

THE TRADE AND EXCHANGE OF CERAMICS  
ACROSS THE MEDIEVAL MIDDLE EAST  
DURING THE CRUSADER PERIOD: A STUDY OF ACRE AND JAFFA

By

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In 1096, the Crusaders set out to for the Levant region in the Middle East in hopes of taking the Holy Land from the Muslim population that resided there. Once the Crusaders settled in the eastern Mediterranean, trade and exchange between the Levant region, southern Europe, and the north-eastern Mediterranean drastically increased. Some of the main imports into the Crusader states were ceramic vessels produced in Italy, Byzantium, Cyprus, Syria, and Egypt. In order to determine the provenance of the ceramics entering into the Crusader states, two port cities were studied using chemical, petrographic, and typological analyses. The cities, Acre and Jaffa, were both compared for similarities and differences in types of ceramics available for the local population of Crusaders during this period.

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First I would like to thank my reader, Dr. Joseph A. Tiffany, for without his guidance through this process I would most certainly have been lost. Second I would like to thank my parents for their years of support and guidance that they provided throughout my life. Lastly I would like to thank my friends and additional family members who have also provided me with assistance throughout this process.

## INTRODUCTION

The First Crusade began on 27 November 1095 when Pope Urban II spoke before a large crowd in Clermont, France. He asked for the creation of a Christian army to help the Eastern churches and the Christian regions suffering under Muslim rule (Boas 1999: 1). Urban's desire to restore the spiritual well-being of Western Europe was the main reason as to why he preached the crusade (Philips 2009: 7). "Because the crusade was judged to be morally positive the crusade became an act of penance that merited a spiritual reward" (Philips 2009: 5). Another reason for Urban's speech was due to the plea from the Byzantine emperor, Alexius I Comnenus. Alexius sent news to Western Europe in hopes of receiving aid against the Seljuk armies which comprised most of Asia Minor and were threatening the Eastern Empire (Boas 1999: 1). It is not certain as to the final result of how many Crusaders set out for the East during the First Crusade. Estimates set the range of Crusaders around one hundred and thirty thousand traveling from northern Europe in August 1096 to the Middle East in June 1097 (Stark 2009: 120). Of this number, an estimated ninety thousand people lost their lives before the first Middle Eastern city was even attacked.

The First Crusade was composed of three main components. First was the People's Crusade, the main group led by Peter the Hermit, with an advance faction led by Walter the Penniless (Stark 2009:120). Second was the German Crusade which was split into three separate groups led by three different individuals: Volkmar, Gottschalk, and Emicho of Leisingen (Stark 2009:121). Lastly was the Princes' Crusade which was organized and led by sons of kings. The

First Crusade was only a success because of the well-armed, well-trained knights involved in the Princes' Crusade (Stark 2009:121). All of these groups planned to meet at Constantinople where they expected that they would join forces with a Byzantine army and which was to be led by Emperor Alexius Comnenus. However, Emperor Comnenus only went so far as to provide a small Byzantine force which accompanied the Crusaders only as far as needed to regain control of lost Byzantine territory. Once this territory was recovered, Alexius was no longer committed to the crusading cause stating that "Jerusalem was strategically irrelevant to the empire" and if the crusaders wanted to continue to push on to the Holy Land, it was their own concern (Stark 2009:137).

### **The People's Crusade**

The People's Crusade arrived at Constantinople in mid-July 1096, roughly five months after its departure. The total number present in this crusade numbered about twenty thousand individuals (Goddard 2000:85). These groups, led by Peter the Hermit and Walter the Penniless, planned to establish a camp at Hellenopolis and be stationed there until the groups of the Princes' Crusade arrived (Stark 2009:125). Hellenopolis was a safe haven as long as the Crusaders did not move into Turkish territory; Nicaea, the Seljuk capital of Asia Minor (Figure 1), was only twenty-five miles away (Stark 2009:125). After two months, boredom within the ranks led to pillaging raids in the course of Nicaea. The Crusaders' successful attacks led to "war fever," and while Peter was absent, all of his men marched out to attack the Turks, leading to the Crusaders' slaughter (Stark 2009:125). The cause of this disaster was that Peter's people arrived much too early, failed to understand the strength and abilities of their enemy, and lacked authority which was lost by Peter's absence (Stark 2009:125).



Figure 1. Seljuk sultanate of Anatolia (1081–1307) (Yalman 2000).

### **The German Crusade**

Those involved in the German Crusade were known mainly for their commitment to a series of Jewish massacres performed as the Crusaders were heading east to Constantinople. Some historians believe that these attacks on Jewish populations were provoked primarily by greed, while others accept that the Crusaders believed that all “enemies of Christ” should be converted or killed (Stark 2009:126). As the German crusaders made their way into Hungary and began pillaging, they were met by Hungarian knights who wiped out each force of German crusaders before they could even reach Constantinople.

## **The Prince's Crusade**

The Princes' Crusade was made up of five different groups each of which left at different times and followed separate routes to reach Constantinople (Stark 2009:127). The main leaders of each group were: Hugh of Vermandois, Godfrey of Bouillon, Bohemond of Taranto, Raymond IV of Toulouse, and Robert, Duke of Normandy. Those involved in this crusade numbered from about fifty to sixty thousand men (Goddard 2000:85).

## **The Capture of Nicaea**

The initial phase of military action began when the force of the Princes' Crusade, combined with a small force of Byzantine soldiers, marched south to Nicaea from their military camp on the banks of the Bosphorus River. Nicaea was the capital of the Seljuk sultanate of Rum, ruled by Kilij Arslan (Stark 2009:142). Because of the sultan's easy recent victory against the People's Crusade, Arslan paid little attention to the new gathering of Frankish forces and led his troops eastward to deal with a different enemy challenging for his rule. This gave the Crusaders the ability to easily surround the city before the sultan was able to return with his Turkish forces. When the sultan returned, the armies clashed in a day long battle. After dark, Arslan withdrew his forces and abandoned Nicaea (Stark 2009:144). As the city was still under Turkish rule, the Crusaders planned to assault the city. However, the night before the assault was to occur Emperor Alexius sent Byzantine negotiators to Nicaea and convinced the Turks to surrender it (Stark 2009:144). Once more, Nicaea had become a part of the Byzantine Empire.



## **The Siege of Antioch**

A week after the taking of Nicaea, the Crusaders moved further east taking cities such as Dorylaeum, Iconium, Heraclea, and Edessa before finally coming to the City of Antioch.

Antioch is located on the Orontes River where it cuts through the mountains, roughly twelve miles from the Mediterranean (Stark 2009:148). At the start of the Christian era Antioch was the third-largest city in the Roman Empire, next to Rome and Alexandria. In 1097, this was a city of massive size complete with extensive fortifications. Because the defense of the city was so strong, Antioch was taken in the past through the means of treachery (Stark 2009:148). Inside the city, two main problems persisted. First, the garrison was much too small to defend the walls completely. Second, the Christian population was being mistreated by the Muslim emir, the commander who controlled the city. This created the potential for Christian residents to become traitors and support the Crusader population outside the walls. Before the start of the crusaders' siege, the emir began to send out ambassadors in search of military support with minor success.

The initial siege of Antioch began in October of 1097 (Stark 2009:148-149). Just as the force inside Antioch did not have enough troops to man the walls, the Crusader force outside Antioch did not have enough men to fully surround the city and prevent the stream of supplies to the city. As winter came, the Crusaders were plagued by hunger and disease more severely than those within Antioch due to the steady amount of supplies being received. A large number of the less economically advantaged crusaders actually died over the winter months due to starvation (Stark 2009:149). In early February, instead of sending additional supplies Alexius ordered his Byzantine troops to withdraw from the city siege. On February 9, 1098, a large Muslim relief force advanced on the Crusaders at Antioch. Even though the Crusaders were extremely outnumbered, they still won a tremendous victory (Stark 2009:149).

In early June, one of the commanders of the Crusaders, Bohemond of Taranto, succeeded in his attempt to convince an Antioch insider to open a gate for the crusading force. The night of June 2-3, 1098, Bohemond led a small group of Norman soldiers through an unlocked gate on the southeastern side of the city. After this, his troops gained control of ten towers and a section of the wall (Stark 2009:151). As the crusaders began to flow within the city, Christian residents inside Antioch began to attack Muslim troops from within. The Muslim force within Antioch, including the commander, was quickly destroyed, turning Antioch into a Christian city once more. It should be noted that another large Muslim force had been gathering. This was made up of forces provided by multiple sultans and emirs and led by a Turkish sultan known as Kerbogah. The threat of a Turkish advance of a force this size on Antioch increased the desertion count of Crusaders due to many thoughts of hopelessness amongst the ranks (Stark 2009:151). Sultan Kerbogah's vast, well-trained force arrived at Antioch on June 9, 1098.

The Turks began their siege on Antioch as the Crusaders defended from inside the walls. Heavy losses were recorded on both sides of the battle. On June 11, religion intervened during the war through a vision of Christ seen by a priest. This increased morale for the Crusaders who doubted their mission. On June 20, 1098, Bohemond of Taranto became the commanding leader over the entire crusader army due to his experience and the dire necessity for a leader (Stark 2009:152). Because of divine reassurances and his belief that this was the best military strategy, his immediate reaction was to rally the Crusader troops for an attack on the Turkish army. On June 28, 1098, the Crusaders marched out of Antioch and met the Turks in battle. The much larger Turkish force attacked the Crusaders at once, but retreated as they were not able to break through the well-armored, disciplined heavy infantry formations (Stark 2009:152). As the Turks withdrew, the Crusaders followed while overrunning and destroying the Turkish camp. Soon

after the Crusader force continued their march to Jerusalem, Bohemond assumed full control of Antioch in February of 1099 (Stark 2009:154).

### **The Capture of Jerusalem**

A year before the Crusaders reached the city of Jerusalem, it had been captured from the Turks by the Fatimids of Egypt (Stark 2009:155). Precautions were made when the newly instated governor, Ifitkhar al-Dawla, heard of the approaching Crusader army; wells around the city were polluted, livestock was driven away, and the city's Christian population was banished (Stark 2009:155). On June 13, 1099, the Crusaders launched their first attack on the city. This ended in defeat for the Christians due to a lack of ladders needed to drive an adequate amount of troops over the walls. Over the next month, the crusaders gained the supplies necessary in order to produce more siege towers. On the morning of July 15, 1099, Godfrey of Bouillon's force was able to hold their tower on the north wall of the city; this allowed scaling ladders to be placed with minor resistance. Crusader forces began to flow over the walls leading to the massacre in the city (Stark 2009:157). It is estimated that forty thousand Muslims were killed by the Crusaders in two days (Goddard 2000:85)!

In the decade after Jerusalem's capture, the crusaders defined four states (Figure 2) in the Levant: the Kingdom of Jerusalem, the County of Tripoli, the Principality of Antioch, and the County of Edessa (Phillips 2009:29). In the Muslim world there was shock and outrage to the events of the Crusade. However no armies were sent to engage the Christian arrivals. This made it possible for the crusader populations to secure their conquest and establish Christian rule in the Holy Land for close to two hundred years (Phillips 2009:28).

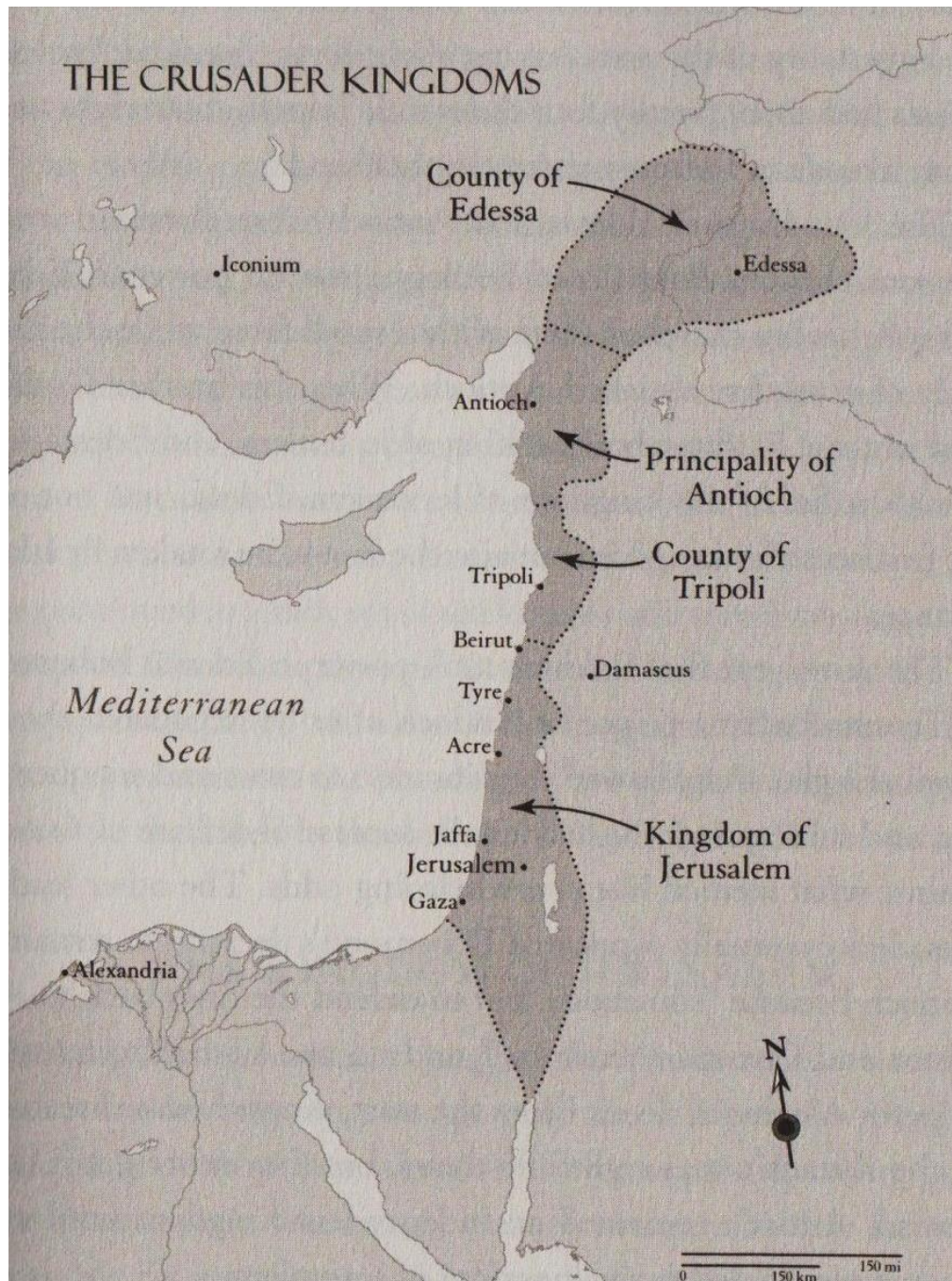


Figure 2. The Crusader States (adapted from Stark 2009, Map 8.1).

## **BACKGROUND**

The ceramics used by Frankish settlers in the Crusader states came from three sources. The large majority of ceramics were manufactured by local, non-Frankish potters. The second source was the neighboring Islamic states, mainly Syria and Egypt. The third source was in other countries under Christian rule. This would include: Cyprus in the late twelfth and thirteenth centuries, the north-eastern Mediterranean, and southern Europe (Boas 1999:143). Fine-quality glazed tableware was prominent amid the ceramics in use during the Middle Ages. The large-scale use of glazes for decorative as well as functional purposes began in the ninth century. By the twelfth century the use of glazes was so well established that glazed vessels are often more abundant in medieval assemblages than are unglazed vessels. Decoration was typically done one of two ways. First, incisions or sgraffito (Figure 3) were made in the slip prior to the application of the glaze. Second, rather than covering the complete surface of the piece with a slip, a pattern was painted in slip on to the dark surface before the glaze was applied (Boas 1999:143-146). This is otherwise known as slip-painting (Figure 4). The originality of potters in the eastern Mediterranean was in the shapes and ornamentations they pioneered. However, the introduction of a technological, advanced, firing technique turned the island of Cyprus into the chief pottery producer in the region. The method was the separation of glazed pottery vessels during firing by the use of small clay tripod stilts which put a stop to vessels sticking to one another. This process allowed potters to place many more vessels into a kiln during a single firing (Boas 1999:146).

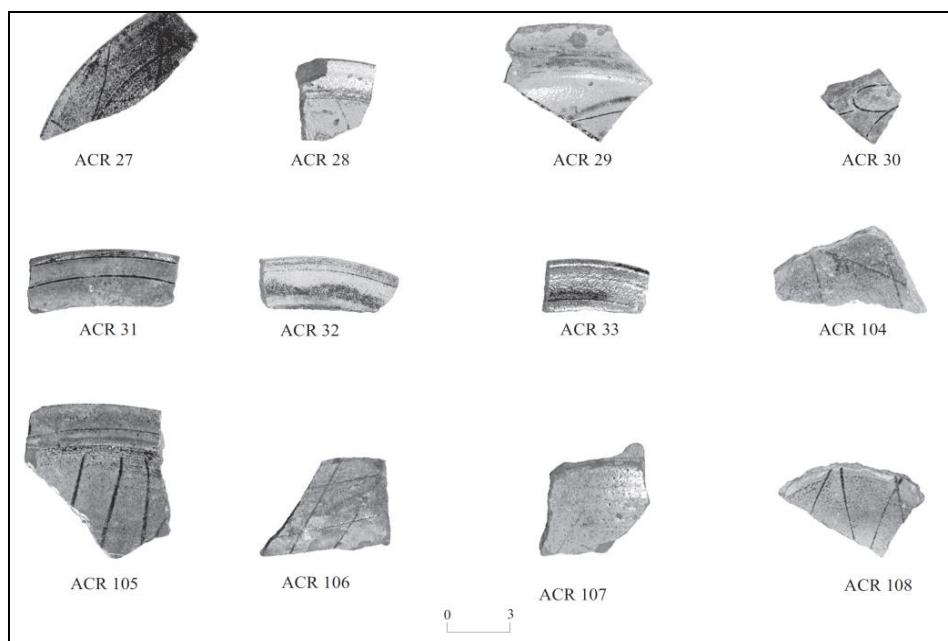


Figure 3. Glazed bowls (sgraffito) (adapted from Waksman et al. 2008, Figure 4).

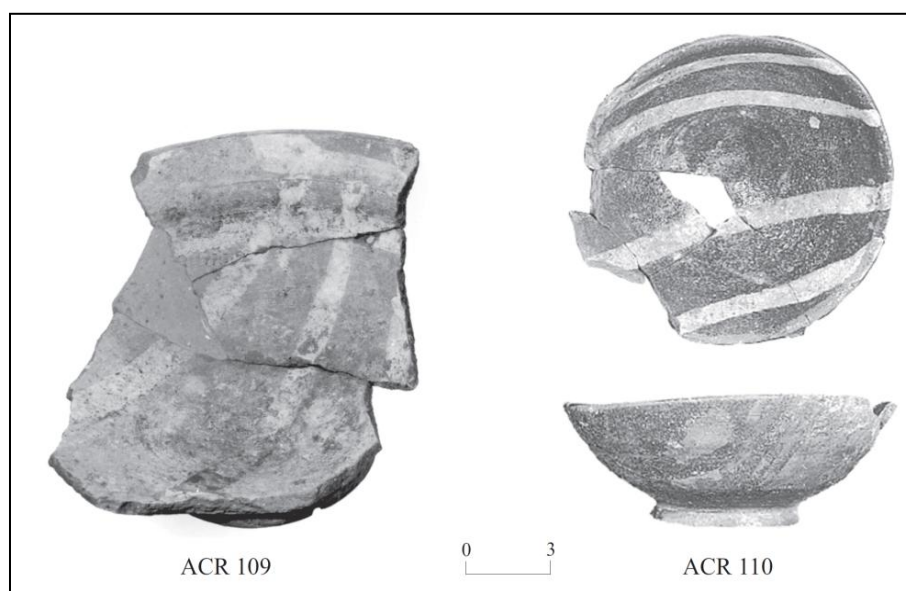


Figure 4. Glazed bowls (slip-painted) (adapted from Waksman et al. 2008, Figure 6).

### **Local Ceramic Production**

The greater part of vessels used by the Franks was locally produced. This included dry-storage vessels and water containers made of porous, buff-colored clay. These forms continued traditions which were already in place much before the arrival of the Franks. An industry of simple but decorative handmade wares, including cooking pots, jugs, basins and bowls, developed in villages around the twelfth century and was well established by the thirteenth century (Boas 1999:146).

### **Ceramic Production from Egypt and Syria**

Large amounts of unglazed and glazed ceramics reached the kingdom of Jerusalem from Fatimid Egypt. These included various types of water vessels of buff-colored ware, which was also manufactured locally. In the twelfth century tin-glazed bowls and jugs decorated with stained, polychrome overglaze patterns, known as “Fayyumi Ware”, seem to have been still reaching the kingdom (Boas 1999:147). In the thirteenth century Egypt exported distinctive deep bowls with high trumpet bases decorated with heraldic motifs in sgraffito or slip-painting. Syria also supplied high-quality glazed vessels to the Crusader states. These were glazed vessels decorated with underglaze designs in blue and black (Boas 1999:147). Some porcelain from the Far East also reached the Crusader states as well as an amount of pottery from Iraq and Iran, but these imports were low compared with those from Egypt and Syria.

### **Ceramic Production from the West**

Because of the availability and superiority in quality of Syrian and Egyptian pottery, very little pottery was imported from the Christian West by the Franks until the thirteenth century (Boas 1999:148). In the thirteenth century, tin-glazed bowls and jugs were imported from the kingdom of Sicily and some pottery might have reached the Crusader states from the Aegean. However, the island of Cyprus was the main source of imported pottery apart from Egypt and Syria. Through the twelfth and thirteenth centuries, six main pottery traditions were introduced into the Crusader states from Byzantium and the Christian West. These ware distinctions were made based on the designs being placed onto the vessels and on the region the pottery was manufactured.

### **Ceramic Types from Byzantium and the Christian West**

First, the type known as “Mid-Twelfth Century Byzantine Sgraffito” was introduced into the Crusader states mainly from Cyprus. This pottery method was limited to coarse, simple, lead-glazed bowls decorated on the outside with white, cream, or pale green lead-based slip-glaze. On the interior, the bowls were ornamented with finely incised designs portraying birds, animals, or floral bands (Boas 1999:148). Second, the type known as “Early-Thirteenth Century Aegean Ware” replaced the first tradition towards the end of the twelfth century. This type differs from the previous method in that the incised decoration is replaced by broad gouging. The designs are simple and abstract, and the glaze is typically yellow rather than cream or white (Boas 1999:148). As the name suggests, this type was manufactured mainly in Byzantine occupied sites in the Aegean region.



Third, around the beginning of the thirteenth century a new, more advanced type of glazed pottery was imported in the kingdom of Jerusalem. Named after a site in Constantinople, “Zeuxippus Ware” are sgraffito-decorated bowls differentiated from other glazed wares by the high-quality of material and the exceedingly shiny pale green or yellow glaze. They are very thinly potted and fired much harder than other medieval ceramics. The interior decorations of the bowls combine fine and broadly incised lines with an assortment of new designs including concentric circles, ‘S’ shapes, mushroom-like patterns, and occasional figurative subjects (Boas 1999:148). Archaeological and chemical analysis shows that these types of vessels were manufactured in or near Constantinople as well as in Cyprus. Fourth, early in the thirteenth century potters in the Frankish port of Antioch, Port Saint Symeon (al-Mina), introduced the original sgraffito-decorated polychrome glazed pottery known as “Port St. Symeon Ware” into the surrounding Crusader states. The ware is normally buff-orange or pink but occasionally brick-red or red-brown. The decoration is carried out in a fairly fine sgraffito under a cream-color glaze highlighted by the spreading of alternate yellow ochre and green stains (Boas 1999:149). Designs range from floral to geometric and figurative.

Fifth, the type known as “Thirteenth Century Cypriot Ware” is a polychrome sgraffito-decorated or slip-painted ware that appears to have integrated the kiln techniques of “Zeuxippus Ware” and the use of color and design of “Port St. Symeon Ware.” The main innovation in these vessels is the distinctive shape of the bowls with a tall, upright, outwardly concave rim, a hemispherical body and a high ring-base (Boas 1999:149). Lastly, the only type of pottery imported in quantity to the Crusader states from Europe was a tin-glazed ware known as “Proto-Maiolica.” The use of a tin-opacified glaze and overglaze painting in blue, manganese and yellow made this type of pottery quite distinctive among the medieval ceramics of the Levant.

The clay came from sources in southern Italy and Sicily. Decorations include a range of designs such as grid patterns, floral motifs, fish, birds, human figures, ships, and town fortifications (Boas 1999:149-150).

## **METHODOLOGY**

The focus of this study is to examine how the coastal sites of Acre (Akko) and Jaffa were involved in the trade and exchange of Middle Eastern ceramics and European ceramics. I also am aiming to determine whether or not the diffusion of ceramic types between both regions was present. Through this research I hope to gain a better understanding of the pottery techniques and ceramic types used and manufactured in the Levant and Mediterranean regions during the Crusader Period. Through the use of historical, archaeological, and chemical analyses, I hope to present trade and exchange networks for both cities of Acre and Jaffa. I have chosen the cities of Acre and Jaffa for my research because, as coastal cities, they were both heavily involved in the maritime trade networks between Europe, Byzantium, and the Muslim states. The data I will be examining comes from an analysis of excavations in Acre as well as Jaffa under the direction of the Israeli Antiquities Authority.

## ANALYSIS

### **The Cities of Acre and Jaffa**

#### Acre

Acre (Akko) was the central port of the Kingdom of Jerusalem during the Crusader period. Acre became its capital after the fall of Jerusalem in 1187 and the establishment of the second Kingdom in 1191 (Stern 2010: 55, Stern 2012:123; Waksman et al. 2008:157). In the 13th century a large amount of the maritime trade in the eastern Mediterranean was directed to Acre, which served as a transit port allowing for the Crusader states to trade with Europe, the Muslim states, and the Byzantine Empire. The port also allowed for the passage of numerous pilgrims venturing to the Holy Land. (Stern 2010: 55, Stern 2012:123; Waksman et al. 2008:157).

A great variety of Crusader period ceramics have been uncovered during large-scale excavations carried out by the Israel Antiquities Authority (IAA) at assorted sites in Acre since the early 1990s (Stern 2010: 55, Stern 2012:123). Two large archaeological excavations, those conducted at the Hospitaller compound (Figure 5) and at the Knights Hotel, emphasized the central and critical role of Crusader Acre by revealing the dense population of the city, the range of its public and domestic buildings, and its material culture remains (Stern 2010: 55, Stern 2012:123).

Together with simple, unglazed wares and glazed cooking and table wares manufactured locally in Acre, imports from an assortment of regions throughout the Mediterranean were found. The large-scale importation of ceramics to this region is a unique aspect to the Crusader period because it was not seen during the previous Fatimid period or during the following Mamluk period (Stern 2010: 55, Stern 2012:123).

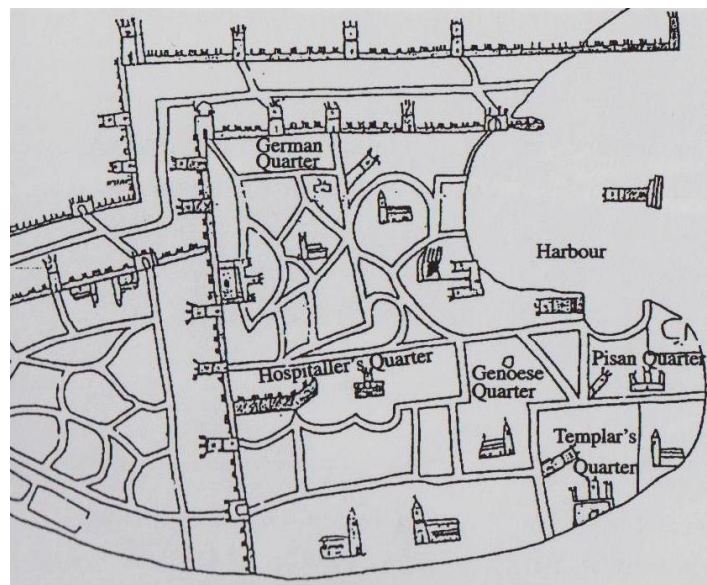


Figure 5. Copy of a Map of Acre by Marino Sanudo (adapted from Boas 1999, Figure 2.5).

### Jaffa

Jaffa was the main port of the kingdom south of Akko and served as the port for Jerusalem. The town was abandoned and destroyed by the Muslim population in 1099, and was rebuilt and defended by Crusaders starting in 1101 (Boas 1999:50). Under the Crusaders, it received numerous merchant and pilgrim ships. At the beginning of this period Jaffa's imported ceramics came primarily from the Black Sea and Aegean regions under Byzantine control, with little

evidence for vessels of Egyptian or Syrian origin. However in the later Crusader period, the origins of imported ceramics expanded to include Syria, Cyprus, Turkey, Italy, France, Spain, North Africa, and Egypt (Burke 2010:21-22). This occurred once trading relationships had been well instituted and Muslim merchants from inland Syria and Egypt became active in the ports of the Franks. Yet throughout the Crusader period as a whole the largest proportion of ceramics, made up of cooking pots and glazed table wares, came from Lebanon, supporting a correlation with the Fatimid period (Burke 2010:22).

### **A Study of Acre**

Since 1991, excavations commenced by the Israel Antiquities Authority in Acre have produced a plethora of Crusader period material remains. A large amount of ceramic material dated to the twelfth and thirteenth centuries was revealed in these excavations. The assortments of sources of the ceramic material show associations between the eastern and western Mediterranean.

Throughout the research of Waksman et al. (2008), elemental and petrographic analyses were performed in order to gain more exact information regarding the origin of pottery types common in Crusader Acre. Elemental analysis, also referred to as chemical analysis, verifies the elemental composition of sherds, i.e., “the concentration of elements constituting the ceramic material” (Waksman et al. 2008:173). Petrographic analysis determines the nature and details of minerals and rock fragments in thin sections of sherds under a polarizing microscope. Both methods may be used to categorize sherds into clusters of ceramics that are manufactured from related raw materials. Under certain conditions, which mainly depend on the geological circumstance, these groups may match up to the products of the same workshop (Waksman et al.

2008:173). To examine their origin, their characteristics are compared to those of reference groups of known origin or, in the case of petrography, to geological formations.

Among the material excavated in Acre, the existence of wasters (Figure 6) of simple, unglazed types of bowls named “Acre bowls” are evidence of local production. Two major categories of ceramics were the focus throughout the duration of the study. The first group included wares characteristic of Levantine sites in the Crusader period—sgraffito, slip-painted, reserved-slip glazed bowls and glazed cooking pots. The second set included wares belonging to the Zeuxippus Family (Waksman et al. 2008:157).

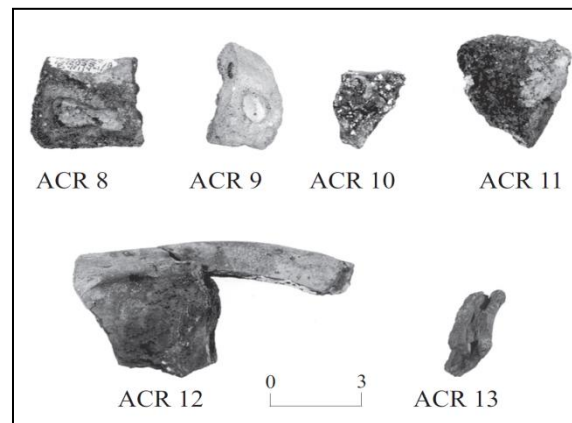


Figure 6. Acre bowl wasters (adapted from Waksman et al. 2008, Figure 1).

#### Acre Bowls, Glazed Bowls, and Cooking Ware

The first grouping consisted of Acre bowls (Figure 7), a simple, most likely mass-produced unglazed bowl which seemed exclusive to Acre. Many of these bowls were found in excavations at Acre, mainly in the Hospitaller Compound, but also in other sites in Acre (Waksman et al. 2008:159). Such bowls were not found in additional unearthed sites in the

Kingdom of Jerusalem except for some rural sites near Acre. Indication of local production was found in the Hospitaller Compound at Acre in the form of wasters of Acre bowls. Wasters (Figure 6) are the discarded remains of ceramic objects that became damaged or deformed during firing. The first grouping of ceramics also consisted of glazed bowls and cooking ware. These wares were initially judged to be local because of their fabric and distribution. These ceramics shared similar material with Acre bowls (red to red-brown with limestone grits) and were defined as being distributed along the northern coastal area of Israel and southern Lebanon (Waksman et al. 2008:159). However, vessels of these types were also found in Cyprus. They seemed to be imported to these sites since they vary from the locally-produced Cypriot glazed bowls and cooking ware.

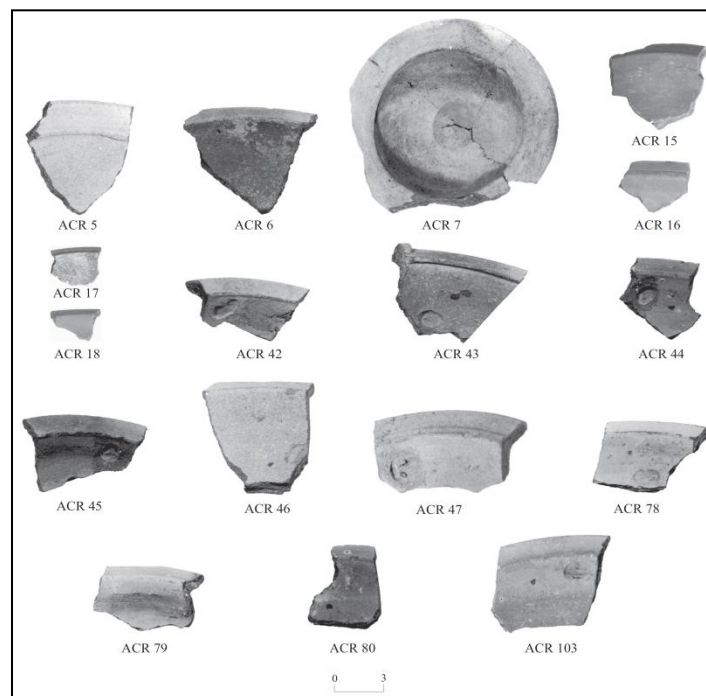


Figure 7. Acre bowls (adapted from Waksman et al. 2008, Figure 3).

## Zeuxippus Ware

Zeuxippus ware is not widely distributed in Israel and has been found mainly in large coastal sites held by the Franks. Large quantities of ceramics that share some features with and were possibly influenced by Zeuxippus ware were found in the excavations at Acre. If these wares were found to be of the Zeuxippus Family, they could have reached Acre only through the importation process. Throughout the study, Zeuxippus ware (Figure 8) samples were divided into four categories based on shape, material, color, color glaze, and decoration (Waksman et al. 2008:167).

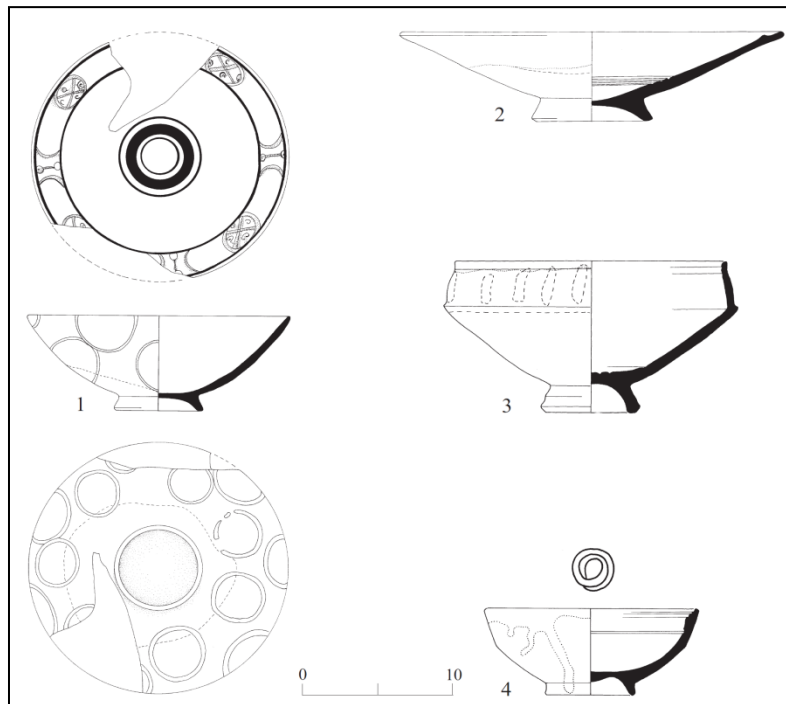


Figure 8. Zeuxippus Family glazed bowls (adapted from Waksman et al. 2008, Figure 9).



### The Comparison of Acre Bowls and Glazed Bowls, Cooking Pots

Petrographic analysis of the Acre bowls (Table 1) identified a collection of well-sorted quartz, decomposed carbonates, accessory minerals, feldspars, epidote, hornblende, and chert, indicative of the coastal Pleistocene formations of Israel that occur around Acre (Waksman et al. 2008:178).

The glazed bowls and cooking pots had quite different characteristics from the Acre bowls' compositional group. Petrographic analysis (Table 1) identified a mineralogical origin frequent to both the bowls and the cooking pots: mainly medium to poorly-sorted quartz, few if any large carbonate grains, few stable heavy minerals epidote, zircon, and tourmaline, occasional shale fragments, and rare chert grains (Waksman et al 2008:178). These features correspond to an established siliclastic formation that would include sandstone, shale, and perhaps siltstone. Such a geological context is not widespread in Israel and is probably related to the Lower Cretaceous formations that crop out in large occurrences on the slopes of Mount Hermon in northern Israel, across Lebanon, and in Transjordan (Waksman et al. 2008:178). It does not occur in the close vicinity of Acre and therefore these wares are deemed imported to Acre.

Table 1. Mean Elemental Compositions (m) and Standard Deviations ( $\sigma$ ) of the Main Groups of Local and Regional Wares (adapted from Waksman et al. 2008, Table 1).

Element	Acre Bowls and Wasters (N = 24)		Slip-Painted Ware (N = 18)		Sgraffito Ware and Cooking Pots (N = 30)		Cooking Pots (N = 5)		Reserved-Slip Ware (N = 11)	
	m	$\sigma$	m	$\sigma$	m	$\sigma$	m	$\sigma$	m	$\sigma$
Na <sub>2</sub> O (%)	1.32	0.20	0.36	0.09	0.15	0.04	0.23	0.07	0.17	0.03
MgO (%)	3.24	0.34	1.48	0.20	0.68	0.14	0.93	0.22	0.84	0.23
Al <sub>2</sub> O <sub>3</sub> (%)	13.46	1.00	15.03	0.97	11.45	1.13	13.63	1.33	17.96	1.15
K <sub>2</sub> O (%)	1.71	0.27	1.50	0.28	0.55	0.14	0.84	0.22	1.38	0.32
CaO (%)	7.77	1.35	9.16	2.22	3.93	2.66	1.66	0.37	2.13	1.67
TiO <sub>2</sub> (%)	1.20	0.06	1.54	0.21	1.57	0.12	1.50	0.13	2.15	0.19
Fe <sub>2</sub> O <sub>3</sub> (%)	7.48	0.45	12.81	1.39	8.25	0.75	10.30	0.91	10.48	2.09
MnO (%)	0.132	0.010	0.091	0.018	0.059	0.021	0.139	0.020	0.072	0.014
V (ppm)	121	10	168	15	105	14	117	15	113	24
Cr (ppm)	142	13	234	14	146	10	181	13	176	13
Ni (ppm)	69	7	141	10	61	8	104	7	83	18
Sr (ppm)	307	41	284	59	95	40	83	9	129	23
Y (ppm)	40.6	2.2	43.5	7.4	33.8	5.4	66.3	6.1	52.1	11.7
Ba (ppm)	386	71	629	193	149	29	233	25	149	36
La (ppm)	42.0	2.6	38.6	2.9	31.4	5.0	55.8	5.1	59.5	5.7
Ce (ppm)	86	6	66	9	69	10	84	7	110	9
Nd (ppm)	39	2	38	5	32	4	55	4	55	9
Sm (ppm)	8.0	0.5	8.3	1.4	6.6	1.0	11.8	0.9	11.4	2.3
Eu (ppm)	1.85	0.12	2.16	0.37	1.53	0.24	2.86	0.17	2.90	0.61
Tb (ppm)	1.1	0.1	1.2	0.2	1.0	0.1	1.8	0.1	1.6	0.3
Yb (ppm)	3.6	0.2	3.5	0.3	3.2	0.3	4.7	0.4	4.3	0.7
Lu (ppm)	0.53	0.04	0.51	0.04	0.52	0.05	0.76	0.06	0.69	0.10
Th (ppm)	9.3	0.6	7.0	0.7	9.1	1.1	9.5	1.2	10.7	1.7
U (ppm)	2.4	0.2	3.1	0.2	2.5	0.3	3.5	0.3	2.5	0.4

N = number of samples

### The Comparison of Zeuxippus Ware and Local, Regional Wares

Zeuxippus ware is simply differentiated chemically from the local and regional wares, from the latter by their higher alkali contents. Petrographic analysis confirms their imported status, as the metamorphic elements in their pastes exclude a regional source (Waksman et al. 2008:180). There are few indications to the location of the production site of Zeuxippus ware. Due to the great amounts of ceramics of this type determined in urban excavations in Istanbul, Zeuxippus ware is thought to be a Constantinopolitan production, although there are no field discoveries so far to confirm this assumption (Waksman et al. 2008:180).

### **A Study of Jaffa**

Throughout the research undergone by Burke, Early Islamic and Crusader period ceramics from the Ganor Compound (Figure 9) were studied. In all, I will only be reviewing the Crusader period ceramics identified by Burke. The vessels recognized were excavated in 1995 and 1996 primarily in areas B and D1 in the Ganor Compound on Yefet Street under the direction of Martin Peilstöcker. (Burke 2011:203). The ceramic types preserved in this group of vessels are both table and utility wares and can all be found in Miriam Avissar and Edna Stern's detailed catalog of ceramics of this period that are present in sites throughout modern Israel. The terminology and dating methods implemented by Burke of the Jaffa vessels follow this catalog (Burke 2011:203).

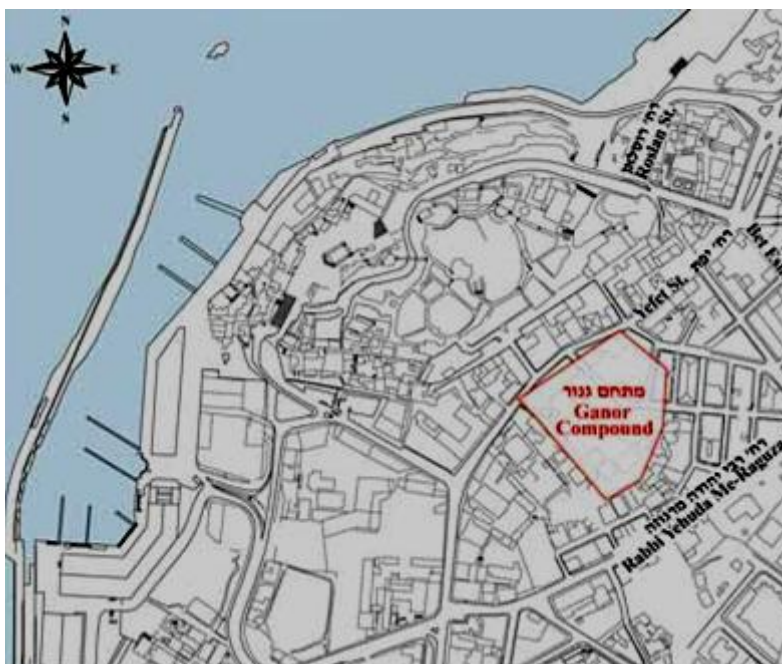


Figure 9. Ganor Compound, Jaffa (adapted from Jakoel 2012).

Virtually all of the glazed bowls in this assemblage from Jaffa seem to be imports from somewhere else in the Crusader states. A small group from this set was potentially imported from Lebanon. This set included a “glazed bowl with double slip” dating from the early eleventh to mid-twelfth century C.E., and a vessel of the Reserved Slip Ware type dating from the twelfth to thirteenth century C.E. (Burke 2011:203-204). After chemical and petrographic analyses of the same types of bowls found in Acre, the latter ceramic piece seems to have a Levantine origin in the region of Beirut. Vessels of similar material to those identified as “Acre Bowls” may also have been found in Jaffa; however, further analyses are needed in order to confirm this.

The arrival of the Franks and the increase in trade controlled by European merchant colonies drastically increased Mediterranean imports to the region, bringing in materials from parts of the Byzantine Empire that had not been formerly seen at Jaffa. In this group, Aegean

Green-Splashed Ware and Aegean Coarse-Incised Ware, both dating from the end of the twelfth to the early thirteenth century C.E., are present (Burke 2011:204). Also identified were three known Cypriot vessel types. These were Cypriot Slip-Painted Ware, Cypriot monochrome sgraffito style vessels, and Cypriot Green and Brown Sgraffito Ware (Burke 2011:204-205). Each of the three Cypriot types was dated to the thirteenth century C.E. The latter two Cypriot vessels showed evidence of tripod marks on the interior indicative of the way the vessels were placed in the kiln during the firing process. Using the descriptions by Avissar and Stern of “Proto-Maiolica from Apulia,” Proto-Maiolica vessels from southern Italy were identified by Burke (2011:205). These ceramic samples all date to the second half of the thirteenth century C.E. From outside of the Crusader states, imported from North Africa, are the North African Blue and Brown Ware which date from the end of the twelfth to the early thirteenth century C.E. (Burke 2011:205).

## **CONCLUSIONS**

### The Study of Acre

Within the data sample used, only the unglazed ‘Acre bowls’ were shown to be locally manufactured. A major result of the study showed that the regional categories of ceramics—sgraffito, slip-painted, reserved-slip wares and glazed cooking pots—which are typical of Levantine Crusader sites, were imported into Acre (Waksman et al. 2008:183). The slip-painted ware differs from the other categories by its elemental and petrographic features (Table 1), pointing to specific production or export of this ware to Acre, perhaps from a distant site.

Cooking pots, sgraffito, and reserved-slip wares are related by petrography to lower Cretaceous formations that are not in the near locality of Acre. Beirut, which sits on such geological formations and where medieval kilns were recently excavated, appeared to be a most likely starting point for these wares (Waksman et al. 2008:183). The study also concluded with information about groups of ceramics imported to Acre that are related to the Byzantine-type Zeuxippus ware. Three compositional collections were classified and characterized, one matching to a probable prototype for the other two. Only one group may be attributed to its origin; both typological and elemental characteristics point to a Venetian provenance for these ceramics (Waksman et al. 2008:183).

#### The Study of Jaffa

In using the sample data identified by Burke, ceramics excavated at Jaffa seemed to have been almost completely imported into the region. Regions identified as exporting ceramics to Jaffa include: Cyprus, Italy, and North Africa. Although it is not certain, many of the vessels studied seem to have come from the Lebanon region as well as the Acre locality. In order to provide a more detailed assessment as well as provenances of the samples used, petrographic analyses of many of the ceramics excavated must be carried out (Burke 2011: 203).

#### A Comparative Analysis

In comparing the results of both studies, it can be determined that each site was involved heavily with the importation of ceramics. The importation of ceramics from Italy as well as the Lebanon region was confirmed for both of the sites. Through the use of petrographic analyses, Acre was determined to be a production center or a workshop for the locally produced “Acre Bowls.”

Vessels made of similar fabric as the “Acre Bowls” were found at the excavation site in Jaffa. However, further analyses must be done in order to confirm Acre exported ceramics to this area.

Because of these findings, it can be assumed that the merchants in both Acre and Jaffa fluently traded with the rest of the Middle East, specifically the Crusader states. The evidence of the importation of European wares leads to the belief that these types of ceramics were diffused through trade, at the very least, across the Crusader states. Historically, the Crusades brought European styles and artifacts directly into the Middle East. It is through the methods of archaeology that we are allowed to confirm the origins of these artifacts and ask the additional questions of “Who?,” “How?,” and “Why?”

## BIBLIOGRAPHY

- Boas, Adrian J.  
1999 *Crusader Archaeology: The Material Culture of the Latin East*. Routledge, London.
- Burke, Katherine Strange  
2010 Islamic and Crusader Ceramics from Jaffa. *American Schools of Oriental Research* 1 December: pp. 21-22., Los Angeles, California.  
  
2011 Islamic and Crusader Pottery from Jaffa: A Collection of Whole and Reconstructed Vessels. In *The History and Archaeology of Jaffa*, edited by Martin Peilstöcker and Aaron Alexander Burke, pp. 197-210. Cotsen Institute of Archaeology, Jerusalem and Los Angeles.
- Goddard, Hugh  
2000 *A History of Christian-Muslim Relations*. Edinburgh University Press Ltd, Great Britain.
- Jakoel, Eriola  
2012 Yafo, Shimon Ben Shetah Street Preliminary Report. Electronic Document, [http://www.hadashot-esi.org.il/report\\_detail\\_eng.asp?id=2167&mag\\_id=119&print=all](http://www.hadashot-esi.org.il/report_detail_eng.asp?id=2167&mag_id=119&print=all), accessed April 19, 2013.
- Phillips, Jonathan  
2009 *Holy Warriors: A Modern History of the Crusades*. Random House Publishing Group, New York.
- Stark, Rodney  
2009 *God's Battalions: The Case for the Crusades*. HarperCollins, New York.
- Stern, Edna J.  
2010 Ceramics as a Reflection of Maritime Commercial Activity at Crusader Acre. In *One Thousand Nights and Days: Akko through the Ages*, edited by A.E. Killebrew and V. Raz-Romeo, pp. 55-59. Haifa, Israel.  
  
2012 Pottery from Crusader Acre as Evidence of Correlation between Pottery Distribution and Medieval Mediterranean Trade Routes. *1000 Years of Byzantine Trade (V-XV)* 121-128.



Yalman, Suzan

2000 The Art of the Seljuq Period in Anatolia (1081-1307). Electronic document, [http://www.metmuseum.org/toah/hd/aselj/hd\\_aselj.htm](http://www.metmuseum.org/toah/hd/aselj/hd_aselj.htm), accessed April 19, 2013.

Waksman, S. Yona, Edna J. Stern, Irina Segal, Naomi Porata, and Joesph Yellin

2008 Elemental and Petrographic Analyses of Local and Imported Ceramics from Crusader Acre. *Antiqot* 59:157-190.