

Egyptians in Jaffa: A Portrait of Egyptian Presence in Jaffa during the Late Bronze Age



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Roughly forty-five miles to the northwest of Jerusalem lies one of the most important ports along the southern Levantine coast of the Mediterranean Sea: the site of Jaffa (Joppa), now surrounded by Tel Aviv's urban sprawl (fig. 1). Despite considerable excavation during the twentieth century, the excavations remained unpublished, and little was known of the types of finds from the extensive archaeological exploration of Late Bronze Age Jaffa. As a result of recent efforts to analyze and prepare the Bronze and Iron Age remains of Jacob Kaplan's Jaffa excavations for publication, a rich corpus of Egyptian ceramics and other artifacts, many from LB IB contexts, have come to light.

Figure 1 (above). Jaffa's location made it an ideal location to serve maritime traffic up and down the Mediterranean coast and also as a conduit to trade throughout the central coastal plain and further inland. While much of the lower city is still occupied by buildings, the tell consists of a number of areas, indicated by the trees, where continued excavations remain possible. Photo by Sky View. Courtesy of the Israel Antiquities Authority.

This Egyptian ceramic assemblage provides a clearer picture of the character of the earliest Egyptian settlements in Canaan that are associated with the expansion of the New Kingdom empire. While much ink has been spilled on the question of distinguishing Egyptian from Egyptianizing artifacts at Egyptian administrative and military sites in Late Bronze Age Canaan, evidence from Jaffa suggests that such distinctions are not easily made. In this context it is preferable to refer instead to Egyptian artifacts and assemblages, noting simply whether they are imported or locally produced and stressing the importance of the context of the assemblage as defined by both textual and archaeological data.

Excavations at Jaffa

Jaffa has been nearly continuously inhabited since the Middle Bronze Age up to the present, thus preserving an important archaeological sequence for understanding cultural and historical developments in the southern Levantine coastal plain over the last four thousand years. In 1955, Jacob Kaplan, municipal archaeologist for the city of Tel Aviv–Jaffa, initiated long-term

Figure 2. Aerial photographs of Jaffa like this one from 1964 reveal the extent of the absence of large structures on the tell following the British Operation Anchor in 1936. A limited interest in Jaffa by Israeli immigrants as Tel Aviv grew after 1947 meant that by 1955 no new attempts to build on the tell were undertaken. Jacob Kaplan's main excavation areas, including Areas A and C, capitalized on the exposed areas of the tell in an effort to establish its stratigraphic sequence. Kaplan Archive photograph. Courtesy of the Israel Antiquities Authority.



excavations on the tell of ancient Jaffa with the goal of exploring its earliest phases of occupation, which are dated to the Bronze and Iron Ages (fig. 2). Kaplan could not have been more fortunate in his choice of excavation areas, and in 1956, during only the second season in Area A, he encountered stone fragments of the monumental gate façade inscribed with the name of Ramesses II (ca. 1264–1198 B.C.E.) that adorned the entrance to the Late Bronze Age Egyptian fortress (fig. 3). Remains of this inscription continued to be unearthed in 1958 (fig. 4), along with a substantial corpus

of Egyptian ceramics and artifacts that belong to earlier phases of Egypt's occupation of Jaffa. Kaplan resumed excavations in Area A in 1970 in an effort to broaden the exposure of the Late Bronze Age phases associated with Egyptian settlement; during these efforts he excavated the well-known "Lion Temple" of probable Iron I date, named after a lion's skull discovered on the floor



Figure 3. A view of Area A as it looks today. Excavations were begun in Area A, the largest excavation area opened by Jacob Kaplan in Jaffa, in 1955 and concluded in 1974. Kaplan's excavations in 1955, 1956, and 1958 here produced one of the largest Late Bronze Age assemblages of Egyptian ceramics excavated in Israel. In the 1990s, a re-creation of the Egyptian gate façade of Ramesses II was installed to illustrate the location of the original gate with its jambs inscribed with the royal titulary of Ramesses II. Photo by Aaron A. Burke.



Figure 4. Fragments of the Ramesses II façade were excavated by Jacob Kaplan from 1955 to 1958, with plaster still adhering to the carved portions of the inscription and decoration. Kaplan was fortunate to encounter such impressive early remains in just the first few seasons at Jaffa. In a strange twist of fate, despite fifteen years of additional work in Jaffa through 1974, he encountered few remains as early as those he excavated in the 1950s and certainly nothing as impressive. Photo by Aaron A. Burke.



Figure 5. Area A excavations continued into the 1970s under Jacob Kaplan. In addition to the various levels associated with the Egyptian occupation during the Late Bronze Age seen in the background, the excavations revealed a temple from the end of the Late Bronze Age and Iron I identified by Kaplan as the "Lion Temple." It is visible on the left side of the photo, with two column bases in the center. Photo from Kaplan Archive. Courtesy of the Israel Antiquities Authority Photographic Archive.

of the temple. Despite five more seasons in Area A, through 1974 (fig. 5), Kaplan never again reached the earliest phases he had encountered during the 1950s. After nearly two decades of work, which were accompanied by the publication of only preliminary reports, the results of Kaplan's excavations received little attention for nearly three decades.

Jacob Kaplan in Jaffa

Archaeological research of Jaffa started as early as 1948, when the newly established Israel Department of Antiquities and Museums (IDAM) issued its third excavation permit to P. L. O. Guy for his excavations in Jaffa. Guy completed only two short seasons of excavations, whose results were published in a brief report (Isserlin 1950). The main aim of these early excavations was to locate the remains of the Iron and Bronze Age settlements. To achieve this goal, Guy dug several long trenches and investigated an area measuring roughly 20 x 15 m, located opposite St. Peter's Church. In 1952, Bowman, Isserlin, and Rowe resumed the excavations on behalf of the University of Leeds (England) in the same excavation area (Bowman, Isserlin, and Rowe 1955).

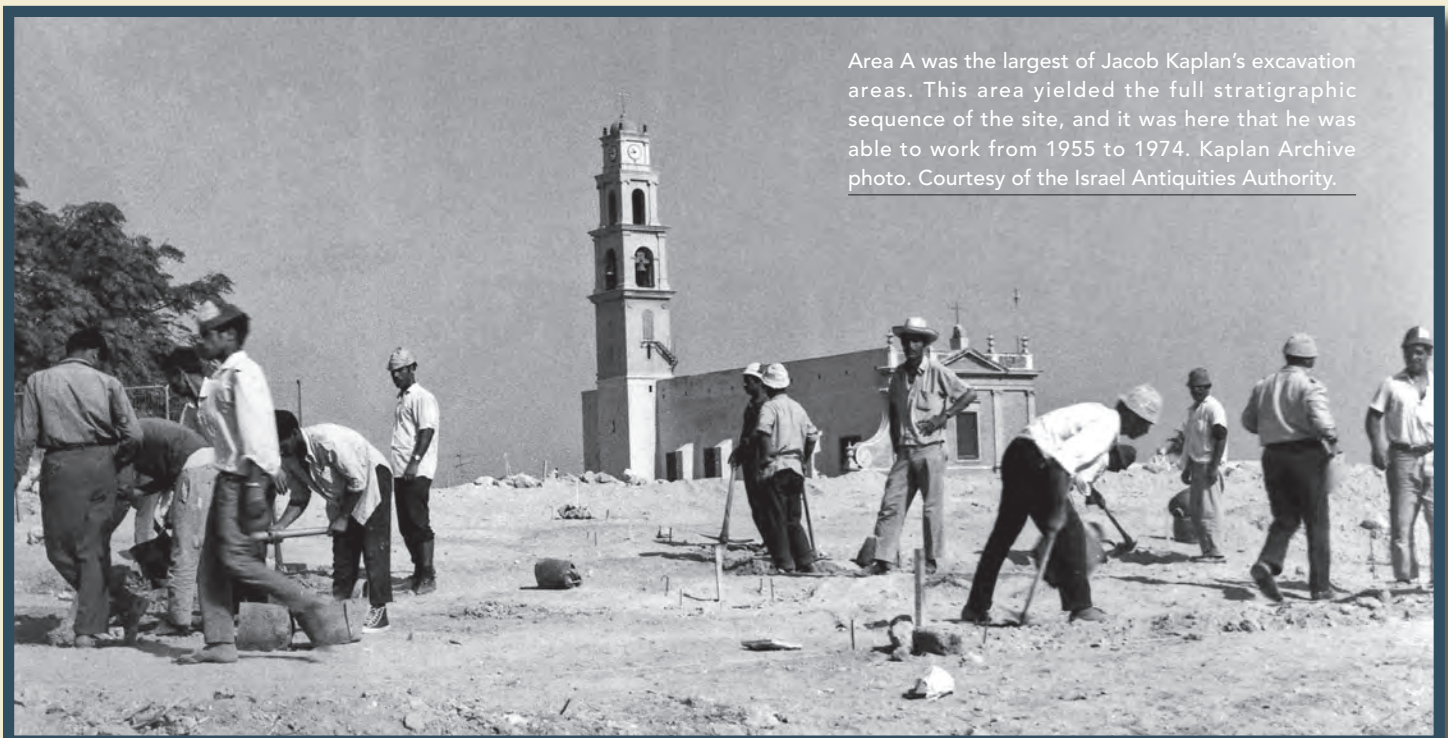
As early as 1955, Jacob Kaplan started to work in Jaffa, the site that was to become the center of his archaeological research. For the following twenty-two years, all archaeological excavations in Jaffa were carried out solely by him, although he was later accompanied by his wife Haya Ritter-Kaplan. Jacob Kaplan, born 1910 in Bialystok, Poland, grew up and lived in Tel Aviv before completing a degree in engineering at Technion

University in Haifa. Out of a deep personal interest in archaeology, he started to participate in archaeological excavations, working first as an engineer and a draftsman. At the same time, he studied

archaeology at the Hebrew University in Jerusalem and was granted a Ph.D. for his 1954 dissertation "The Chalcolithic and Neolithic Settlements in Tel Aviv and the Surrounding Vicinity." In addition to his excavation activities, he conducted an archaeological survey in Tel Aviv, concentrating in particular on the northern parts of the city, where development endangered cultural heritage sites (Kaplan 1953). Before excavating in Jaffa, Kaplan excavated various other sites in the greater Tel Aviv area and beyond, including, for example, Lod and Ramla. However, his main interest was Tel Aviv and Jaffa, and for his work he received the title and function of "municipal archaeologist" (Bowman, Isserlin, and Rowe 1955: 231). It appears that Kaplan worked closely with the Leeds project, since a 1954 topographical map found in the archive of the archaeological museum of Jaffa indicates how the ancient mound was to be divided. Isserlin's signature on the northern portion and Kaplan's on the southern half indicate that the original idea was that of two expeditions working side by side on the mound. The map was also signed by Yeivin, then the director of the Israel Department of Antiquities and Museums.



Jacob Kaplan, municipal archaeologist for Tel Aviv and Jaffa during the 1950s through the 1970s, conducted excavations in Jaffa from 1955 to 1974. His work was continued by Haya Ritter-Kaplan through the early 1980s. Despite the challenges of working in Jaffa, Kaplan succeeded in convincing the municipality to prohibit the construction of buildings on the tell, a ban that has remained in effect until the present day. Kaplan Archive photo. Courtesy of the Israel Antiquities Authority.



Area A was the largest of Jacob Kaplan's excavation areas. This area yielded the full stratigraphic sequence of the site, and it was here that he was able to work from 1955 to 1974. Kaplan Archive photo. Courtesy of the Israel Antiquities Authority.

Stratigraphy of Tel Yafo according to Jacob Kaplan

Areas A, B, and Y

Level	Phases	Area	Period	Date (B.C.E.)	Notable Finds
I	A	A	Hellenistic	2nd–1st century	
	B	A, Y		3rd–2nd century	A: “fortress”
II	A	A, Y	Persian	5th century	A: Sidonian fortress
	B	A		pre-5th century	
III	A	A, B	Iron II	8th century	Area A east
	B	A	Iron I	11th century	Area A west: Philistine sherds
IV	A	A	LB IIB	13th century	A: Gate lintel, hinge; burned
	B	A			A: Ramesses II gate; burned
V		A	LB IIA	14th century	A: silo; stone paving
VI		A	LB I	16th–15th century	A: Egyptian kiln and ceramics; Bichrome ware; Y: kilns
VII		A, B, Y	MB IIB–C	17th–16th century	Y: tombs, ovens
VIII			MB IIB?		unexcavated

Area C Stratigraphy

Level	Period	Date (C.E.)
1	Byzantine	6th–7th century
2	Byzantine	5th century
3	Roman/Byzantine	4th century
4	Roman	3rd century
5	Roman	2nd century
6	Roman	1st century

Area J

Level	Period	Date
1	Modern	
2	Roman	1st century C.E.
3	Roman	3rd century B.C.E.
4	Persian	4th century B.C.E.
5	LB	
6	MB IIB	
7	MB IIA	

3-D Scanning of Artifacts from Jaffa

Although Kaplan dug at various locations in Jaffa, his main efforts were concentrated on three areas that were, as a result of wars and riots, no longer covered by modern buildings. In Area A, located on the eastern part of the tell's summit, he exposed remains of the city's citadels and its gates, mainly dating to the Late Bronze Age, the Iron Age, and the Persian and Hellenistic periods. Located toward the west and opposite St. Peter's Church (in Qedumim Square), Kaplan opened Area C and unearthed remains mainly of the Roman and Byzantine periods. In Area B, located inside an old bathhouse (the Hammam) in the vicinity of the Jaffa Museum, he identified a section of the site's earthen rampart fortifications, the earliest phase of which, he concluded, dated to the Middle Bronze Age.

As shown in the tables on page 6, Kaplan established a stratigraphy for his main excavation areas and listed the local stratigraphy of additional areas such as Area J.

He continued to dig in various areas until 1981 (for a list of his excavations, see Bar-Nathan 2002), assisted by his wife Haya Ritter-Kaplan, who was also an archaeologist. The Tel Aviv municipality's high regard for Kaplan's work and the archaeology of Jaffa is indicated by the fact that he was provided with a facility in Jaffa to serve as a laboratory and storage facility; since 1961, it has served as an archaeological museum. Here Kaplan established an archaeological exhibit with numerous finds from his excavations throughout greater Tel Aviv and Jaffa. These finds illustrate in chronological order the history of the region from late prehistory through the Byzantine period. Kaplan himself served as director of the museum, which belonged to the Eretz-Israel Museum, one of Tel Aviv's museums.

Despite the fact that Kaplan did not act on behalf of the IDAM, the body responsible for the implementation of the antiquities laws in Israel, it seems that his opinion was quite influential. He succeeded in entering a paragraph into the municipal regulations for development and construction work in the old city of Jaffa that prohibited any modern building activity in what was defined as an "archaeological reserve," identified with the tell today.

Jacob Kaplan, who passed away in 1989 (Anonymous 1990), published a number of articles on specific archaeological and historical problems (e.g., Kaplan 1971; 1975) as well as general overviews of Jaffa and Tel Aviv, of which Jaffa has been a part since 1950. His publication of *The Archaeology and History of Tel Aviv-Jaffa* (Kaplan 1959; updated, summarized, and translated into English in Kaplan 1972), illustrated to Tel Aviv residents in a semipopular manner that their city had a rich archaeological past. While other articles (e.g., Kaplan and Ritter-Kaplan 1993) indicate his approach to publication, the crucial, comprehensive final report of his work has been, unfortunately, lacking and is thus a main focus of The Jaffa Cultural Heritage Project.

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In the fall of 2009, supported by a grant from the Faculty Senate of the University of California, Los Angeles, The Jaffa Cultural Heritage Project initiated a process of 3-D digitization of artifacts from Kaplan's excavations. While many 3-D scanners available on the market are complicated to use and expensive, for this project we employed a low-cost desktop scanner built by NextEngine® that operates with a reasonably priced desktop PC. The main goal of this project is to increase the efficiency of data collection and dissemination of artifact data by implementing a process of 3-D scanning that has the potential of extracting a number of data byproducts or derivatives with which high costs are often associated for excavation projects.

The most obvious byproduct is the actual 3-D model of an object, which can be embedded and manipulated within 3-D environments and, ultimately, displayed online. Although widely acknowledged as the next generation of data collection in archaeology, 3-D scanning has yet to be given real consideration by even well-established projects. It is not difficult to see, however, that the collection of 3-D artifact data will be among the factors that distinguish "old" excavations from "new," even more so than the years in which excavations were conducted. The reason for this is simple: the collection of 3-D data facilitates a process of repeated personal observation that, if properly implemented and made widely accessible, will extend the shelf life of excavated materials otherwise inaccessible stuffed away in the bowels of storerooms. While few projects may reach the point where it is possible to create 3-D environments in which these scanned artifacts can be embedded or "re-situed," the useful life of data stemming from the vast majority of projects will exponentially increase if it can be made available online.

A second byproduct is also made possible by a 3D scanner: the illustration of artifacts, particularly those requiring cross-section drawings, such as for ceramics. This is accomplished by cutting through the scan of the object and digitizing its cross-section. Traditionally, this is undertaken by a professional illustrator who makes choices about what constitutes a representative section through the vessel, while trying to adhere to the individual, often idiosyncratic, conventions of a given project's illustration needs. While the time and costs associated with this process (often requiring the redrawing of objects) vary from project to project, a cost can be ascribed to each object's illustration. In the end, projects usually opt for selective illustration, since it is often impossible to know in advance whether one or another or all of the exemplars of a given type will be published in the final report.

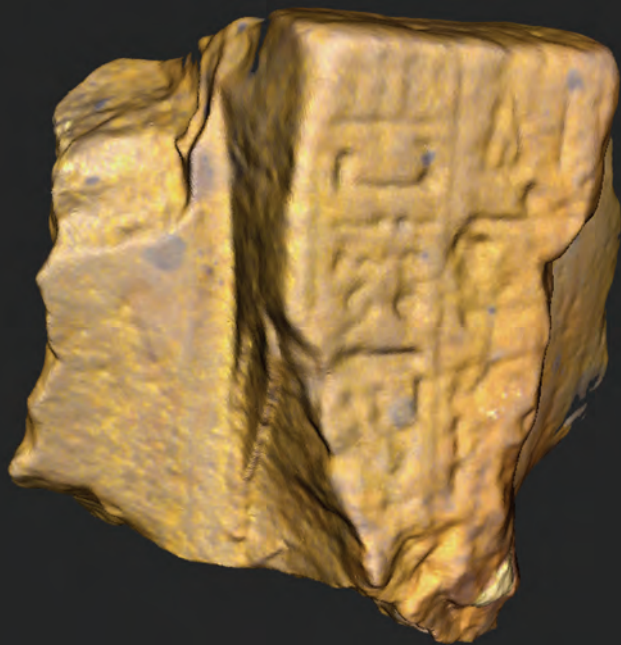
Because 3-D scanners now permit the capture of high

resolution, picture-quality data on top of the 3-D point data, a third byproduct emerges: artifact image capture, with the potential in some cases of replacing traditional photographs of artifacts. While no scanner currently available provides the type of images expected in published reports using traditional methods of photography, due to lighting and the distortions inherent to the camera lens, the methodological and analytical value of rendering digital images from 3-D scans is clear. With 3-D scans, it is possible, for example, to extract color data from an image, which often distracts from observation of an artifact's shape. Illustrations are used largely with the hope of addressing this problem, but they are subject to artistic interpretation and require an enormous number of very precise measurements (made difficult by the size of objects) in order to be accurate. Unlike developing a traditional photo in black and white, the light source in a 3-D environment can be moved to achieve the optimal rendering of an object's surface. Anyone who has attempted to arrange optimal lighting conditions for photographing objects will appreciate this feature.

In addition to the methodological value of implementing 3-D scanning of artifacts as a standard part of the observation process, the financial savings are noteworthy, a fact of no small significance, considering the overall costs of archaeological research. Without calculating the precise dollar amount, one can appreciate the potential savings by considering a complete small ceramic bowl

like the Egyptian bowls excavated by Kaplan. A 3-D scan of the bowl can be completed within two and a half hours, during which only half an hour of computer time is required of the "scanning engineer"; the remainder of the time is largely hands-off, as the scanner automates the 360-degree scans. With an additional hour of work, images (as screen captures) and a profile section of the object can be produced by exporting the 3-D data to other software packages. Thus, with approximately an hour and a half of total work time, a complete or restored vessel can be rendered as a 3-D object, provided with a traditional profile drawing, and rendered from requisite angles. Best of all, if the end product is found to be unsatisfactory (most likely the result of postscanning procedures), the artifact's derivatives can be rendered again even after the object is no longer accessible. Although there is certainly a learning curve to the implementation of this process and perhaps a need to acquire additional software, the net value of this data-capture chain is the versatility of the data generated and confidence that an artifact's spatial dimensions have been captured as well as technology permits and, for all intents and purposes, at a level of detail that will be difficult to surpass. The average wide-scan setting achieves an accuracy of within .005 inch, and recent enhancements to the software permit even greater accuracy; scans can also be done in high definition and in macro, if necessary.

As with all technologies, there are certain limitations to



3-D scanning of artifacts permits the retrieval of levels of data not permitted by conventional means such as photographs, which are limited by the control of lighting, and drawings, which are the visual interpretation of the artist. This is best illustrated with inscribed, especially incised, objects for which the control of the light source is vital to reading the inscription. With 3-D scans, a level of data that is often found missing after the fact is actually captured and can be studied further when the object has been stored away.

using a 3-D scanner. The size and weight of certain objects limit, of course, those that can be scanned. Although a cable extension permits scanning larger objects, because larger objects are further from the scanner, they will not be scanned at the same level of resolution. In this process and others, users will certainly face a learning curve when trying to decide how to scan certain objects. Bowls, for example, are not intuitively scanned sitting on their bases, since this complicates the attachment of scans of the base and interior to the full scan of the exterior wall of the bowl, due to a lack of overlapping points between the separate scans. Additionally, the sloping walls of bowls mean that lighting across the exterior surface is uneven, with shadows around the sides farthest from the scanner, often leading to discoloration of the final fused scan. Instead, bowls are best scanned like a radar dish, in two 360-degree rotations, providing the necessary overlapping scans while reducing the total number of scans needed. Still, users will learn that objects with sharp edges (e.g., thin bowls with flaring rims), where it is difficult to capture sufficient overlap between adjoining scans, may prove more time-consuming than the average vessel. Of course, the interior of closed vessels (e.g., jugs and jars) cannot be scanned and thus will not permit the creation of profile drawings from scanned data.

For all the deficiencies that are certainly to be encountered during attempts to reconstruct the records of earlier excavations, like those of Jacob Kaplan, the

intensive collection of artifact data made possible with 3-D scanners encourages new avenues of research with such artifact collections. Consider, for example, an Egyptian inscription whose origin is likely Jaffa but that is as-of-yet unknown to the community of scholars interested in Egypt's LB presence in Canaan. This new technology will allow a firsthand opportunity to study the object and its inscription in a way not previously possible. By making it available in this manner, it is hoped that further details concerning the artifact's function and meaning in Late Bronze Age Canaan will come to light. As we continue to work through the publication of Kaplan's excavations to the fullest extent possible, we look forward to making this collection accessible to the public in ways not yet pursued by most excavations.

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The integration of 3-D scanning data with online databases such as OCHRE (Online Cultural Heritage Research Environment) permits continued access to artifacts by multiple individuals for whom personal access to the artifacts may be impractical. While the capture of the data associated with the 3-D image constitutes an exponential increase in data associated with each artifact, these data also lend a greater utility to the scanned artifacts, which is particularly significant for unpublished corpora that have experienced a loss of important observations regarding their contexts.





Figure 6. During the 1990s, Area C of Jacob Kaplan's excavations were incorporated within the subterranean Visitors' Center located in Qedumim Square adjacent to St. Peter's Church on the eastern side of the tell of Jaffa. Kaplan encountered considerable remains of the Hellenistic, Roman, and Byzantine periods during his soundings in the square. Recent renovations to the Visitors' Center permitted an opportunity to renew excavations within Area C and revisit Kaplan's stratigraphy. Photo by Sky View. Courtesy of the Israel Antiquities Authority.

In 2007, more than fifty years after the start of Kaplan's excavations, Aaron Burke and Martin Peilstöcker, co-directors of the Jaffa Cultural Heritage Project, received permission from the Israel Antiquities Authority to publish the Bronze and Iron Age phases of Kaplan's excavations in Jaffa. The results of this publication project are in turn informing the research design of the renewed excavations. Excavations were also renewed at the site in 2008 within Kaplan's Area C (Hellenistic and Roman periods), culminating in 2009 with the exposure of impressive remains of a Hellenistic building preserved more than a story high (figs. 6, 7a–b). These excavations not only provide new insights into the history of the site during the Hellenistic and Roman periods but also have contributed to our understanding of Kaplan's earlier excavations in this area.¹ Once conserved, the Area C architectural remains will be incorporated into the renovations of the Visitors' Center in Qedumim Square, which will also include an artifact display. Continued work on Kaplan's unpublished corpus has proved, above all, an irreplaceable

element for understanding Jaffa's archaeological sequence in advance of excavations by The Jaffa Cultural Heritage Project. One particular aspect illuminated by the unpublished records is Jaffa's central role in the Egyptian conquest and administration of Canaan during the Late Bronze Age; the records thus substantially expand and refine our understanding of the history and archaeology of this important port along the Canaanite coast during the late second millennium B.C.E.

The archaeological evidence exposed by Jacob Kaplan for Egypt's imperial presence during the Late Bronze (LB) Age in Jaffa is little known beyond the fragments of the Egyptian gate. The bulk of the assemblage consists, however, of a large corpus of Egyptian ceramics dating from LB IB to the early Iron Age (ca. 1460–1150 B.C.E.), as well as considerable *aegyptiaca* (artifacts of Egyptian cultural provenience). As a whole, this collection points to a long-term (ca. 250 years) and effectively permanent Egyptian presence in Jaffa during the Late Bronze Age, which enables us to flesh out Jaffa's role during Egyptian domination of Canaan.

These items also allow us to address questions related to Egyptian settlement in Jaffa and the process of Egyptianization that has been the focus of many recent studies addressing Egypt in Canaan during the New Kingdom period. In this article, we review Jaffa's status during the Late Bronze Age and the light shed by our recent efforts to examine ceramics from Jaffa's earliest phase of Egyptian settlement, dated to the fifteenth century, as well as unique evidence for local production of Egyptian ceramics in Canaan during the early Late Bronze Age.

Jaffa in the Late Bronze Age

Our knowledge about Jaffa during the Late Bronze Age begins in the wake of the subjugation of the central coast of Canaan and the Galilee during the reign of Thutmose III (ca. 1482–1428 B.C.E.), around 1460 B.C.E.: Jaffa is listed as site 62 on Thutmose III's topographical list. Although historical sources do not clarify precisely when Jaffa was developed as an Egyptian fortress, it appears likely that this took place in the aftermath of Thutmose III's conquest, when the site would have been turned into what Ellen Morris has identified as a *hṫm*-base fortress, a type of fortress intended to make preparations for and to supply Egyptian forces campaigning throughout Canaan (2005: 138–39 n. 90). Regardless of the terminology that might be used to identify Jaffa, subsequent sources from the Late Bronze Age reveal Jaffa's strategic importance to the Egyptians.

The next reference to Jaffa during the Late Bronze Age is found in the Egyptian tale *The Capture of Joppa*, which is preserved in Papyrus Harris 500 (see Pritchard 1969: 22–23) and is accepted as set in the reign of Thutmose III. Although the first part of the document is not preserved, it is generally inferred that the Canaanite inhabitants of Jaffa had managed to rebel against their Egyptian overlord, leaving the Egyptian garrison and its commander outside the city. By employing a ruse that evokes



Figures 7a–b. In 2008 and 2009, the Jaffa Cultural Heritage Project, under the co-direction of Aaron Burke and Martin Peilstöcker, resumed excavations in Jaffa's Visitors' Center in Qedumim Square (Kaplan's Area C). The excavations encountered extensive building remains of a Hellenistic building preserved up to the second story, which it was revealed underlay the entire eastern half of the excavation area dug by Jacob Kaplan in 1961 and 1965 and during the 1990s by Ety Brand. Although the building's identification remains ambiguous, a doorway has been identified in every wall of the structure, suggesting that it played a largely public function. Photos by Aaron A. Burke.



the later tradition of the Trojan horse, the Egyptians loaded two hundred men into baskets, which were then delivered by another five hundred soldiers into the city, where they were given entry, surprisingly, without question. Springing from the baskets, the Egyptians retook the city; there is no report of a fight.

While it is reasonable to question the historical veracity of this literary tradition, if it preserves a historical memory—and there is reason to believe that it may, which we shall discuss below—then as early as the reign of Thutmose III, Jaffa had become home to a strategically located Egyptian garrison whose presence was still

Areas B, D, and G: The Eastern Fortification Line of Jaffa

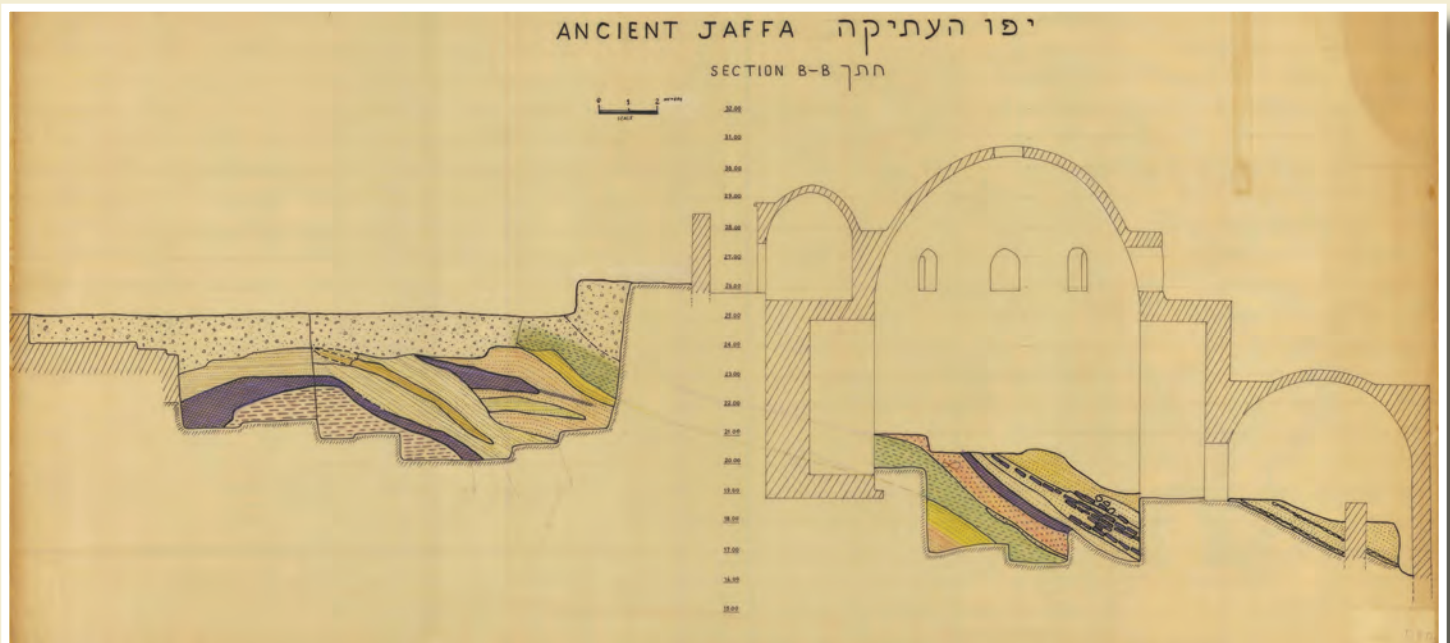
Between 1958 and 1964, Jacob Kaplan opened three small excavation areas (B, D, and G) in the northeastern part of Jaffa's tell. The initial excavation in Area B was a salvage operation in which two glacis—one mudbrick and one stone—from the late eighth or early seventh centuries B.C.E. were discovered. Following these excavations, Area D was opened just west of and further up the eastern slope of the tell from Area B; lastly, Area G was opened south of Area D. Kaplan hoped not only to better articulate the Iron Age defenses of Jaffa but to delineate the nature of the earlier Bronze Age ones.

All three excavation areas were limited in their exposure; Area B was the largest, at just over 100 square meters, while Areas D and G were smaller: trenches 20 x 2 meters wide. These areas were highly disturbed by later building activities. Area B was actually within the Turkish bathhouse, or *hammam* (the current Hammam Restaurant), and was limited to the floor area of two rooms—what Kaplan called the “Large” and “Small” rooms. The Iron Age glacis were cut by the foundations of the *hammam* and partially removed in order to lay the drains and floors for the building. Outside of the *hammam*, the disturbances in Areas D and G occurred much earlier, in the Hellenistic or Roman period, when a large portion of the tell appears to have been removed or leveled. This operation

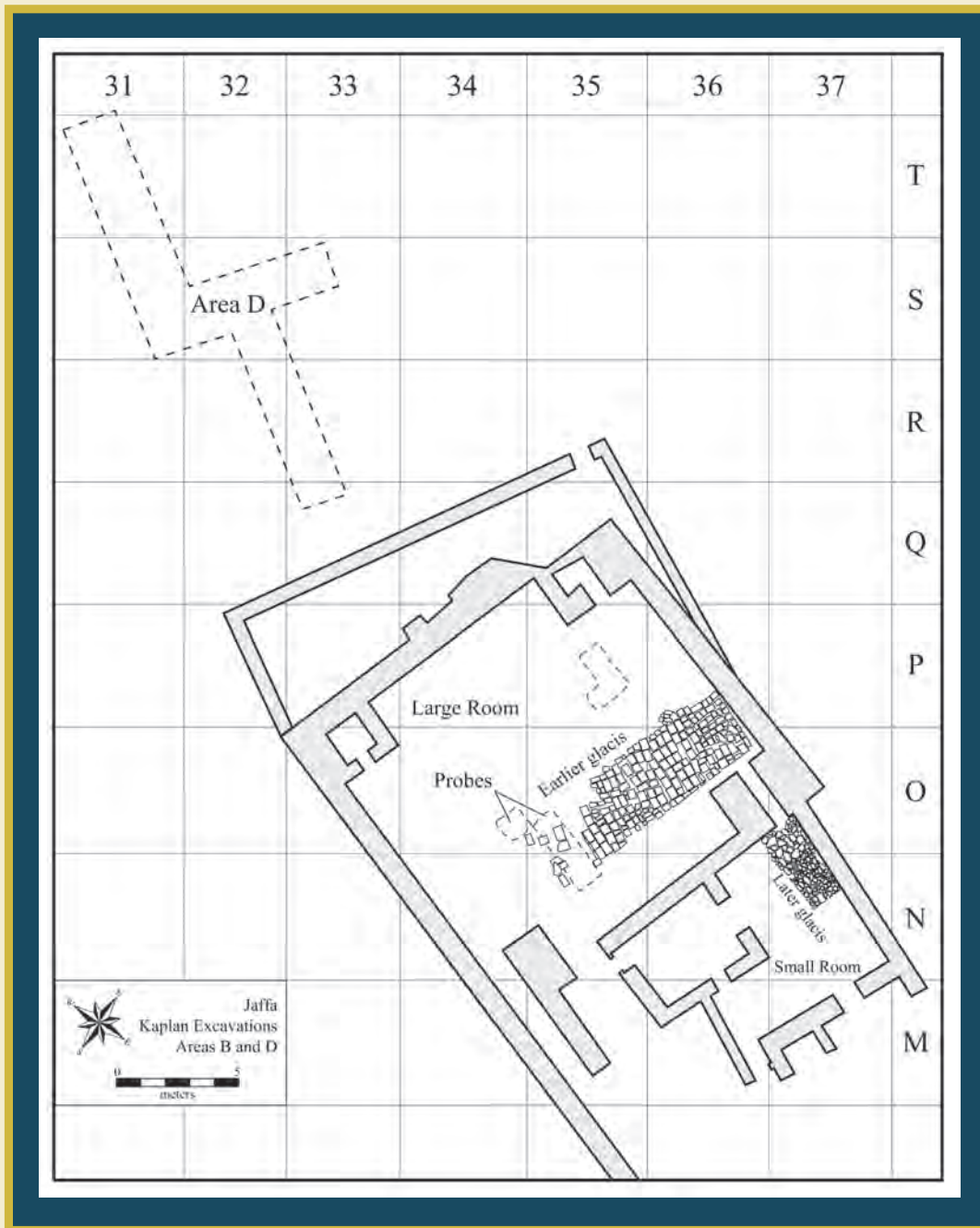
cut into the earlier Iron and Bronze Age layers, all of which were fills devoid of architecture. The Middle Bronze II through Iron IIA periods are represented only by scattered pottery sherds in these areas. Kaplan's contention that there were MB II ramparts has not been substantiated by the finds, as only one Middle Bronze Age sherd, a Cypriot Red-on-Black body fragment, has been found in Area G. Despite this fact, superposition of the layers suggests that some of the sloping fill layers into which Kaplan excavated (and which yielded no datable finds) may be Bronze Age in date, as they run below the Iron IIB/C glacis. Considering that the construction of earthen ramparts is unknown in the Late Bronze Age in the southern Levant, it would stand to reason that any earlier purposefully deposited fill layers date to the MB II; it is possible but less likely that they date to the Iron IIA.

At the end of the Iron IIB or perhaps the beginning of the Iron IIC, a mudbrick glacis was constructed that was at least 10 m high and covered the northeastern side of the tell. Whether this mudbrick glacis was constructed around the entire tell is unclear, as the only glacis discovered further to the south, in Area A, was of crushed chalk and has yet to be dated. Based on the line of the glacis in Areas B and G, however, this chalk glacis is a good candidate for the southern continuation of the Iron Age defenses.

Shortly after the construction of this mudbrick glacis, a fill of over 1.5 meters was deposited over the bricks, and a second glacis was constructed, this time of large stone slabs. The ceramics found within both glacis and the fill between them suggest that the glacis were constructed, at the earliest, at the end of the eighth century B.C.E. or perhaps the beginning of the seventh century. They presumably mark the eastern boundary of the upper town of Jaffa



Original illustration of excavated section from Areas B and D in Kaplan's notes. Although greater certainty exists concerning the identification of the Iron Age glacis exposed within the *hammam*, Kaplan's assertion, despite a limited quantity of artifacts, is likely correct that the earthen fills to the west and outside of the *hammam*, which are seen to lie below the later Iron Age layers of the rampart, belong to a Middle Bronze Age rampart.



By overlaying Kaplan's excavation grid and the locations of his excavation areas, it is possible to determine the precise locations of his probes with respect to the built environment. This permits, in turn, the projection of the line of fortifications around Jaffa and an estimate of the location of these defenses.

in the late Iron Age, though Iron IIB–C sherds have been found further east below the remains of Ottoman Jaffa's lower town.

The next period of habitation represented in Areas B, D, or G is the Late Hellenistic or Early Roman period. At some point during these two periods, it appears that a portion of the tell was removed or leveled off. A massive fill layer was identified in both Areas D and G that cut through all the earlier layers. This fill was, in turn, cut into at some point in the Roman period, and a large *tannur* (oven) was constructed. The quantity of ceramics found in and around this *tannur*, which was almost entirely preserved, suggests that it was part of a ceramic production center.

Scattered remains from the Early Islamic and Crusader period occupations of Jaffa overlay the massive Hellenistic–Roman layers. While there are few identifiable architectural features from any of these periods in the areas, there is a wide collection of Frankish ceramics (including Port St. Symeon polychrome Sgraffito, Proto-Maiolica, Cypriot Monochrome Sgraffito, and Zeuxippus wares).

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being contested by a Canaanite insurgency. In light of the role that the town played as a port and a garrison in the coastal plain, the need for Egyptian troops poised to quell occasional rebellions and prepare the way for campaigning pharaohs is obvious. As it concerns the remainder of the population of Jaffa, references to both the *'apiru* (outlaws, mercenaries) and *maryannu* (chariot warriors of noble rank) in The Capture of Joppa may also suggest the presence of well-known Late Bronze Age social elements in and around Jaffa during the fifteenth century B.C.E. The *'apiru*, who are otherwise unattested in the region until the fourteenth-century letters from Tell el-Amarna, are characterized as a threat, with the express concern that the *'apiru* might steal the *maryannu*'s horses, if they are left outside the city.

After The Capture of Joppa, the next references to Jaffa, found in the Amarna letters (mid-fourteenth century B.C.E.), indicate that the strategic value of Jaffa (identified as *Yapu*) included its granaries. These pharaonic granaries, which are identified by the Egyptian word *šnwty*, are described in this Akkadian correspondence as the “*šunuti* of the king” (EA 294:20). This important function for Jaffa within the Egyptian New Kingdom empire is also attested in correspondence from Aphek dated ca. 1230 B.C.E. (Singer 1983; Horowitz, Oshima, and Sanders 2006: 35–37). Together these references invite consideration of the relationship between Aphek and Jaffa and the unique role that each of these sites played within Egyptian administration of the region, which is one focus of our project's ongoing research. In addition to these texts, the only additional reference to Jaffa with possible assignment to the Late Bronze Age comes from Gezer. Jaffa is mentioned in a fragmentary letter from Gezer that may date to the early Late Bronze Age (see Gezer 2 in Horowitz, Oshima, and Sanders 2006: 53–55).

The Egyptian Ceramic Corpus

Jacob Kaplan assigned the Late Bronze Age strata in Area A from Strata VI to IV. The fragments of Ramesses II's gate from Stratum IV belong, of course, to the thirteenth century B.C.E., and their context is clearly associated with the eastern gateway leading into Jaffa. Below this, Kaplan exposed remains of Stratum V, a phase of fourteenth-century occupation consisting of limited architectural remains and what Kaplan identified as a small silo. But an even earlier sequence of at least four phases, which were grouped together as Stratum VI, represent the LB I settlement of the sixteenth to fifteenth centuries B.C.E. These phases consist of buildings that, according to Kaplan, were constructed of mudbrick on stone foundations (Kaplan and Ritter-Kaplan 1993: 657). This suggests that Egyptians adopted Canaanite construction techniques, since Egyptian construction in Canaan is usually identified by its lack of stone foundations, as was typical of mudbrick architecture in Egypt. While Kaplan described little about the nature of Stratum VI, he noted that the ceramic evidence included

Bichrome sherds, Cypriot Base-Ring I and monochrome wares, as well as a collection of complete Egyptian vessels (1960: 122).

Our initial work reveals ample dating criteria derived from Egyptian ceramic forms as well as Cypriot ceramics that corroborate Kaplan's dates for Jaffa's occupational phases during the Late Bronze Age and shed new light on an intensive Egyptian presence at the site during this period. As a result of recent publications of Egyptian ceramics from sites such as Beth-Shean, Aphek, Tel Mor, Ashkelon, Tel Dan, and Deir el-Balah, Jaffa's corpus from Strata VI to IV is notably one of the earliest and long-lived Egyptian ceramic assemblages in Canaan, with a contemporaneous LB I assemblage identified solely at Beth-Shean (Mullins 2007). Furthermore, the combined textual and archaeological evidence suggests that the one phase of Stratum VI includes a large and distinctive assemblage of Egyptian ceramics that can be dated quite precisely to the Late Bronze IB, namely, to the period of Jaffa's conversion to an Egyptian base in the wake of Thutmose III's first campaign of ca. 1460 B.C.E.

New Kingdom Egyptian pottery (including so-called Egyptianized pottery) constitutes the largest element of the artifact corpus, revealing the extent of Egyptian influence and presence in Jaffa during the Late Bronze Age. The range of forms includes nearly all those attested at other sites in Canaan during the Late Bronze Age, as well as a number of unique forms. The vessels include an array of bowl types and sizes, small and large jars, storage jars, imported carinated jars, so-called “flowerpots,” and an enigmatic ceramic form

often identified as part of a cult stand. Due in large part, no doubt, to the location from which the Level VI assemblage was excavated, which may be characterized as a large-scale food production area, it includes no fine wares such as Cypriot or Mycenaean vessels and certainly no ritual vessels but rather a large collection of utilitarian vessels associated first and foremost with food production and consumption.

Bowls

The most frequently occurring Egyptian ceramic type in the LB assemblage at Jaffa, with approximately fifty intact or complete profiles attested, consists of bowls of shallow to medium depth with rounded or straight walls, a rounded or flat base, and a plain or everted rim (fig. 8). In Egypt and Nubia, similar bowls form the main component of almost every New Kingdom ceramic assemblage. Like Jaffa, other sites in Canaan with Egyptian and Egyptian-style pottery groups are also inundated with the same type of bowl, which is the most commonly occurring form in every Egyptian-style corpus. The majority of these vessels derive from LB II and early Iron Age I contexts at a number of sites. Although the bowls are of a simple design that can make them difficult to distinguish from local Canaanite bowl types, the fabric, clay preparation, surface treatment, production techniques, decoration, and base type of such bowls are easily distinguished from Canaanite types. Base type is one of the most recognizable

Egyptian construction in Canaan is often noted for its lack of stone foundations.

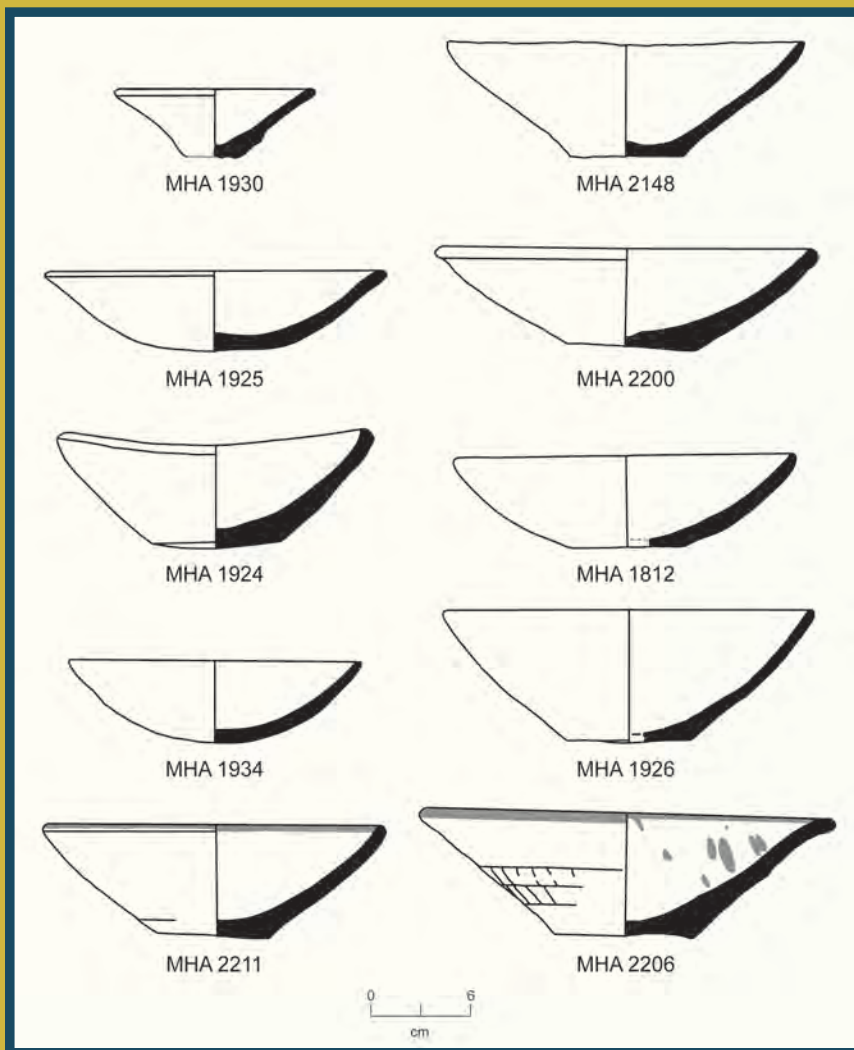


Figure 8. Simple bowls constitute the main component of every Late Bronze Egyptian assemblage in Canaan. The same holds true for Jaffa, where at least fifty of these bowls were discovered in Area A. The corpus of simple bowls in Jaffa includes the full assortment of sizes, wall types, rim orientations, base styles, and decorative elements. These bowls range from shallow to medium in depth, have straight or rounded walls, plain, everted, or flanged rims, and flat, or more rarely, rounded bases. Decorative elements consist of a red strip of paint circling the rim, which is sometimes combined with red paint splatters across the body of the vessel. All these stylistic characteristics are used to date the vessels, and they run parallel to simple bowls in Egypt, where they also form the backbone of every New Kingdom ceramic corpus.

characteristics of Canaanite and Egyptian bowls. Bases on Egyptian bowls are generally flat, round, or, rarely, a very low disk, all of which are in marked contrast to the elevated ring and developed disk bases typical of Canaanite assemblages. Nearly all of the Egyptian bowls discovered in Canaanite sites have a flat base, which is in distinct contrast to New Kingdom Egypt, where flat bases are clearly outnumbered by rounded bases. Preliminary analysis reveals that the percentage of bowls with flat versus rounded bases, as well as the diameters of the bases, corresponds to those of other Canaanite sites, including Beth-Shean, Aphek, Deir el-Balah, Tell es-Sa'idiyeh, and Tel Mor. Egyptian bowls are also distinguished by their specialized production techniques, indicated by the presence of strong wheel marks in the form of concentric circles on the bases, which were made during a secondary trimming or when the vessel was string-cut from the wheel (Martin and Barako 2007: 142).

Modifications in the orientation of the bowls' rims can be systematically tracked throughout the New Kingdom, and these are

typically used to divide the vessels into two groups: plain-rimmed and everted-rim bowls. Rim orientation is indicative of the period of production: plain rims are common from the end of the Second Intermediate period (ca. 1640–1530 B.C.E.) to the beginning of the Twenty-First Dynasty (ca. 1069–945 B.C.E.), while everted rims do not become widespread until the end of the Eighteenth Dynasty (ca. 1530–1293 B.C.E.) in Egypt and Nubia and in the thirteenth century B.C.E. in Canaan, where that type is most common during the twelfth century B.C.E. Both styles are represented in the corpus of Egyptian bowls at Jaffa, although plain-rim bowls are more common.

Although the majority of these vessels are undecorated, the decorative techniques used on about 10 percent of the bowls—red slip, red-painted rims, and sometimes red splashes—provide additional chronological hallmarks. While red slip and red paint on the rims are long-standing traditions for Egyptian bowls during the Late Bronze Age, red-splash decoration, which consists of the intentional splatter of red paint across the interior and/or

exterior sides of the vessels, is distinctive and usually occurs in combination with a red-painted rim, the so-called “lipstick” decoration. The chronological range of bowls with this type of decoration is incredibly narrow, with all examples deriving from contexts in Egypt, Nubia, northern Sinai, and the Levant suggesting dates within the reign of Thutmose III, with a possible extension into the reign of Amunhotep II (ca. 1428–1402 B.C.E.) and thus to the LB IB (Aston 2006). Such a date for this bowl type is corroborated in Jaffa by an assemblage of vessels whose contexts also suggest an LB IB date, as discussed below.

Ovoid-Shaped Jars

Slender ovoid-shaped jars with rounded bases and slightly thickened, everted rims also occur in the assemblage (fig. 9). In Egypt, Nubia, and northern Sinai, this well-known type appears most frequently in contexts dating to the Hyksos period and the Eighteenth Dynasty, although a few examples dating to the Nineteenth Dynasty (ca. 1293–1176 B.C.E.) have been discovered. In Canaan, the appearance of this vessel type during the early part of the Late Bronze Age (LB I–IIA) is within the same chronological horizon. The special ovoid shape of this jar clearly identifies it as an Egyptian form, but evidence also appears in the presence of concentric circles surrounding the body. These markings are similar to those around the bases of the Egyptian bowls described above and probably result from the same production technique:

secondary trimming or the vessel being string-cut from the wheel.

Storage Jars

A third ceramic form appearing in the Egyptian assemblage at Jaffa are large neckless storage jars, which are characterized by an ovoid to bag-shaped body, a rounded base, and a rolled rim (fig. 10). Unfortunately, because of the considerable size of these jars, few completely intact examples of this type have survived anywhere. In Egypt, these jars

form one of the characteristic Nile-silt types of the Ramesside period, where they first appear in the early Nineteenth Dynasty and peak in popularity during the Twentieth Dynasty (ca. 1176–1069 B.C.E.). Neckless storage jars are also found in Canaan in thirteenth- and twelfth-century B.C.E. contexts at Ashkelon, Beth-Shean, Deir el-Balah, Megiddo, Tel Mor, Tell es-Sa’idiyeh, and Tel Sera’, corresponding to their Egyptian counterparts.

The earliest exemplar from Jaffa derives from a clear LB IB context (fig. 10), discussed further below, making it the earliest known occurrence of this form in Canaan. It was probably accompanied by the pot stand found in the same locus. The other neckless storage jar also belongs to the Late Bronze Age Egyptian assemblage (fig. 11); although its stratigraphic context is at present unclear, it is likely contemporary with the LB IB assemblage. The size and shape of neckless storage jars from the Levant recall the so-called Egyptian “meat jars,” a common marl- and mixed-clay vessel type of the New Kingdom that first appeared in the late Eighteenth Dynasty. Although “meat jars” have never actually been discovered containing meat, several vessels of this type at Tell el-Amarna were clearly marked with hieratic docketings stating that the contents were various forms of processed meats (Rose 2007: 130). Due to these jars’ similarity in size and shape to the “meat jars,” Martin and Barako have hypothesized that these vessels might actually be local imitations of Egyptian “meat jars” rather than neckless storage jars (2007: 143–45). Thanks to the LB IB stratigraphic context of the Jaffa



Figure 9. A particularly fine example, this slender ovoid jar originates from the 1958 excavations in Area A. Although it is a rather common shape among Egyptian jars, this particular form and its characteristics range from the Hyksos period to the Eighteenth Dynasty. Numerous fragments of additional restorable examples of this vessel have also been identified. Photo by Krystal V. Lords.



Figure 10. At least one example of a neckless storejar was found in an LB IB context in Jaffa. The size and shape of neckless storage jars from the Levant recall Egyptian “meat jars,” a common marl and mixed-clay vessel type of the New Kingdom that first appeared in the late Eighteenth Dynasty. Photo by Krystal V. Lords.



Figure 11. Neckless storejars are a large category of storejar types, with probably as many different roles as there are variations. Photo by Krystal V. Lords.

examples, the connection between neckless storage jars and Eighteenth Dynasty Egyptian “meat jars” appears even more concrete. Nevertheless, Egyptian marl-clay types were generally not imitated in Canaan, and there is little doubt, based on its general shape, that these vessels are an Egyptian form.

Carinated Jars

There is at least one form within the Egyptian assemblage in Jaffa that was clearly imported. This group includes carinated jars characterized by a squat, carinated body, a straight neck with a shelf rim, and a slightly convex, round, flat, disc, or ring base (fig. 12). Despite the somewhat soft carination, this form of vessel is readily associated with the Egyptian family of carinated jars, especially those of the broad-necked variety. In Egypt, carinated jars are common in the Second Intermediate period and the Eighteenth Dynasty; the form decreases in popularity after the reign of Thutmose III and completely disappears by the end of the dynasty. Egyptian and Nubian sites with carinated jars include Tell el-Amarna, Aniba, Buhen, Hiu, Tell el-Daba, Fadrus, Deir el-Medina, and Toschke. Egyptian carinated jars also appear in the southern Levant, where, according to Bietak, the Upper Egyptian form was not likely to appear earlier than the beginning of the Eighteenth Dynasty, therefore providing an important correlation between the end of the Middle Bronze Age and the beginning of the New Kingdom in Egypt (Mazar 2003: 328 n. 4). These imported vessels have been discovered in LB IA to LB IIA contexts in Canaan at Tell el-’Ajjul, Yoqne’am, Megiddo, Beth-Shean, and Tel Dan. Chronological indicators for carinated jars include the relative height of the neck and the style of decoration on the body. In terms of relative height, the jars are separated into two types: short-necked and broad-necked. While short-necked carinated vessels occur from the Second Intermediate period to the early Eighteenth Dynasty, broad-necked carinated vessels appear only from the late Second

Intermediate period and are most common in the early to mid-Eighteenth Dynasty, with an apex during the reigns of Hatshepsut (1482–1461 B.C.E.) to Thutmose III. The majority of Egyptian carinated vessels in the Levant are of the broad-necked variety.

Carinated jars can also be stylistically dated according to the motifs of painted decoration that commonly encircle the vessels. Almost all of the jars are burnished and covered in a cream slip. The earliest carinated jars carry no other decoration than the slip and burnishing and appear during the Hyksos period up to the beginning of Eighteenth Dynasty, whereas the painted specimens are found in later contexts dating from the reign of Hatshepsut to the end of the Eighteenth Dynasty. Decorative motifs are usually painted in a dark red or brown color encircling the body and/or neck of the jar. The designs are typically geometric line patterns: horizontal stripes; bundles of vertical lines; crisscross designs; wavy lines; and ladders. The carinated jars with vertical line bundles and crisscross ornamentation seem to be earlier than those with only horizontal bands, the latter usually being found in the mid-Eighteenth Dynasty during the reign of Thutmose III or later. A cream-colored slip and brown-painted decoration have been preserved on all three of the carinated jars from Jaffa, including one complete example of the broad-necked variety (fig. 12). The painted designs on Jaffa exemplars include crisscross patterns alternating with vertical line bundles. The complete vessel has five parallel vertical strokes followed by

three lines that cross over another three lines, forming an X. These two motifs alternate with one another around the body and hang down from one horizontal band that surrounds the neck of the vessel. The same pattern decorates the partial jar from Jaffa, but only four lines make up the vertical bundle and only two lines cross each other. The four body sherds that make up the remaining carinated jar from Jaffa illustrate the crisscross design, using three strokes as on the complete example. These specific decorative motifs stylistically date the imported carinated jars at Jaffa no later than the reign of Thutmose III.



Figure 12. In Egypt, carinated jars are common in the Second Intermediate period and the Eighteenth Dynasty; the form decreases in popularity after the reign of Thutmose III and completely disappears by the end of the dynasty. Their decorative motifs stylistically date the imported carinated jars from Jaffa no later than the reign of Thutmose III. Photo by Krystal V. Lords.

“Flowerpot” Vessels and “Funnels”

Perhaps the most impressive collection of vessels within the LB IB Egyptian assemblage consists of twenty restorable vessels of the “flowerpot” variety (Burke and Mandell forthcoming). So named because of their distinctive shape (fig. 13), the average “flowerpot” in the Jaffa assemblage is bell-shaped, is pierced at the bottom with a flat base, and has a beveled rim (figs. 14a–c). The mouths of several are clearly lopsided, which demonstrates that they were hastily produced; haste is also evident in the characteristic finger impressions left on the sides of the base of each of the vessels, which resulted from the manner in which they were removed from the wheel. The holes through the vessel bottoms suggest that these vessels were designed to drain or strain their contents; this clearly did not include products requiring fine straining, since the holes are quite large, approximately 2 cm in diameter. The Jaffa “flowerpots” were recovered from a single locus that is interpreted as an open-pit firing associated with the Egyptian garrison kitchen. While this context does not entirely clarify the function of this vessel type, it does suggest an association with food production (see further below).

Accompanying the twenty “flowerpots” were a number of other examples of a unique vessel type resembling funnels, although it is unclear if they were pierced all the way through (figs. 15, 16). Kaplan identified them as cult stands, but a closer examination of their cross-section reveals that they are not comparable to Canaanite cult stands in their production, and nowhere is there clear evidence of Egyptian use of these items as stands.



Figure 13. Twenty “flowerpots” and a so-called “stand” were recovered from a single locus during the 1958 Jaffa excavations. This assemblage of nearly complete vessels suggests that they experienced little to no use, which is corroborated by the discovery of photos revealing their discovery within an open-firing pit. Photo by Aaron A. Burke.

Figures 14a–c. “Flowerpots,” so-called because of their basic shape, are a distinctive Egyptian form that may have been related to beer and bread production. The type attested at Jaffa is of a design unique to the Eighteenth Dynasty. Each vessel features a beveled rim, pierced base, and finger impressions around the base created when the vessel was removed from the wheel. Photos by Krystal V. Lords.



Furthermore, for all of the pieces of these vessels recovered, no part or vessel has been identified that would have functioned as the bowl atop the stand. The two most complete examples from Jaffa, the preserved portions of which are approximately 30 cm in height, feature thick walls and were produced in an identical fashion and fabric as the “flowerpots.” They were also apparently hurriedly thrown on a wheel and finished by hand through the addition of a spout. When they are placed in the same orientation as the “flowerpots,” the upper portion or bowl of the vessel, including its body and rim, exhibit the same production characteristics as the body and rim of the “flowerpots.” The only difference is their size; the diameter of the mouth of the restored example of the funnel is, for instance, just over half the size of the mouth diameter of the average flowerpot. The lowest portions of both exemplars have not been preserved, having been broken off.

While the vessel’s appearance is suggestive of a funnel of sorts, other fragments recovered from a locus adjacent to the open-firing pit in which the “flowerpots” were found suggest that the vessels were not pierced through (fig. 16). While it is uncertain how these vessels functioned, the discovery in an open-firing pit of a nearly complete example with the twenty “flowerpots” (fig. 13), which features identical production characteristics, suggests that this vessel type was part of a single assemblage and, in our opinion, functioned together with the so-called “flowerpots.” Evidence in support of this conclusion comes from the ceramic assemblage associated with two potters’ kilns from the administrative center at Haruba in northern Sinai, which was excavated by Eliezer

Oren (1987: 97–107). Rooms adjacent to the first kiln included “large quantities of industrial waste, as well as many fragments of pottery stands with a tall, trumpet-shaped foot, including unfired specimens and chunks of unused

clay [and in] another room nearby ... a group of especially large flower pots” (102). With regard to the repertory of shapes produced by the Egyptian potters at A-345 (the administrative center), Oren observes that these included “tall stands on a high, trumpet-shaped base,” which apparently included “a small bowl on top” (pl. I), as well as “flower pots with heavy, frequently perforated bases bearing deep thumb indentations.” The illustration reveals a perfect match for the Jaffa assemblage even to the extent that at least three small Egyptian bowls were excavated near the Jaffa vessels. Still, no parallels are yet attested for Jaffa’s funnel-shaped vessels among Canaan’s other Late Bronze Age Egyptian sites.



Figure 15. The type of vessel seen here, the shape of which resembles a trumpet, has been identified as a vessel “stand” by Eliezer Oren at Haruba in northern Sinai. In Canaan, this vessel type has been identified only in Jaffa. Fired from the same fabric and in the same manner as the “flowerpots,” they are hastily produced, clunky, and, due to the use of limited quantities of temper, quite fragile, despite having thick walls. Photo by Aaron A. Burke.



Figure 16. A number of fragments of so-called “stands” have been excavated from Jaffa. As indicated by the example on the left (and others not shown), the vessels are not pierced through and thus were not used for straining or draining liquids. Still, their identification as stands is problematic, due to a lack of evidence for bowls or other receptacles that would have been placed atop these vessels. Photo by Aaron A. Burke.

The Egyptian Ceramic Corpus in Context

The evidence for the Egyptian ceramic corpus from Late Bronze Age Jaffa reveals the duration and intensive nature of the Egyptian presence in Jaffa during the New Kingdom, lasting from the mid-fifteenth through the early twelfth century B.C.E. While this is not surprising in light of textual sources for this period, the context for many of the exemplars within the corpus described above sheds new light on the nature of Egypt’s earliest presence in Canaan. Not only is it possible to identify an assemblage of vessels within the Jaffa corpus dated to the LB IB, but their context also provides unequivocal evidence for the *local production* of Egyptian ceramic forms using Egyptian techniques. The archaeological context in question, which was encountered in the southern end of Area A excavated during the 1958 season, consists of what we have identified as an Egyptian pottery-production and kitchen facility. Our identification is

GIS and Jaffa's Cultural Landscape

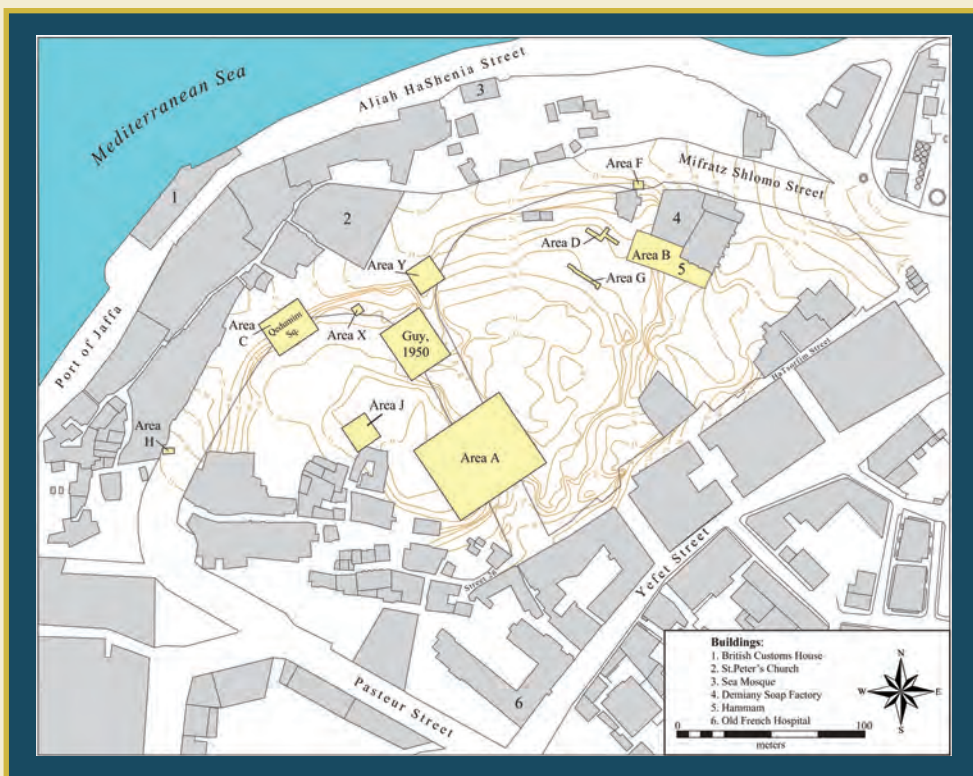
The use of Geographical Information Systems (GIS) in archaeological investigations has become commonplace over the last fifteen years. No longer thought of as a “bandwagon” phenomenon, this powerful tool is used by archaeologists and cultural resource managers for both predictive and interpretive modeling, deemed “landscape-as-now” and “landscape-as-then” studies, respectively (Lock 2003: 164). This “then” and “now” dichotomy also extends to the data used in GIS studies that combine excavated ancient features and artifacts with modern topographic, architectural, and civil information. Since its inception in 2007, the Jaffa Cultural Heritage Project (JCHP) has incorporated GIS into both its fieldwork and publication components by integrating data from older excavations by Jacob Kaplan and various historical maps with new data acquired from the Israel Antiquities Authority (IAA) and JCHP excavations into one geographical database, or geodatabase, that can be queried for a variety of analyses.

Jaffa is one of the few sites on the Levantine coast with an almost continual occupation history from the Bronze Age through the modern era, with the result that little of the material culture and architecture has been preserved. The reuse of architectural materials, as well as construction projects that leveled previous buildings and layers to bedrock, such as those undertaken in the Persian and Hellenistic

periods, left few remains from the Bronze and Iron Ages *in situ*. Further, archaeological excavations have been limited to the area exposed by the Anchor Project conducted by the British in 1936 and salvage excavations in areas under development, such as streets, the city market, and potential building sites. Although excavations reveal a fragmentary picture of ancient and historical Jaffa below the modern street level, the layout and extent of the city as a whole can be proposed. GIS provides a digital environment to organize the various data from each period of Jaffa's history and presents windows into Jaffa's past expansion and contraction through the millennia of occupation.

Before data relating to ancient or modern features could be integrated into the database, the project needed to assess the types of available spatial data that could provide useful information about Jaffa's extent, architecture, history, and various streets and paths within the city, as well as routes leading to other urban centers. Data for the JCHP geodatabase included aerial photographs taken since World War I, satellite imagery, a modern civil plan of Jaffa in computer-aided drafting (CAD) format, and digital excavation data provided by the IAA. The 2009 JCHP excavations in the Visitors' Center at Qedumim Square utilized Total Station theodolite data combined with information from rectified photographs (i.e., photographs whose 3-D coordinates are used to orient the photo) and digital drawings of architectural features within the GIS software to produce new and accurate plans of architecture exposed by Kaplan, Brand, and the JCHP (Burke and Peilstöcker 2009; in press).

The bulk of the GIS data for Jaffa's urban plan since the



Area A constituted approximately 50 percent of the excavated area opened by Kaplan and contained nearly two-thirds of the site's finds. Efforts by the JCHP to locate each of the excavation areas and plot them accurately using GIS have revealed how these excavations capitalized on the abandonment of Jaffa's tell along Operation Anchor, which was blasted through the site during the British Mandate in 1936. Produced by George A. Pierce

late eighteenth century consists of paper maps that have been oriented in the computer to their actual location, or georectified. The features of each historical map were traced digitally in GIS, then georectified based on the modern municipality layout of Tel Aviv-Yafo. Every attempt was made to align the historical maps according to landmarks and features common between each map and the modern civil layout of Jaffa. One of the most accurate nineteenth-century maps is a ground plan of Jaffa's fortifications prepared by British engineer Lt. Skyring in 1842 and published one year later. This map was also rectified using known points in the cityscape. It provides the identification of paths outside the city, such as a track that would later become Yefet Street (see below) and roads leading away from Jaffa to Acre, Ramla, Jerusalem, and Gaza. Another historical map, that was prepared by Jacotin for Napoleon in 1799, is inaccurate in terms of its city outline but still proves useful in illustrating the topography of Jaffa and its hinterland, including a swampy area to the south labeled "flaque d'eau," which may have been the location of the ancient port (see Hanauer 1903).

Kaplan's fieldwork was integrated with recent IAA excavations and historical maps by georectifying his plans in GIS. Because Kaplan included known coordinate points on a plan of the entire tell of Jaffa that included his excavation grid, digitally manipulating this map to real-world coordinates in the computer was straightforward. Following this, the top plans of the excavated areas on the tell were aligned using the excavation grid of squares (5 x 5 m) drawn by Kaplan. The process of digitally tracing each feature on the top plans then began. Walls were traced stone for stone, while pits and floors were outlined. Heights recorded on the top plan were digitized as 3-D points, which enabled the numerous walls in the portion of Area A where the Egyptian vessels were discovered to be preliminarily phased according to height and relative position above or below other walls. Work is currently underway to represent the various architectural features with their respective heights in a 3-D environment much like the current GIS work being done at Tel Beth-Shemesh.

As an illustration of combining "then" and "now" GIS data, an analysis integrating georectified historical maps, CAD plans of the modern city, and digitally recorded archaeological features was performed during the 2007 excavations of the Ganor Compound on the south side of Yefet Street (Peilstöcker and Burke 2009). During the excavations, a question arose about the proximity of the Crusader-period architecture unearthed to the city's fortifications. To answer this question, project members examined the digital top plans of Ganor in relation to the modern civil plan and the 1843 British map. The GIS indicated that a trackway along the southern boundary of the city ran along the outside of a ditch that, with the walls and *faussebray*, was part of the city's defenses. This path and ditch later became Yefet Street, as indicated by the modern city plans. If, as is likely, the location of the Ottoman walls roughly approximated



Building and road outlines supplied by the municipality of Tel Aviv-Yafo were overlaid on an 1842 British map by Skyring in order to determine how the features unearthed in the Ganor Compound excavations related to Jaffa's fortifications in the Ottoman period. This process revealed that the excavation area was indeed outside the line of the Ottoman defenses and that, as suspected, Yefet Street traces the line of the defensive ditch and adjacent pathway.

their earlier counterparts (and even reused elements from the earlier walls), then the Crusader fortifications were likely located on the northern side of Yefet Street, and the architecture exposed during the Ganor excavations lay outside the city walls. This strongly suggests that the city expanded beyond its fortifications during the Crusader period.

Several advantages to the creation of the JCHP GIS geodatabase are evident based on the experiences of the 2007, 2008, and 2009 excavations and extensive work with Kaplan's data. The archaeological information represented on top plans will be preserved in a digital format available for future queries, both predictive and analytical. Overall plans for larger areas excavated by Kaplan, such as Area A, are possible by combining the top plans from the successive seasons on the site. Data from more recent excavations that already have a spatial reference can easily be incorporated into the geodatabase and permit more comprehensive analyses of Jaffa's past. Archaeologists may also use the results of this virtual mapping as a guideline in future excavations by indicating what periods or types of remains may be encountered during fieldwork. The ongoing creation of digital data, refinement of Jaffa's stratigraphy, and further integration of old and new excavations will surely provide more opportunities to combine "landscape-as-then" and "landscape-as-now" data, gain insight into Jaffa's cultural landscapes, and preserve and present that heritage to future generations.

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based upon the presence of an open-firing pit with vessels found *in situ*, ceramic wasters, a burnishing tool, a potter's wheel, and a large quantity of restorable vessels, including examples of each of the vessel types described above.

Associated with this pottery-production complex, but not discussed with the Late Bronze Age Egyptian ceramic forms mentioned earlier, are a group of large straining bowls, most of

which are identified as wasters (figs. 17a–c), that is, ceramic forms discarded because they failed to produce the desired end product. Their intended form, as revealed by at least one undistorted example, is effectively the same as that of the smaller Egyptian bowls, only larger (ca. 30 cm in diameter) and pierced through the base prior to firing while the vessel was leather-hard. The coarse and gritty fabric of these bowls was poorly levigated and



Figures 17a–c. The restoration of more than four complete bowl wasters and fragments of a number of others aided in the recognition of the surrounding area, which included an open-firing pit with *in situ* vessels, as a pottery production facility associated with the kitchen complex. Despite the large quantity of vessels restored by the Jaffa Museum's staff, these wasters were conspicuously ignored. The bowls average 30 cm in diameter, and all feature holes punched through the bottom when the vessel was leather-hard, leading to their identification as sieving bowls. The unevenness of the temperatures in the pit firing led to considerable differentiation of color across many of the vessels. Photos by Aaron A. Burke.

includes a considerable quantity of sand and limestone chunks (figs. 18a–b), indicating that the vessels were hastily produced. The wheel on which vessels within this facility were thrown was recovered during excavation of the square (fig. 19), as was a burnishing sherd. That these and other portions (including, strangely enough, entire halves and other large parts of a number of wasters) were found here suggests, of course, that ceramic

production took place nearby. The identification of an open-firing pit proves to be the final element needed to unequivocally demonstrate this fact.

Due to the state of the records from Kaplan's excavations half a century ago and the limited information on excavation plans, which do not show every feature excavated, the existence and precise location of the open-firing pit mentioned above might very



Figures 18a–b. Analysis of the sections of the bowl wasters reveals a hasty and poor selection of materials for use with these large straining bowls. Little chaff occurs, but great quantities of sand and chunks of limestone are found throughout, often having burst during the firing process. The firing appears to have been short but at a very high temperature, which may have contributed to the vessels' failures. Photo by Aaron A. Burke.



Figure 19. This half of a potter's wheel was associated with several other elements indicating the existence of a ceramic workshop that was part of the Egyptian garrison kitchen complex. The intense compression of the halves of the wheel ground clay residues into the wheel's surface. Photo by Krystal V. Lords.



well have been permanently lost. Thankfully, however, photographs still exist showing a large number of the so-called “flowerpots” within what appears to be an open-firing pit in an adjoining locus within the same excavation square (figs. 20, 21). One photograph shows a number of complete “flowerpots” *in situ* that, although now broken, were stacked within the shallow pit and separated by what appear to be brick-shaped ceramic spacers. While twenty “flowerpots” and at least one “stand” were recovered from this locus (see above), none of the spacers pictured was retained. Nevertheless, this important evidence enables us to conclude that the area was clearly associated with Egyptian ceramic production and is thus a unique contribution to our knowledge of Egyptian New Kingdom settlement in Canaan during the Late Bronze Age, since no comparable facility has

been recovered from excavations of any New Kingdom sites in Canaan. Further underscoring the significance of this discovery is the fact that Egyptian iconographic evidence for the production of “flowerpots” often associates the firing of “flowerpots” with food production (Bourriau, Nicholson, and Rose 2000: 136).
The association between the firing of “flowerpots” and food

Figure 20. This photo of the open-firing pit during Kaplan's 1958 excavations reveals that the twenty “flowerpots” and one trumpet-shaped “stand” recovered from the site were produced locally. This constitutes the first evidence for an Egyptian ceramic production area in Canaan during the New Kingdom and is the earliest evidence of such production, which occurred during the LB IB. Photo from Kaplan Archive. Courtesy of the Israel Antiquities Authority Photographic Archive.



production finds support in the range of forms that have been recovered from the living surfaces around this open-firing pit, all of which relate to food production and its storage, two of the three main categories of Egyptian-style vessels in the Late Bronze Age assemblage (Killebrew 2005: 68–77). This invites us to consider further the nature of food production in this area and the relationship of the various vessels to each other. In addition to the “flowerpots,” which are associated either with bread or, more likely, beer production (or both; Burke and Mandell forthcoming), the appearance of the waster bowls with pierced bases indicates a substantial need for vessels used to strain foods or sieve liquids. Within the limits of the excavation, however, only one neckless storejar was recovered along with what was likely to have been the pot stand that supported it (fig. 22), suggesting that it is unlikely to have been associated with beer production, as was the probable use of the “flowerpots.” Instead, the neckless jars, as indicated in Egypt, are sometimes associated with the storage of meat; since these jars were found as single exemplars, not occurring in groups, this seems as likely an explanation as any for their use in this area. Less ambiguous, perhaps, is the presence of several examples of carinated jars, the fabric of which suggests that they were imported from Egypt. Although the content of these jars in the Levant has yet to be investigated, residue analysis on Egyptian exports to Nubia show that the carinated jars held dom-fruit and honeycombs, both of which are integral in the production of Egyptian bread and beer (Holthoer 1977: 133).

Because few of the small Egyptian bowls found in Area A, which are clearly associated with food consumption, were

uncovered during the 1958 excavations, the immediate context of the assemblage discussed above does not support its identification as a consumption area. Of all the vessels recovered from the area around the firing pit, the most difficult to explain are the so-called “stands,” funneled in shape, which appear to be neither stands nor funnels. That these vessels lack a cultic function, despite previously suggested identifications, and are therefore not cult stands, is made clear by the complete absence of other cultic paraphernalia in this area and the absence of bowls (or other vessels) to sit atop the base. Altogether, two nearly complete examples and fragments of no fewer than four other such vessels were recovered. Nothing, however, appears to explain their function alongside twenty beer jars of the “flowerpot” variety, six strainer bowls, a neckless storejar and stand, a small ovoid jar, and four examples of imported carinated jars. Despite the challenges associated with connecting the function of such a variety and quantity of vessels, all of which were found within 20 square meters, the sheer number of utilitarian vessels associated with this food production area are evocative of a substantial kitchen producing food for a large number of Egyptians, whom we may tentatively identify as the Egyptian garrison of the LB IB (ca. 1460 and 1400 B.C.E.). Thus we suggest that the earliest New Kingdom garrison kitchen was located on the leeward side of Jaffa, just inside the eastern gate, near the monumental gateway of Ramesses II.

Because it appears that the kitchen and its firing pit were put out of use in a sudden event that caused the abandonment of vessels in the pit and a number of restorable examples to be found



Figure 21. A close-up photo of the Egyptian open-firing pit reveals the use of spacer bricks and other elements that separated the “flowerpots” when they were fired. The kiln’s immediate proximity to a large collection of Egyptian ceramics of other forms, most of which are thought to have been produced locally, suggests the direct association between the firing of the so-called “flowerpots” and food production. Photo from Kaplan Archive. Courtesy of the Israel Antiquities Authority Photographic Archive.

smashed on floors around the area, the circumstances associated with what we would identify as a destruction of Egyptian Jaffa during the LB IB merit comment. Despite royal monuments recording Eighteenth Dynasty conquests and the many later depictions of Egyptians conquering towns in the Levant, which date largely to the LB IIB (thirteenth century B.C.E.), little is known of early Canaanite efforts to resist Egypt's conquests and maintenance of its empire (Burke 2009). The battle of Megiddo between Thutmose III and a coalition of Canaanite kings appears

as but the largest single effort to resist Egypt at a rather early stage in the formation of its empire. Along with the evidence from the archaeological context of the LB IB Egyptian ceramic assemblage deriving from Jaffa's destruction and the tale of The Capture of Joppa, which relates a brief phase of the Canaanite retaking of Jaffa during the same period, Egyptian domination during the fifteenth century B.C.E. can scarcely be portrayed as a *fait accompli*. If resistance persisted during Thutmose's reign and the reigns of his successors, we can only hope to learn about such events



Figure 22. This pot stand, which belongs to the Egyptian LB IB assemblage from Jaffa, may have been used with the neckless storejar excavated from the same locus. Its cross-section reveals that it was made from both the same fabric and fired in a similar manner as the "flowerpots" and other locally produced Egyptian wares. Photo by Aaron A. Burke.

from archaeological excavations, given the lack of historical documentation. Although no historical sources record the destruction of Jaffa while it was under Egyptian control, the well-known literary tale of The Capture of Joppa, the historicity of which has been debated, appears to illustrate the volatile circumstances surrounding Canaanite attempts to disrupt Egyptian rule during the fifteenth century.

Jaffa's *Aegyptiaca*

Although the bulk of the evidence for Egyptian occupation of Jaffa during the Late Bronze Age consists of ceramics, a variety of New Kingdom Egyptian artifacts reveal that life in Jaffa was far from spartan for its Egyptian community. *Aegyptiaca* include three scarabs and a faience lotus-style bowl (fig. 23), all dated to the Eighteenth Dynasty, and a fragment of an inscribed Ramesside-period statue (fig. 24; see also pp. 7–9). Archaeological evidence of possible relations between Egypt and Jaffa just prior to and during the Amarna period comes from the discovery of three scarabs of Amunhotep III (ca. 1392–1354 B.C.E.). Two of the scarabs, one with the king's prenomen (personal name) and the other commemorating a lion hunt of the king, come from a secondary-use context in the walls of the late Nineteenth Dynasty fortification in Area A (Sweeney 2003: 54). The third scarab, discovered in a small temple in the same area, was engraved with the name of Tiy, the great royal wife of Amunhotep III (Sweeney 2003: 59). Weinstein has suggested that commemorative scarabs were distributed as gifts to foreign rulers and Egyptian officials residing in the Levant at sites such as Jaffa (1998: 235).

Another piece of *aegyptiaca* consists of fragments of a small faience bowl with a lotus-style decoration, also discovered in Area A (fig. 23). These shallow vessels, normally with a rounded base, are one of the most familiar vessel types of New Kingdom Egypt, with a peak in popularity during the reign of Thutmose III. The method of manufacture for these bowls was relatively simple: a sheet of self-glazing faience paste was laid over a hemispherical form, cut to shape, then fired (Nicholson and Peltenburg 2000: 182). A design was then added in black paint (usually manganese), often consisting of marsh plants, animals, and fish, with the most frequently occurring motif being the lotus bud, like those found decorating the example from Jaffa. The precise use of faience lotus bowls remains uncertain; a purely domestic use has been suggested, but since they are attested mostly in temples and tombs in Egypt, others believe that faience bowls were used to present votive offerings (Pinch 1993: 280).

Another Egyptian object discovered at Jaffa is an inscribed quartzite statue fragment (fig. 24). The statue is of a man wearing a tunic tied at the neck, with his left arm raised to his chest. A back pillar is positioned directly behind the man, ending just below where the head would be situated; it is inscribed with the typical Egyptian *hṯp dj nswt*, or offering formula. The exact context of the statue has been lost, but certain characteristics of

the statue reliably date the piece to the Ramesside period. First, the clothing type, pose, and height of the back pillar on the statue are typical of this era, and the beginning of the offering formula contains a dative *n*, which is first attested in the Ramesside period (Franke 2003: 43). Based on the superior quality of the stone and inscription, we can safely conclude that the statue represents an Egyptian official who held a high-ranking position. Although it is probable that the statue was accidentally broken, the block as it now appears is probably the result of its reshaping for use as building material.



Figure 23. A faience lotus-style bowl of the Eighteenth Dynasty was found during the 1958 season. This style of bowl reached its peak in popularity during the reign of Thutmose III, to whom is attributed the initial Egyptian conquest of Jaffa. Although the use of these bowls remains uncertain, their decorative motifs, as with the Jaffa example, often include marsh plants, animals, and fish, but most frequently the lotus-bud motif. Photo by Krystal V. Lords.

Conclusion

The new findings from our efforts to publish Jacob Kaplan's excavations in Jaffa, particularly with regard to locally produced Egyptian ceramics and the collection of *aegyptiaca*, suggest a clear association with an Egyptian population, with limited evidence for Jaffa's Canaanite inhabitants. It is so clear, in fact, that we suggest that using terms such as *Egyptian* and *Egyptianized*, as is often done, in an attempt to qualify the uncertainty regarding the ethnic affiliations of those for whom such artifacts were produced only obfuscates the apparent cultural and ethnic association that existed between this assemblage, those who produced it, and the



Figure 24. A fragment of a Ramesside Egyptian statue, made of imported quartzite and inscribed with a *ḥtp dj nswt* formula, was identified in the Jaffa Museum storerooms. It was accessioned by museum staff as an artifact that had lost its provenance, but its relationship to Jaffa is suggested by the date of its discovery, which was during the spring of 1975, after the last season of excavation in Jaffa. We conclude that this object's provenance is likely Jaffa and that it was reused as a building stone and fell from an excavated section after the winter rain. Photo by Krystal V. Lords.

population for which it was intended. That Canaanites may or may not have been involved in the production of such vessels for Egyptians in Jaffa—and we see no clear evidence to associate the production of these vessels by Canaanites for Canaanites at any site—is effectively irrelevant, especially in light of the clear association of such vessels with sites connected with Egyptian administration and military presence in Canaan, as in Egypt. The assemblage of so-called Egyptianizing artifacts is not evenly distributed across sites in Canaan; it occurs essentially exclusively at sites in the coastal plain and along the major highway and its secondary corridors. Even if one could prove that Canaanites played a role in the production of Egyptian-style artifacts, their role is unlikely to have been any different from that of Asiatics in Egypt, who fulfilled a number of positions in Egyptian society. That these terms continue to play a role in the discussion of Egyptian ceramic forms in Canaan is, however, solely an effort to hedge bets against the *remote* possibility that Canaanites emulated Egyptian elites in their desire to associate themselves with Egyptian power, which would thus explain the quantity of *aegyptiaca* and Egyptian ceramic forms found at sites in Canaan during the Late Bronze Age (as asserted by Higginbotham 2000). As others have concluded, the evidence to date does not support this hypothesis (Hasel 1998: 116–17; Morris 2005: 9–17; Killebrew 2005: 54; Martin and Barako 2007: 152–53), and the evidence

from Jaffa, a first-tier Egyptian administrative center and garrison, only further undermines any attempt to separate Egyptians from distinctive elements of Egyptian material culture, even when those items are produced locally. For this reason, terms such as *Egyptianizing* and *Egyptianized* should be abandoned in favor of the straightforward identification of Egyptian ceramic forms as either locally produced, imported, or imitated, as is regularly done with Cypriot and Mycenaean forms that also occur in the Late Bronze Age assemblages of Canaan. Jaffa's population during the Late Bronze Age was undoubtedly cosmopolitan, as might be expected for a major Egyptian fortress, frequented by ships bearing emissaries from lands ringing the eastern Mediterranean, and housing a Canaanite population who likely provided for many of the basic needs of the Egyptian garrison.

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Note

1. Efforts to publish Kaplan's excavations in Jaffa, notably the finds belonging from the Persian to Byzantine periods, are underway by Orit Tsuf, who is also funded by the White-Levy Program for Archaeological Publications. Islamic materials will be published by Katherine Strange Burke.

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