development towards the Iron Age IIA period at the site.

3.20. Gezer

Gezer, strategically positioned at the foot of the Shephelah heights, played a vital role as a settlement in the Late Bronze Age, contributing to the regional trade network. Excavations conducted by the Hebrew Union College Biblical and Archaeological School in Jerusalem (HUC) and the Harvard Semitic Museum from 1964 to 1976 unearthed remnants from various periods, with a focus on the Late Bronze Age and Iron Age In Fields II, III, VI, and VII (Dever et al., 1970, 1974, 1986; Seger, 1988; Gitin, 1990; Seger and Hardin, 2013; Seger and Dever, 2014). Subsequently, from 2006 to 2017, the Tandy expedition led by S. Ortiz and S. Wolff (2017, 2019, 2021) initiated a new archaeological project, specifically exploring Field West, an area situated between HUC's areas VII and III, which revealed fresh local phases from which modeled radiocarbon determinations have been recently published (Webster et al., 2023).

Stratum 10A exhibited signs of violent destruction, evidenced by damage found in nearly all rooms, possibly corresponding to similar events in Fields II — local Str. 7A —, VI — local Str. 4 —, and VII — local Str. 8 — (Holladay, 1990; Dever, 1986; Gitin, 1990). Among the burnt debris of Stratum 10A, intact and restorable vessels typical of Iron Age I were recovered by the Tandy expedition. Notably, Room 3 of Stratum 10A yielded mushroom-shaped clay stoppers, one of which featured a stamp seal impression which has been linked to the reigns of Siamun and Sheshonq I in Egypt in the 10th century BC (Münger, 2003 and 2005). Stratum 9 represents a transient phase characterized by the reconstruction of a domestic structure. Builders, cognizant of the destruction witnessed in Stratum 10, incorporated, or reused some architectural elements from the previous phase. This stratum likely witnessed the establishment of a new city wall, subsequently undergoing further modifications in Stratum 8. According to the excavators, Stratum 9 might be attributed to the local Late Iron Age I or Early Iron Age IIA, preceding significant transformations during the later period of the Iron Age IIA — Stratum 8 — (Webster et al., 2023).

A series of modeled radiocarbon data have been recently published from levels of the Late Bronze Age and the entire sequence of the Iron Age In the Field West — phases 12-7 — (Webster et al., 2023).

While radiocarbon data from Tel Shiloh indicate a cultural continuity of the Iron Age I during the middle to late 11th century, the modeled dates from the Field West of Gezer (table 24, appendix 25) suggest the possibility of a transitional phase towards the Iron Age II period emerging during that time — level 9 —. It also reflects a likely fully developed Iron Age IIA culture by the late 11th century BC — level 8 —, like that found in Khirbet

Qeiyafa and Khirbet a'Rai (*vid. infra*) — possibly also in Tel Qasile —. Nonetheless, in an alternative Bayesian model excluding the two outliers Beta-436538 and Beta-436540, a chronology of this level is rather placed in the first half of the 10th century BC (68.3%) — Model B presented by L.C. Webster et al. (2023) —.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
12B Start	1310	1362-1216	1394-1208
12B-12A Transition	1196	1221-1173	1247-1149
12A-11 Transition	1168	1186-1136	1215-1129
11-10B Transition	1117	1135-1089	1175-1070
10B-10A Transition	1086	1107-1069	1121-1050
10A-9 Transition	**1060**	**1088-1039**	**1110-1010**
9 End	**1032**	**1074-992**	**1095-971**
8 Start	1011	1040-965	1076-951
8-7 Transition	967	984-941	1007-932
7 End	907	958-878	975-844

Table 24. Gezer Field West Modeled Chronology

Tabla 24. Cronología modelada de Gezer Field West

It's noteworthy that there is no evidence of a destruction event between levels 9 and 8 at Tel Gezer; instead, there are only architectural changes accompanied by a renewed pottery assemblage.

In any case, the modeled radiocarbon dates and the archaeological record contradict the argued link between the level 10A and the Egyptian 21th Dynasty (Münger, 2003 and 2005), as well as the conjectured destruction of the site by Sheshonq I as it has been understood after reading the 11th and 12th recorded toponymy in his monumental reliefs in Karnak, with alternative views suggesting other sites as Gaza or Makkedah instead (Mazar, 1957; Aharoni, 1979; Ahituy, 1984; Kitchen, 1986; Na'aman, 1992; Wilson, 2005; Ritner, 2009; Weippert, 2010).

3.21. Tell Moza

Tel Moza has revealed stratified levels of occupation from the Iron Age, specifically Strata VII-V, superimposed on Middle Bronze Age levels represented by Stratum VIII (Greenhut, 2009a, 2009b, 2021; Greenhut and De Groot, 2009). Stratum VII, documented in area B, consists of fragmentary walls and floors beneath layers of debris (Greenhut, 2009b: 43, pl. 2.10), accompanied by traditional Canaanite pottery, including bowls, craters, pyxis, and cooking pots (Greenhut and De Groot, 2009: 72, fig. 3.6). Notably, there are no clearly distinct indicators of Iron Age IIA, such as red-slipped, Cypro-Geometric, Greek, Phoenician Bichrome, or Samarian ware. The excavators' conclusions regarding the stratum's dating to Iron Age IIA and the 10th century BC are likely inaccurate. Conversely, a limited number of published vessel examples suggest a higher relative chronology — Iron Age I —, although the presence of a disc base of a bowl or crater featuring an irregular hand-burnished surface (Greenhut and De Groot, 2009: fig. 3.6.4) reflect a possible transition towards the Iron Age IIA. A series of radiocarbon determinations measured in Rehovot upon charcoal samples from the locus 2043 (Sharon et al., 2007; Boaretto, 2009) let us to obtain an average determination after introducing "SSimple" and "Charcoal" outlier analysis models.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
Tel Moza L2043 Average date	**1012**	**1077-971**	**1105-914**

Table 25. Tel Moza Modeled Chronology

Tabla 25. Cronología modelada de Tel Moza

The findings from the level of destruction documented in Tel Moza VII (table 25, appendix 26, figure 8) are quite interesting as chronologically coincides with that registered in Tell Shiloh in the late 11th century BC, sharing an Iron Age I assemblage of pottery, although in this case including a base of vessel with the surface red-slipped and burnished. Something that reflects an early introduction of this kind of vessels of the Iron Age IIA and a transitional phase developed in the late 11th century or early 10th century BC. Though an old wood effect can be pointed out to argue a lower chronology of the level, it fits anyway with many other dates from the Southern Levant, as Gezer, Khirbet Qeiyafa and Khirbet a'Rai.

3.22. Beth-Shemesh

The recent excavations at this site have exposed Iron Age I levels, specifically Levels 6-4, concentrated in

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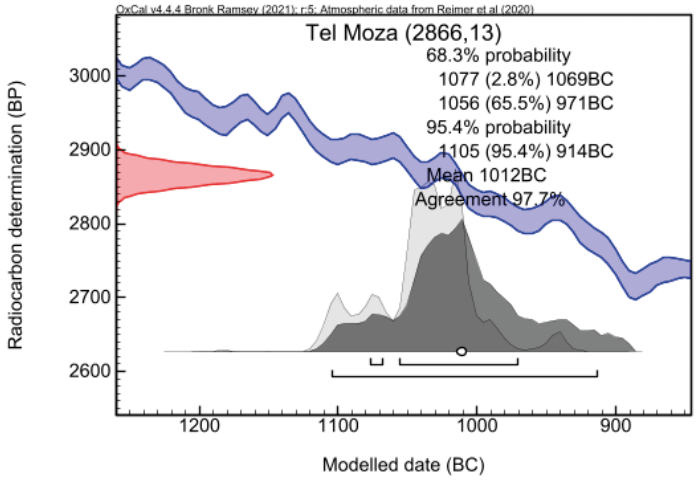

Figure 8. Tel Moza (locus 2043) Modeled Chronology

Figura 8. Cronología modelada Tel Moza (locus 2043)

the northern sectors, namely areas A and D. In Level 6, a series of aligned domestic units along the mount's periphery, accompanied by a significant assemblage of objects and associated pottery, was found beneath layers of debris (Bunimovitz and Lederman, 2013: 159-173, 187-245, figs. 6.1-2, 6.39-43, 6.61). Level 5 revealed partial remains of additional domestic structures across all excavated areas (Bunimovitz and Lederman, 2013: 173-176, 187, figs. 6.21-22, 9.1), while Level 4 exhibited more substantial architectural remains, particularly in area A, featuring domestic units reinforced by monolithic columns (Bunimovitz and Lederman, 2013: 176-185, figs. 6.24-38). In addition to typical vessels of Iron Age IA found in preceding levels, Level 4 showcased a globular jug adorned with red slip and black and white concentric circles, identified as Late Philistine Decorated Ware (LPDW) (Bunimovitz and Lederman, 2013: figs. 6.53, 6.74.2), with parallels at Tel Batash IV (Mazar and Panitz-Cohen, 2001: pl. 79.10) and Tel Qasile X (Mazar, 1085: 67-69, fig. 41.11). Additionally, a small, red-slipped spouted jug was uncovered (Bunimovitz and Lederman, 2013: fig. 6.54), indicating an advanced chronology for Level 4 within the Iron Age IB or the Early Iron Age IIA. This stage underwent significant disruptions due to extensive construction activities carried out in the subsequent Level 3. The initially unfortified Iron Age I settlement underwent by then a transformation into a royal administrative center.

A series of radiocarbon determinations over olive pits and charcoal from the entire site's strata 6-3b sequence (Sharon et al., 2007; Boaretto et al., 2016; Piasetzky, 2016) allow for the creation of a Bayesian model.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
6 Start	1065	1093-1005	1188-974
6-5 Transition	1012	1049-985	1065-951
5-4 Transition	**992**	**1038-960**	**1042-940**
4-3b Transition	**962**	**1001-928**	**1026-896**
3b-3a Transition	748	791-727	812-659
3a End	646	744-623	753-462

Table 26. Beth-Shemesh Modeled Chronology

Tabla 26. Cronología modelada de Beth-Shemesh

Contrasting with many other data sets from the Southern Levant, radiocarbon modeled dates from level IV of Beth-Shemesh (table 26, appendix 27), predating the construction of the administrative center in level III, suggest a chronology dating back to the early 10th century BC. Like in Gezer, there is no recorded destruction event during this transitional phase.

Despite a certain cultural continuity seen in traditional local ware, many vessels exhibit features characteristic of the Iron Age IIA, such as red-slipped pottery and Late Philistine Decorated Ware (LPDW), akin to Tel Qasile X. Considering level 4 as representative of the Early Iron Age IIA

aligns better with other near datasets, indicating a transition between the Iron Age I and II around 1038 to 960 BC (68.3%), as in Tel Shiloh or Gezer.

3.23. Khirbet Qeiyafa

Khirbet Qeiyafa, located a few kilometers south of Beth Shemesh in the Shephelah region, underwent excavation from 2007 to 2013, directed by Y. Garfinkel and S. Fanos. The site revealed the remains of a significant fortified settlement with a casemate system featuring two monumental gates complete with lateral rooms and internal courtyards. Adjacent to the inner wall face, a series of domestic units served to fortify it, along with the discovery of a large storage building and a potential public monumental structure within the acropolis, identified as Level 4. The preservation of these structures, along with the numerous artifacts — pottery, stone, and metal — was exceptional due to the settlement's destruction, which remained sealed beneath substantial debris (Garfinkel and Ganor, 2009; Garfinkel et al., 2014; Garfinkel, 2017).

While the detailed publication of associated pottery is pending, the uncovered artifacts include vessels adorned with red slip and irregular hand burnishing, numerous Late Philistine Decorated Ware (LPDW) items, handles of storage jars with digital impressions, four black juglets, and Cypro-Geometric White Painted jugs (Hang and Garfinkel, 2009; Cohen-Weinberger and Panitz-Cohen, 2014; Gilboa and Waiman-Barak, 2014). These findings suggest an advanced cultural phase during the settlement's destruction and abandonment, apparently during the Early Iron Age IIA.

Olive and grape seeds collected from various contexts were subjected to radiocarbon dating (Garfinkel and Ganor, 2009: tab. 3.3; Garfinkel et al., 2012: tab. 2; Garfinkel and Streit, 2014; Garfinkel et al., 2015), providing high results mainly distributed from the late 11th to the early 10th centuries BC. I. Finkelstein and E. Piasetzky (2010 and 2015) argued that not all the contexts from where the measured samples were collected must be necessarily contemporary, but representative of different phases of use. Therefore, the higher distribution of probabilities in the radiocarbon dating shall be dismissed for them. This group of dates can be used here as a *terminus ante quem* reference for the Iron Age IB period.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
4 Start	1029	1056-1002	1090-984
4 End	991	1012-982	1040-930
C11747 Average date	997	1013-988	1042-934

Table 27. Khirbet Qeiyafa Modeled Chronology

Tabla 27. Cronología modelada de Khirbet Qeiyafa

While previous studies have highlighted the inclusion of samples from various phases of use at this site (Finkelstein and Piasetzky, 2010; 2015), the consistent distribution of the Bayesian model and our average determination (table 27, appendix 28) suggest the development of an early Iron Age IIA stage during the late 11th century BC. This interpretation is further supported by its consistency with numerous other datasets from the Southern Levant. Additionally, evidence from Gezer, Tel Moza and Beth-Shemesh reinforces the notion of a local transitional phase emerging during the middle to late 11th century BC, with a subsequent episode of destruction occurring around 1000 BC.

3.24. Tel Rumeida

At Tel Rumeida, also known as Tel Hebron, located in the high lands of Juda, a range of occupation levels spanning from the Bronze Age to the Late Iron Age has been identified, featuring partial architectural remnants from the Iron Age I across various areas (Chadwick, 1992; Eisenberg and Nagorski, 2002; Eisenberg, 2011; Eisenberg and Ben-Shlomo, 2017). Notably, artifacts such as carinated craters, carinated cooking pots, bowls with carinated and spherical shapes, along with pithoi, have been documented within these stratified levels (Eisenberg and Ben-Shlomo, 2017: figs. 7.4-5). To establish a chronological framework, several charcoal samples were systematically collected from two distinct loci, namely 338 and 357 — level VII —. These samples were subsequently analyzed in Rehovot to derive radiocarbon dating results

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(Sharon et al., 2007) that can be used as a *terminus post quem* reference for the Iron Age IB period.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
VII Start	1283	1351-1200	1451-1111
VII End	1087	1196-1035	1233-908

Table 28. Tel Rumeida Modeled Chronology

Tabla 28. Cronología modelada de Tel Rumeida

Like Tel Shiloh and the X12 level of Tel Aphek, the radiocarbon data from the VI level of Tel Rumeida (table 28, appendix 29), or Tel Hebron, provides a noteworthy reference as a *terminus post quem* for the regional Iron Age IB period in the Southern high lands of Judah. The collected and measured charcoal samples may be affected by the old wood effect, or it is possible that Tel Rumeida was occupied as early as the 13th century BC, like Tel Hazor XII/XI. Nonetheless, it appears that towards the end of the period of occupation around the 12th-11th centuries BC, before the development of new structures during the Iron Age II, as documented in several excavation areas, an Iron Age I assemblage of pottery kept unaltered in the site (Chadwick, 1992; Eisenberg and Ben-Shlomo, 2017).

3.25. Tel Miqne

Located in the Philistine plain between Gezer and Tell es-Safi, Tel Miqne was subjected to excavations led by T. Dothan and S. Gitin during the 1980s and 1990s, bringing to light a continuous history of settlement from the Middle Bronze Age to the Late Iron Age. The Philistine center witnessed expansion during the Iron Age I in phases VI-V, marked by numerous architectural units associated with Philistine Bichrome pottery (Dothan and Gitin, 1993; Dothan et al., 2016). Notably, Level IV signifies an abandonment of the lower city, with the population concentrating on the upper city. This phase is linked to a renewed material culture reminiscent of Tel Qasile X and Khirbet Qeiyafa, showcasing red-slipped and burnished pottery, Late Philistine Decorated Ware (LPDW), Phoenician Bichrome jugs, and scant remnants of Philistine Bichrome vessels (Dothan et al., 2016: figs. 5.88-112) — Iron Age II —.

To establish chronological timelines for each stratum, I. Sharon et al. (2007) conducted radiocarbon dating across various occupation levels at Tel Miqne, employing a Bayesian model for analysis. Only phases VIIB, VIIA — Late Bronze Age —, VIB, and VB — Iron Age I — provided samples measured in Rehovot, along with an isolated locus — 9022 — with an uncertain stratigraphic relation between phases IV and I. These data are utilized here to develop a new Bayesian model, providing references as *terminus ante quem* and *terminus post quem*.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
VIIb Start	1160	1211-1105	1251-1066
VIIb End	1125	1178-1077	1198-1057
VIIa Phase			
VIb Start	1099	1127-1057	1175-1036
VIb End	1070	1097-1037	1139-1011
VIa Phase			
Vb Start	1040	1061-1013	1105-987
Vb End	990	1036-969	1050-906
Va Phase			
Locus 9022 Start	828	837-789	921-778
Locus 9022 End	767	798-759	809-704

Table 29. Tel Miqne Modeled Chronology

Tabla 29. Cronología modelada de Tel Miqne

Alongside Beth-Shemesh' level 4 — if it is labeled as Iron Age IB rather than Early Iron Age IIA —, the radiocarbon data from Tel Miqne (table 29, appendix 30) suggests a low chronological framework for the local development of pottery in the Southern Levant. This framework indicates a cultural continuity of Philistine Bichrome pottery — phase Vb — around 1000 BC, with an absence of any signs of development of new features documented in Beth-Shemesh or Tel Qasile X. Currently, it is challenging to determine the exact local chronology of the transitional phase towards the Iron Age II due to a wide gap between phase Vb and the next dated archaeological context — locus 9022 —, which is uncertainly located between the general strata IV and I. The collection of samples from contexts clearly ascribable to strata Va and IV could prove useful in the near future to determine the chronology of the local transition towards the Iron Age II, which

apparently could have occurred in an uncertain moment of the 10th century BC.

3.26. Tell es-Safi

Similar to Tel Miqne, Tell es-Safi witnessed significant and extensive Philistine occupation during the Iron Age (Maeir, 2017, 2020). Various seed samples were systematically collected from a series of stratified contexts — levels A4, A6, A7, P2, and F2 — for radiocarbon dating (Toffolo et al., 2012; Asscher et al., 2015a). Notably, levels A7 and P2 are indicative of the Late Bronze Age IIB, devoid of any intrusion of Philistine pottery. Level F2, on the other hand, is linked to Philistine Monochrome pottery, leading to its classification as later than levels A7 and P2. Finally, level A6 has been regarded as the most recent due to the presence of Philistine Bichrome pottery, assuming a cultural gap between levels 7-6 in area A, which is also evident in level F2. After it, level A5 continue exhibiting Philistine Bichrome pottery of the Iron Age I.

Like other sites in the region such as Beth-Shemesh and Khirbet Qeiyafa, the ending phase of the Iron Age I transitioning to the Iron Age IIA is well-documented at Tell es-Safi. A significant portion of these remains has been recorded in Area A,[12] in the eastern part of the lower city — stratum A4 — (Zuckerman and Maeir, 2012), where a Proto-Geometric style Greek cup was also discovered (Zukerman, 2012: pl. 13.12.15).

Radiocarbon data from the level P2 to the level A4 were modeled under the assumption of these sequential stages, despite the absence of direct stratigraphical relationships between all the selected contexts (Asscher et al., 2015a: fig. 17).

On the other hand, from an isolated and sealed context at Tell es-Safi — locus 22042 — which, according to I. Sharon et al., (2007: tab. 8), should be placed in the transition between Iron Age IIA and IIB, a collection of seeds was also retrieved. These seeds yielded up to 10 radiometric measurements in Rehovot and Groningen.

The discoveries from surveys conducted between 2005 and 2006 of caves on the eastern slope of the upper part of the tell, near Areas A and E — Area T — are also significant[13] (Uziel and Maeir, 2020a).

All these data — excluding those from the caves of the eastern slope which could be altered contexts — let us to obtain a new Bayesian model to determine references for the Iron Age IB period.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
Late Bronze Age IIB Start	1345	1390-1296	1422-1282
Late Bronze Age IIB-F2 Transition	1291	1310-1259	1363-1234
F2-A6 Transition	1194	1230-1158	1262-1124
A6-A5 Transition	1128	1181-1096	1202-1047
A5-A4 Transition	**1068**	**1114-1024**	**1164-979**
A4 End	**986**	**1040-928**	**1091-885**
Locus 22042 Start	884	916-836	936-822
Locus 22042 End	837	888-798	895-783

Table 30. Tell es-Safi Modeled Chronology

Tabla 30. Cronología modelada de Tell es-Safi

The high chronology proposed by the measured samples of Tell es-Safi (table 30, appendix 31) has sparked considerable debate. While the laboratory dates themselves are not subject to question, there are concerns regarding the archaeological context from which the organic material was obtained. Critics, notably I. Finkelstein (2016), have highlighted inconsistencies in the site's stratigraphy, particularly in

12 Noteworthy findings are also present in Area F, near the summit of the tell — stratum F10 — and in Area D in the lower city stratum D4 — with remnants of a solid fortification and a potential cultic area (Maeir, 2017: 220) —.

13 In these caves, ceramic deposits from the Iron Age IB and bones indicating a funerary use were found, leading to the excavation of the so-called T1 cave, which, however, was heavily disturbed by modern looting. The recovered ceramic material includes fragments from the Early, Middle, and Late Bronze Age, as well as the Iron Age I and II (Uziel and Maeir, 2020b). Since the only complete vessels recovered are from the Iron Age IB and two of the four bone remains provided calibrated radiocarbon dates concentrated in the late 11th century and the first half of the 10th century BC — RTT 5988 and 5991 — (Boaretto, 2020: tab. 4.7 and fig. 4.24), the funerary use of the cave during this transitional period is plausible. However, the prolonged use from the Iron Age I to the Iron Age IIA is equally possible based on the other two radiocarbon dates — RTT 5989 and 5990 —.

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Area A, which is central to the study. I. Finkelstein points lack of floors and unclear connections to architectural remains, casting doubt on the reliability of the stratigraphy. However, recent research by E. Boaretto et al. (2018) has shown that Stratum A6 is actually a distinct layer marked by phytolith-rich sediments and charred debris. This layer spans the entire area and underlies all later Iron Age architecture, providing a consistent marker horizon for anchoring the local stratigraphy. Examinations of pottery from Stratum A6 reveal a predominance of Iron Age I material, confirming its Early Iron Age I chronology with no evident intrusions. Evidence from primary contexts and sedimentary layers then supports a robust chrono-stratigraphic sequence for the area A of Tell es-Safi.

Regarding the transition towards the Iron Age I — level A4 —, only two measured samples are available from that layer. This results in a wide range of possible dates from the late 12th century to the late 10th century BC due to its isolation between two undated gaps — A5 and A3 —. However, focusing on the mean values of the distributions framing the period — 1068-986 BC — suggests a local periodization from around 1050 to 1000 BC, as in many other near sites. This chronology not only could have implications for Levantine history but also for Aegean chronology due to the presence of a Proto-Geometric bowl, like that found at Tel Hadar IV. Without forgetting that the radiocarbon chronology coming from Sidon and Sindos (Weninger and Gimatzidis, 2020; Doumet-Serhal et al., 2023) determined an even higher chronology for that same Aegean period. In fact, regarding the sherd coming from Tell es-Safi, some concerns have been raised[14] (Doumet-Serhal et al., 2023).

14 "The discussion over a single sherd from a skyphos with a wavy line in the reserved handle zone from Tell es-Safi, […], which comes neither from a primary context nor can it be dated with precision to any one or the other Aegean period, represents a case of overinterpretation and imprecision in the synchronisation of regional Mediterranean chronological systems. Previous critique renders the radiocarbon data from that site effectively useless, at least for purposes of chronological correlation between the Aegean and the eastern Mediterranean" (Doumet-Serhal et al., 2023).

3.27. Khirbet a' Rai

The site of Khirbet a'Rai is situated in the southern region of Shephelah, strategically controlling the Lachish River, a major communication route between the plain and the mountainous interior.

Excavated from 2015 under the direction of Y. Garfinkel and S. Ganor (2017, 2018, 2019; Garfinkel et al., 2019a, 2019b), several excavation areas were opened on the southern slope where surface architectural remains were already documented. This excavation led to the discovery of large public buildings from the Iron Age, along with ceramics and minor remains, providing evidence of a prolonged occupation sequence from the Middle Bronze Age to the Ottoman period.

Particularly significant are the recently documented Iron Age I remains — Level VIII — in Area A, where Philistine Bichrome pottery remained and dated by radiocarbon measurements over samples of olive pits (Garfinkel et al., 2019a: tab. 4) recovered from a destruction level. Level VII — Early Iron Age IIA —, has also yielded significant remains in Areas A — phase 6 —, B — phase 8 —, and D2 — phase 5 —. In Areas A and D2, no structures were recorded, but a substantial collection of decontextualized ceramics was found. In Area B, however, a series of four adjacent rooms was documented, along with another building made of large stone blocks under a significant stratigraphic layer of collapse with a large quantity of *in situ* pottery (Garfinkel et al., 2019b; Thomas et al., 2021). Three more dating on legume remains — OxA-34501, 34969, and 34970 — were provided by Oxford (Garfinkel et al., 2019a: tab. 4). Together with the measured samples of the level VIII they can provide the construction of a local Bayesian model.

Y. Garfinkel et al. (2019a) introduced a Bayesian model of Khirbet a' Rai's stratigraphy, integrating it with their presumed periodization of nearby sites like Khirbet Qeiyafa and Lachish. They proposed that Khirbet a'Rai VIII represented an advanced stage of the Iron Age I, occurring as Lachish remained uninhabited. Following its destruction, Khirbet Qeiyafa, where an advanced cultural stage of Early Iron Age IIA had apparently

fully developed, was destroyed, followed by the occupation of Lachish V. Based on these assumed sequential steps, their Bayesian model indicated that the end of Khirbet a'Rai VIII occurred during the late 11th century BC, with the Early Iron Age IIA period immediately beginning as early as the very late 11th century BC. This aligns with data from Tel Moza, Gezer and Khirbet Qeiyafa.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
VIII Start	1104	1134-1051	1202-1020
VIII-VII Transition	**1056**	**1079-1021**	**1107-1015**
VII End	1019	1060-988	1106-934

Table 31. Khirbet a'Rai Modeled Chronology

Tabla 31. Cronología modelada de Khirbet a'Rai

However, modeling based solely on local samples from Khirbet a' Rai (table 31, appendix 32) elevates the transition between levels VIII and VII of Khirbet a'Rai to the mid-11th century BC, which, although surprising, is consistent with data from the Field West of Gezer and Ashkelon. Yet, as it also suggests a local chronology framed in the late 11th century for the subsequent period — level VII —, or the Early Iron Age IIA, it's likely that some kind of aging bias is present in the dates from Khirbet a' Rai, given the lack of supporting data in this sense. Considering the chronology reflected by surrounding sites such as Gezer, Tel Moza, Tell Miqne, Tell es-Safi, Khirbet Qeiyafa, and Lachish, a transitional phase developed in the middle-late 11th century BC seems more plausible.

3.28. Lachish

Lachish, a prominent archaeological site in the southern Levant, witnessed a dramatic event leading to the destruction of Stratum VI towards the end of the Late Bronze Age. Following this destructive event, the city remained uninhabited for an extended period until its revival in the Early Iron Age IIA, identified as Lachish V (Ussishkin, 2004; Weissbein et al., 2020).

Despite the absence of direct stratigraphic links, radiocarbon dating from various excavation areas produced two distinct datasets (Carmi and Ussishkin, 2004; Garfinkel et al., 2019). Utilizing these datasets, a Bayesian model can be developed to comprehensively reconstruct the historical timeline of the site. There is a notable presence of woody samples through the entire sequence, leading to the adoption of a "Charcoal" outlier model for each one of them.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
VIII Start	1527	1536-1515	1549-1505
VIII-VII Transition	1508	1525-1500	1535-1469
VII-VI Transition	1166	1182-1139	1211-1129
VI End	1123	1146-1100	1178-1068
Abandonment			
V Start	973	1001-906	1119-861
V-IVb Transition	856	895-824	900-820
IVb-IVa Transition	828	830-804	881-802
IVa End	796	809-790	816-766

Table 32. Lachish Modeled Chronology

Tabla 32. Cronología modelada de Lachish

The modeled chronology from Lachish (table 32, appendix 33) provides a noteworthy *terminus ante quem* for the Iron Age IB period, placing it in the 10th century — mean value in 973 BC —, when the reoccupation of the site during the Early Iron Age IIA period apparently took place. The mean value, consistent with the modeling done by Y. Garfinkel et al. (2019a), suggests that this period likely occurred during the early 10th century, aligning well with the chronology proposed by surrounding sites such as Gezer, Khirbet Qeiyafa and Tel Moza for the Early Iron Age IIA period.

3.29. Ashkelon

The investigation of Ashkelon, primarily overseen by L.E. Stager and later by D.M. Master through the Leon Levy Expedition, meticulously uncovered 24 layers of occupation, referred to as Periods I-XXIV. Each period delineates specific phases within distinct areas, with a particular focus on grids 38 and 50 of the South Tell, revealing a comprehensive occupational sequence spanning the Philistine and Iron Age periods. The emergence of Bichrome Philistine pottery

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occurred in period XVI — phase 19 in Grid 38 — and persisted through period XV — phase 18 —, followed by the introduction of the new Late Philistine Decorated Ware (LPDW) in period XIV, phases 17-16 (Stager et al., 2008; Voss et al., 2018).

Radiometric dating was specifically focused on phases 23-17b of Grid 38, covering the Late Bronze Age to Early Iron Age IIA. This analysis involved 17 radiometric dates derived from a collection of associated samples of charred seeds and bones, which were analyzed at the Rehovot Particle Accelerator — AMS — (Asscher et al., 2021).

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
23 Start	1598	1646-1537	1758-1424
23 End	1335	1401-1295	1421-1222
22 Phase			
21 Start	1234	1258-1186	1333-1162
21-20B Transition	1185	1206-1168	1217-1147
20B-20A Transition	1168	1186-1148	1202-1136
20A-19B Transition	1152	1172-1132	1187-1124
19B-19A Transition	1132	1146-1111	1173-1098
19A-18B Transition	1107	1125-1108	1151-1067
18B-18A Transition	1088	1106-1071	1126-1049
18A-17B Transition	**1070**	**1092-1052**	**1109-1024**
17B End	**1040**	**1074-1015**	**1101-972**

Table 33. Ashkelon Grid 38 Modeled Chronology

Tabla 33. Cronología modelada de Ashkelon Grid 38

The radiocarbon dates from Ashkelon (table 33, appendix 34, figure 9) consistently suggest the beginning of the XIV period — represented by levels 17 and 16 of Grid 38 — which marks the onset of the local Philistine Iron Age II, around the mid-11th century BC. This period is characterized by the introduction of the first red-slipped and vessels of LPDW into the local pottery tradition. These findings align with data from the Field West of Gezer, Khirbet a'Rai, and possibly Tell es-Safi, all indicating an early development of the Iron Age IIA period during the late 11th century BC.

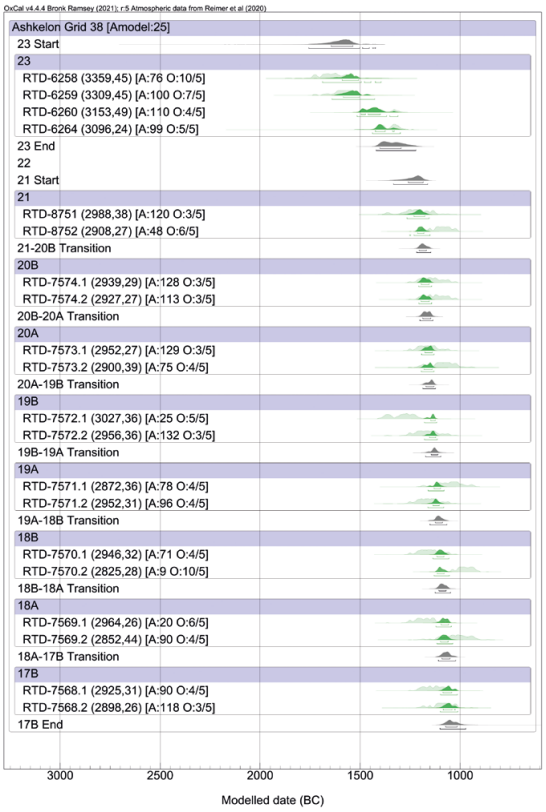

Figure 9. Ashkelon Grid 38 Modeled Chronology

Figura 9. Cronología modelada Ashkelon Grid 38

3.30. Qubur el-Waleyide

Finally, Qubur el-Waleyide stands as another archaeological site situated along the Habesor River in southern Canaan. It was initially excavated by R. Cohen (1978) and more recently by G. Lehmann et al. (2009-2010). This site significantly contributes to establishing the chronology of the Early Levantine Iron Age. A series of systematically stratified samples containing charred seeds and plants were retrieved from level 1-7 to 1-4 of Field I and subsequently analyzed at Rehovot (Asscher et al., 2015b). These samples were collected from Late Bronze Age IIB — levels 1-7 to 1-5c-d — and Iron Age I — level 1-4 — deposits, excluding level 1-5a-c, where the initial appearance of Philistine Monochrome pottery is noted. Despite this, given the sequential stratification of the samples, they have been incorporated into a Bayesian model. The chronology of the level 1-4 can be used as a *terminus post quem* reference for the regional Late Iron Age I period.

Phase	Mean	Mod. cal BC (68.3%)	Mod. cal BC (95.4%)
1-5d-e Start	1211	1262-1135	1315-1122
1-5d-e End	1171	1217-1120	1256-1106
1-5c-a Phase			
1-4 Start	1126	1151-1090	1197-1061
1-4 End	1075	1116-1047	1187-991

Table 34. Qubur el-Waleyide Modeled Chronology

Tabla 34. Cronología modelada de Qubur el-Waleyide

The radiocarbon dating of Qubur el-Waleyide (table 34, appendix 35) has been scrutinized due to challenges in understanding its stratigraphy and conducting reliable dating, as noted by I. Finkelstein (2016). Sample locations lack clear connections to architectural elements, complicating interpretation, while the predominant local pottery with no imports provides inconclusive chronology clues. Moreover, reliance on dry-sieved sediment, mainly composed of single barley seeds, pose further challenges for I. Finkelstein. Despite indications of ancient burning, uncertainties persist for him regarding sediment origin and age. Additionally, as ceramic typology relies heavily on sherds, with few complete vessels for analysis, the relative dating gets more complicated. Despite these challenges, E. Boaretto et al. (2018) argued for the reliability of the samples, indicating primary deposition supported by macro and micro-archaeological analyses. The progressive decrease in ^{14}C dates within the sequence and consistent dating support this view, despite limited pottery diagnostics.

Thus, Qubur el-Walaydah serves as a valuable reference as a *terminus post quem* for the Iron Age IB period, with its sequence ending at level 14, representing the local "middle" Iron Age I associated with Philistine Bichrome pottery dated to the first half of the 11th century BC, with no evident transition towards the Iron Age II by then.

4. Conclusions

Definitely, the transitional phase — Iron Age IB — towards the Iron Age II developed with different rhythms depending on the approached sites and areas.

In the northern section of the Southern Levant there are clear references that sustain the high chronology model suggesting a development of the Iron Age IIA period from the early-middle 10th century BC, with a transitional phase from the Iron Age I during the late 11th and the early 10th century BC. These are the cases of Tell Abu al-Kharaz X together with Tel Hadar IV, Tell el-Farah VII and Megiddo VIA — as Tell Tweini 6E in the Northern Levant and possibly Et-Tell (Bethsaida) VI —. Remarkably, most of these sites suffered destructions at the end, around the early 10th century BC — Tell Tweini 6E, Tel Hadar IV, Megiddo VIA and Tell el Ahwat II —, with exceptions like Sidon. Nonetheless, many other settlements remained untouched during that time around 1050-950 BC, keeping traditional pottery types together with some Phoenician and Cypriot imports until the late 10th century, as seemingly did Tell Keisan 9b-a, Tel Dor D2 10-9, Tel Rehov D3, Tell el-Hammah — locus 384 — and Yoqne'am XVII — as Tell Tayinat[15] in the northern Levant where a transitional phase towards the local Iron Age II with the first appearance of red-slipped pottery is noted (*vid. supra*) —. Many of them also suffered an episode of destruction around 930 BC — Tell Keisan 9a, Tell el-Hammah locus 384 and Yoqne'am XVII —, with Tel Dor D2 and Tel Rehov D3 remaining apparently safe during that time, but it seems it is a different wave than that of Tell Tweini, Megiddo and Tel Hadar.

The findings coming from the Southern Levant point more consistently to a generalized higher chronology than those coming from Phoenicia, the Jezreel Valley and Galilee. In fact, there is not a single dataset which soundly sustain a low chronology view displacing the transition towards the Iron Age II in the middle-late 10th century BC. Almost all of them suggest that transition developed around as early as around 1050 BC and as lately as around 975 BC.

Ashkelon XIV and Khirbet a' Rai VIII-VII constitute two exceptional cases suggesting a transition towards the Iron Age IIA period in the mid-11th century BC. Gezer — Field West 9 —, Tel Moza

15 Field 1 — level 2d —. Field 2 — level 4a —.

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— locus 2043 — and Khirbet Qeiyafa IV — as possibly Tel Qasile X — also reflect a transitional phase located in the middle-late 11th century BC, finding supporting parallels in Sidon, Megiddo H and Tell Abu al-Kharaz in northern sites.

That is, especially Khirbet a'Rai, Tel Moza and Ashkelon — possibly also Tell es-Safi A4 and Gezer — support a high chronology for the early stages of the Iron Age IIA dated around 1020-1000 BC. Khirbet Qeiyafa IV and Lachish V show a stage of occupation with a developed Iron Age II pottery assemblage during the early 10th century BC, acting consistently as *termini ante quem* for the Iron Age IB regional period.

Nonetheless, even in the Southern Levant there are some other sites that remained keeping ancient types of pottery although introducing some new features — seemingly, Beth-Shemesh —. Tel Miqne likely even kept exclusively traditional Philistine Bichrome pottery without substantial changes during the same period.

Therefore, while accepting local variations and preferences in the cultural development of pottery, a general chronology from the late 11th century to the early 10th century BC seems the more consistent for the general period of the Levantine Iron Age IB and the starting point of the subsequent Iron Age IIA.

There is however a nuanced differentiation between the northern and southern areas. If there is a more consistent chronology of the transition towards the Iron Age II in the Southern Levant around the Yarkon River, Shephelah and Philistine during the middle and late 11th century BC, excepting some examples in the northern corridors and coast — Sidon B-E, Tell Abu al-Kharaz X and possibly Tell Tweini 6E and Megiddo H9 — most of cases in this area suggest a lower chronology for the ending of the Iron Age I during the early 10th century BC — Tel Hadar IV, Megiddo Q7 and also possibly Tell Tweini 6E —, the mid-10th century BC — Tell el-Ahwat II and Tell Tayinat Field 1, levels 6c-3 — and even the late 10th century BC — Tell Keisan 9b-a, Tel Dor D2 10-9, Yoqne'am XVII, Tel Rehov D3 and Tell el-Hammah, locus 384 —.

Could this nuanced picture sustain any of the main chronological views that consider the conquests of David around 1000 BC or the campaign of Sheshonq around 930 BC as the historical event acting as a *terminus post quem* for the development of the Iron Age IIA archaeological period during the Solomonic or the Omrite periods?

It is difficult to answer upon the archaeological record. It is assumed here that Levantine history is not as simply reflected in pottery features — which are after all the diagnostic artifact we use to define periodization and chronology — which actually leave multiple options opened not visible in historical sources written centuries after the real events took place, as F.J. Núñez Calvo (2008, 2010, 2015 and 2020) has suggested several times. If we accepted that new pottery features of the Iron Age IIA are diagnostic artifacts of the Solomonic or Omrite periods, the notable disparity in the adoption of these features in pottery[16] suggest it is an independent affair from effects of the palatial administration of both periods. It is clear that regional and local tendences likely determined the adoption and development of pottery types and styles harder than historical incidents as the Davidic conquests or the palatial administration of Solomon. These are after all historical events with an uncertain scope and few options for empirical verification. The current stay of knowledge and research about them do not let to consider them as clear pivotal factors determining the emergence of the Iron Age IIA archaeological period.

The early introduction of new features during the middle and late 11th century BC in Ashkelon, Gezer, Tel Moza and Khirbet a' Rai would develop even before the historical reigns of David and Solomon theoretically took place. On the other hand, the destruction of Yoqne'am XVII and Tell Keisan 9 with no red-slipped pottery documented, as the late transition towards the Iron Age II in Tel Dor, Tel Rehov and Tell

16 Sites started to do so in the middle-late 11th century BC — Ashkelon, Gezer, Tel Moza, Tell Abu al-Kharaz, Sidon, etc. — and those that waited a century until the late 10th century to include this kind of features and Cypro-Aegean imports, notably in the northern areas around The Mount of Carmel and the Jezreel Valley — here Megiddo stands as an exception —.

Figure 10. Relative and absolute chronology. Registered episodes of destruction

Figura 10. Cronología relativa y absoluta. Episodios de destrucción documentados

el-Hammah in the late 10th century BC indicate that, under Davidic-Solomonic political control or not, they did not share a common assemblage of pottery as late as during the mid-10th century BC. The process of extension of the types and styles of ware associated with the Iron Age II likely took several generations to completely replace local and regional traditions of the Iron Age I, including those Canaanite and Philistine.

Therefore, several key findings emerge:

1. Regional Chronological Variation (figure 10): The research reveals significant regional variation in the chronology of the transitional phase. Sites in the northern sector of the Southern Levant, such as Tell Tweini, Tell Abu al-Kharaz, Tel Hadar IV, Tell el-Farah VIIb, and Megiddo VIA-VB, provide evidence supporting a high chronology model, suggesting an early development of the Iron Age IIA period from the early to middle 10th century BC after a transitional phase between around 1025-975 BC. In contrast, other sites, including Tel Keisan, Tel Dor, Tell el-Ahwat, Tel Rehov, Tell el-Hammah, and Yoqne'am XVIIa, directly or indirectly exhibit a transitional phase extending until the late 10th century BC. But the issue gets even more complicated when Southern sites are also checked, with most of them reflecting a higher chronological transition towards the Iron Age IIA in the middle and late 11th century BC with a few exceptions rather reflecting the early 10th century BC — Beth-Shemesh and Tel Miqne —.
2. Destruction Events and Continuity (figure 10): Many sites experienced episodes of destruction and abandonment during the transitional phase — Khirbet a'Rai, Khirbet Qeiyafa, Tel Qasile, Tell Keisan, Yoqne'am, Megiddo, Tell el-Ahwat, Tell el-Hammah, Tel Hadar and Tell Tweini — at different times from late 11th century to around 930 BC, while others remained relatively untouched — Tell Abu al-Kharaz, Beth-Shean, Tel Rehov, Tel Dor, Sidon, Gezer, Tel Miqne, Tell es-Safi, Ashkelon, among others — showing a heterogeneous reality through this wide span of time. That is, the presence or absence of destruction events does not uniformly correlate with shifts in pottery styles or with any clear absolute date. For example, Tel Dor and Tel Rehov which remained untouched retained traditional pottery in the mid-10th century types despite their proximity to sites experiencing transitions — Tell Abu al-Kharaz or Megiddo — much earlier.
3. Interpretation of Pottery Features: The adoption and development of new pottery features, such as red-slipped hand-burnished treatment and Late Philistine Decorated Ware (LPDW), do not necessarily align with any of the aforementioned

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historical periods. Instead, they reflect nuanced regional and local dynamics that evolved over multiple generations, even starting much before the Davidic-Solomonic period in certain areas and sites, while in some others later. The disparity in the adoption of these features across different sites suggests independent cultural developments rather than a unified political control under a centralized palatial administration. If there was any, some other kind of links of reliance could emerge instead, which are nonetheless difficult to clearly identify in the archaeological record. As A. Gilboa (2022) has recently suggested, if there is an undeniable development of Mediterranean and Levantine trade as well as a new reinforced economic dynamic during the 10th century BC, there is no clear evidence about its association with a centralized administration palatial system leaded by Hiram or Solomon.

4. Implications for Historical Narratives: The study challenges traditional interpretations linking shifts in material culture exclusively to known and recorded historical events. It suggests that the cultural evolution of the Levant was more intricate and diverse than previously conceived, with each site progressing autonomously in developing different stages of material culture. The chronological variations observed underscore the need for a nuanced understanding of historical narratives and the archaeological record of the Iron Age In the Levant, inviting to treat more cautiously the historical record as a methodological issue approaching the archaeological record.

Supplementary information: click to go

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