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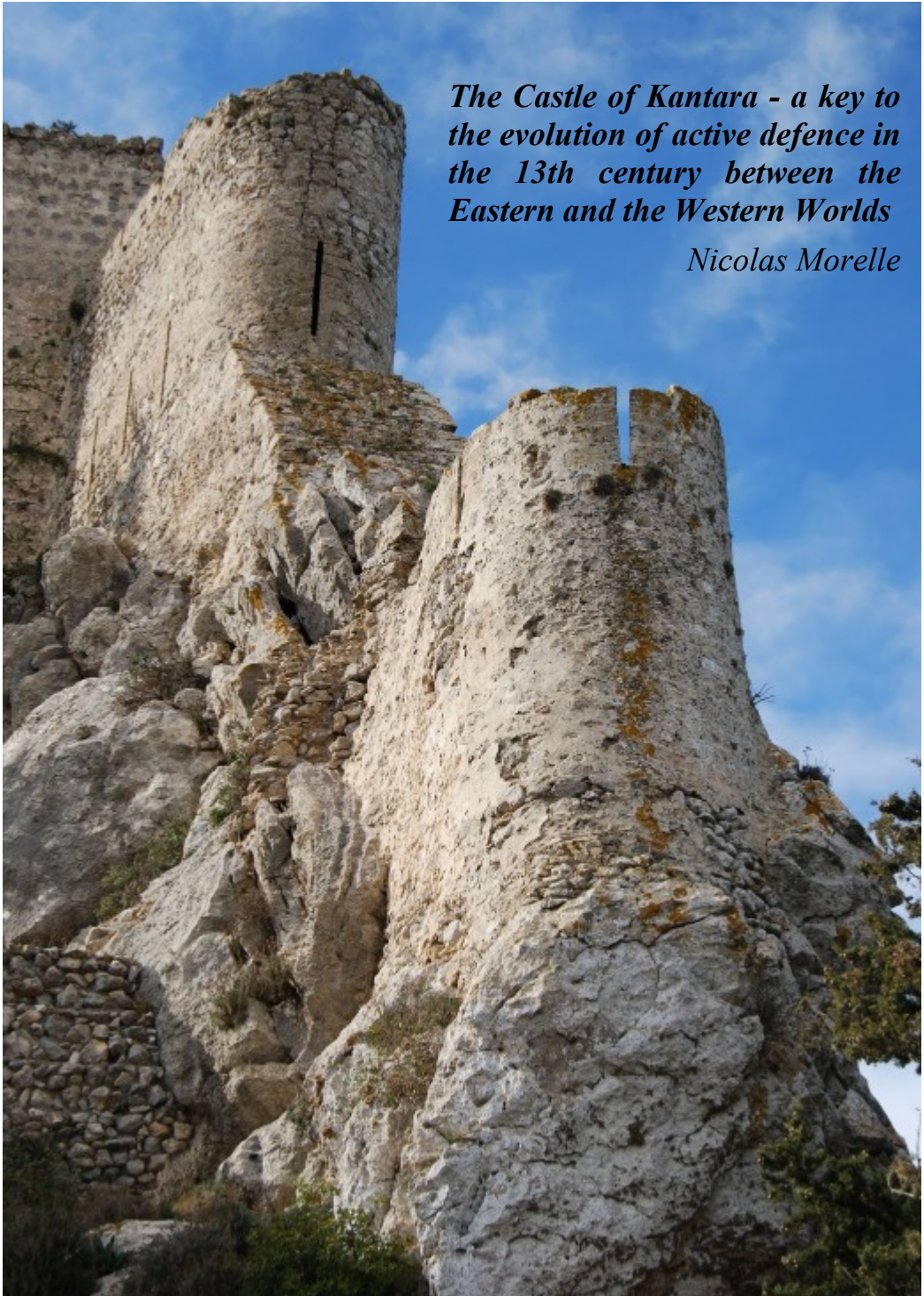
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The Castle of Kantara



*The Castle of Kantara - a key to
the evolution of active defence in
the 13th century between the
Eastern and the Western Worlds*

Nicolas Morelle

The Castle of Kantara, a key to the evolution of active defence in the 13th century between the Eastern and the Western Worlds¹

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Abstract :

Set on a rocky outcrop, this fortress in Cyprus has stood the test of centuries facing the sea and the Mesaoria plain. Despite being abandoned in the 16th century, it still remains a well preserved castle in Cyprus. Today, it serves as an attraction to a few tourists, almost deflecting attention from the political conflict that has divided the island since 1974. (fig. 1)

This island in the eastern Mediterranean, off the coasts of Levant and Anatolia was successively in the hands of Romans, then the Arabs and the Byzantines, until the Latins took over in the Middle-Ages. It helps us to develop the discussion on the military evolution that took place between the Ancient period and the present. Geographically, the island is well placed so as to be at the heart of the political, economic and military history of the Mediterranean, between the Oriental and the Occidental worlds. It can be seen that the control of Cyprus was important to powerful empires for strategic reasons. The study of Cypriot fortification therefore requires a knowledge and comparative analysis of all the fortified networks along the Mediterranean coasts. This would help define the cultural melting point of technical exchanges and trace the evolution of the art of warfare (poliorcetics) and military architecture during the Middle-Ages in the Mediterranean belt (fig. 2). Through the study of the system of Cypriot fortification, we shall deal with the notions of frontier lines and coastal fortification, compared to Rhodes and Byzantine frontiers.

This paper is based on research undertaken for the Masters degree.² Recent studies of Kantara

¹ I thank the great help provided by Sindhuja Veeraghavan for her English translation of this work, and Gianna Philippidou for her Greek translation. I also want to thank James Petre for proofreading and commenting extensively on the text.

Castle has led to new findings on the role of Cyprus in the diffusion of technical and military innovations during the Crusades in the 13th century. Since the work of French scholar and archaeologist Camille Enlart, who undertook a study of Kantara in the 19th century, some researchers have emphasised the need for a monographic study of the site in order to be able to assign it properly in the Lusignans' renewal of the active defence system in the context of West-East relationships in the 13th century. This research perspective, the need for which was highlighted by Hugh Kennedy at the conclusion of the Parthenay Symposium in 2002,³ in order to qualify innovative research undertaken in Near Eastern castellology, helps renew the question of Occidental-Oriental influences during the Crusades.

This detailed study of Kantara helps to show the originality of its defences, attempting to identify the castle's builders and consequently a time-line; the study of its construction methods is important from a technical point of view.

HISTORY

Cyprus under Byzantine rule

Kantara Castle, (figs. 1, 2) (name derived from *kandak* (stone bridge) is an Arabic word of

² Morelle, 2010. 'Le château de Kantara, une clé de l'évolution de la défense active au XIII^{ème} siècle entre Orient et Occident, schéma défensif et étude comparative', under the direction of Pierre-Yves Laffont (for a Masters dissertation at the University of Rennes 2) in 2008. Following a monograph of the site as a part of Master 1, an Erasmus scholarship under the University of Cyprus in Nicosia, incorporated into and a scholarship from IFEA of Istanbul for Master 2 in 2009, gave me an opportunity to undertake an architectural exploration of the fortified sites of Cilicia. Although these sites are already discussed in the existing studies, my aim was to bring to light the similarities between the Armenian and Cypriot fortifications in the Middle Ages, in order to specify the technical study and dating undertaken in the site of Kantara. I would like to thank these institutions for their support.

³ Faucherre, 2004, pp. 333-338

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ABOVE: Fig. 1a. Kantara Castle from the south.

BELOW: Fig. 1b. Painting by H. W. Seton-Karr, Cyprus, Kantara Castle, 1922. Cl. N. Morelle, 2008. From Rita C. Severis, 2000, 'Traveling artists in Cyprus 1700-1960', London.



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Fig. 2 - ABOVE: Geographic location of the island of Cyprus in the Mediterranean, with its cities and principal medieval castles.

BELOW: Detail of above. Part of the topographic map of Cyprus, Kantara region, Lord H. H. Kitchener (Royal Engineers), 1882. Realisation N. Morelle, 2009.

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Maronite roots.⁴ It may have been so named by the Byzantines) is situated on the Pentadaktylos range, which constitutes the northern frontiers of the island of Cyprus, bordering the sea. This strategic location was put to good use by the Byzantines, who installed three watch towers in the region: Kantara, Buffavento and Saint Hilarion. It is possible that Kantara was built under the order of Emperor Nikephoros Phokas in 967,⁵ after regaining the island and defeating the Arabs. These towers may have communicated with each other and been able to alert the troops stationed at the Mesaoria plain. Such a communication system is also possibly found in the fortified networks of Cilicia (in the castles of Anavarza, Yilankale, Tumlu, Sis, Haruniye).

In unifying defence in Cyprus, this great strategist, Phokas, intended to prevent attacks from pirates and his powerful Muslim adversary. This principle would later be adopted by the Lusignans, and Kantara, like the other Cypriot castles, functioned under the king as part of the curtain of defence for the island. These fortresses, found in remote areas far away from the cities, served as refuges in case of internal disorder or during invasions. The conceptual similarities that are generally apparent between Kantara, Byzantine castles and the castles in Cilicia are not insignificant. In fact, these buildings could result directly from a tactical model based on the guerilla theory propounded by the Byzantine emperor Phokas II, at the end of the 10th century.⁶

⁴ The native Christian population of Greater Syria established in Cyprus in the 8th century, after the Islamic conquest. It kept its traditions and made use of the Arabic language. Kyrris, 1984, III, pp. 155-74.

⁵ It is difficult to find the exact reference of the construction of Kantara attributed to Leo Diaconus. Same in Hill, 1940, vol. 1, p. 272.

⁶ Dagron & Mihaescu, 1986, 358 p. More recently at Harvard: translated by Dennis, *The Taktika of Leo VI*, Dumbarton Oaks Texts, 2010, 656 p. After his victorious campaign of 962, Nicephorus Phocas organized the drafting of a new treatise incorporating combat theories based on *The Taktika of Leo VI* (900), in order to disseminate these tactics in the empire so as to update a defensive military policy. The methods of Eastern guerril-

Alternatively, the insecurity in the eastern boundaries of the Mediterranean, which resulted in the first Crusade in 1096, might have caused the first construction if not a strengthening of Kantara castle, as well as a programme of fortifying Cyprus generally. Subsequently, it may be that in 1092, Emperor Alexius Comnenus I fortified the northern coast of Cyprus, using Armenian mercenaries, directly from Silifke, Cilicia, in order to suppress the revolt begun by his governor Rhapso-mades. However, it is beyond doubt that Kantara and its two counterparts on the Pentadaktylos were established by the time of the reign of the tyrant king, Isaac Comnenus when Richard the Lionheart and Guy of Lusignan besieged the castles in 1191.⁷ Possibly Isaac commissioned the fortification of Kantara in order to guard himself against Byzantine vengeance, internal revolts threatening his tyranny, or the Crusaders, who had earlier, in 1156, looted Cyprus under Raynald of Chatillon.

It seems that by 1191, the Byzantines had already transformed this simple watch tower into a fortified nest, capable of resisting the Crusader army of the English king. Then, in 1192, the island was taken over by the Lusig-

las in the tenth century were expounded in *De Velitatione* along with the great imperial military campaigns undertaken after 962 in the East and the West. This principle was adopted in the kingdom of Armenian Cilicia and the fortifications of Cyprus served as the bases for the Lusignans during the Crusades. The Byzantinist, John Haldon says that the famous treatise from Phocas' time, *De Re Militari*, (also called 'the anonymous Vari'), was not written by him but probably by one of Basil II's commanders. Strategy and tactics changed a lot between Leo's time and the 950s and 960s.

⁷ Hill 1940 vol. 1, p. 304 ; Petre, 2012, pp. 1-8; Isaac Comnenus finally fled to Kantara or Buffavento after being defeated in Tremethusa by Richard the Lionheart. The castle was besieged, and Isaac finally surrendered. The castle must have then put up a good defence, capable of withstanding a Crusader army led by a brilliant strategist. However James Petre suggests the need for caution with this affirmation because the chroniclers could well have just glorified Richard's deeds.

nan dynasty. They established a feudal and Latin system, while retaining the complex Byzantine administration. They ruled over the orthodox Greek population, but also adopted their customs.⁸ From this point, the history of Cyprus becomes inseparable from that of the Occidental world, while still belonging as much to the Oriental world.

*The War of Bailiffs*⁹

In the early 13th century, during the regency of John of Ibelin, Lord of Beirut, acting proxy to young Henry I Lusignan, many steps were undertaken to fortify Cyprus and Kantara (figs. 4 & 5).¹⁰ Formerly a monastery, the castle of Saint Hilarion was given its defensive system during this period (fig. 6).¹¹

The fear of being overthrown by Emperor Frederick II of Hohenstaufen, who claimed the regency through vassalic legitimacy, led to hostility between the two leaders. The conflict commenced in 1228, when Frederick II embarked on the 6th Crusade and recaptured Cyprus, where he stationed his Cypriot allies of Latin nobility, the 5 bailiffs. John of Ibelin returned from Syria to Cyprus with a strong force and defeated the pro-imperialist army on the 14th July 1229, in Nicosia.

The Bailiffs (or *Baillis*) sought refuge in the fortresses of the Pentadaktylos. The ensuing siege of Kantara is recounted by many contemporary chroniclers, such as the famous Philip of Novara (in his *Geste des Chiprois*¹²). For a year, Gauvain de Cheneche and his soldiers resisted an attack in which a trebuchet reportedly demolishing a number of buildings. The

siege was relentless until the commander of the castle was killed by a bolt from a crossbow.

Between the Lusignan and the Genoese rule

After the fall of Acre in 1291, Cyprus and Rhodes became the last of the Latin strongholds to face the Muslims, the Turkish navy and the Egyptian forces. It may be then, that the fortifications had to be strengthened during this period.¹³ The port of Famagusta, which brought economic enrichment to the Lusignan kingdom, attracted an influx of Genoese and Venetian traders. These two communities with strong economic and military resources coveted the kingdom conveniently situated at the heart of the Mediterranean maritime system. In 1373 the Genoese invaded Cyprus and imprisoned the king and his nobles. John of Antioch, who was imprisoned along with King Peter II in Famagusta assumed the disguise of the valet of his cook, in order to cross the enemy line to take refuge in Kantara,¹⁴ from where the Genoese tried in vain to drive him out. From this strategic position and elsewhere the prince was able to reorganize the kingdom. This event induced the new king, James I (1385-1398), the uncle of Peter II, to undertake vast works of fortification which included the modification of the Pentadaktylos castles.¹⁵

Kantara changed its role and became a garrison castle. Barracks were erected and an enormous cistern was dug outside the *enceinte* (fig. 7). One such monumental cistern may also be found at Saint Hilarion, whilst the one in Buffavento is ruined. Barracks similar to those in

⁸ Richard, 2006, pp. 60-88.

⁹ Richard cited in de Vaivre, 2006, p. 63. Many chronicles recount this war: (Eracles, *Les Gestes des Chiprois* (Philip of Novara), Bustron, Amadi and Strambaldi).

¹⁰ Jeffery, 1918, p. 246.

¹¹ Gunnis, 1936, pp. 414, 252.

¹² Raynaud, 1887, pp. 60-93; Melani, 1994.

¹³ Prouteau in Faucherre & Pimouguet-Pedarros, 2010, p. 203.

¹⁴ de Mas Latrie, 1893, p. 171 *ibid* 453, according to the *Chronicles of Strambaldi*. Enlart 1899, p. 649, the prince had his face blackened, a pot on his head, and a casserole dish in hand that he was supposed to have tinplated.

¹⁵ Grivaud 2004, p. 90; this campaign of fortification is related by Etienne de Lusignan who insists on the fact that the Genoese could not take Kantara « Cantara estoit un chatsteau fort sur les montaignes Septentrionales, que les Géneuois n'ont iamais peu prendre: lequel fut fortifié par Iacques premier de Lusignan, Roi de Cypre ».

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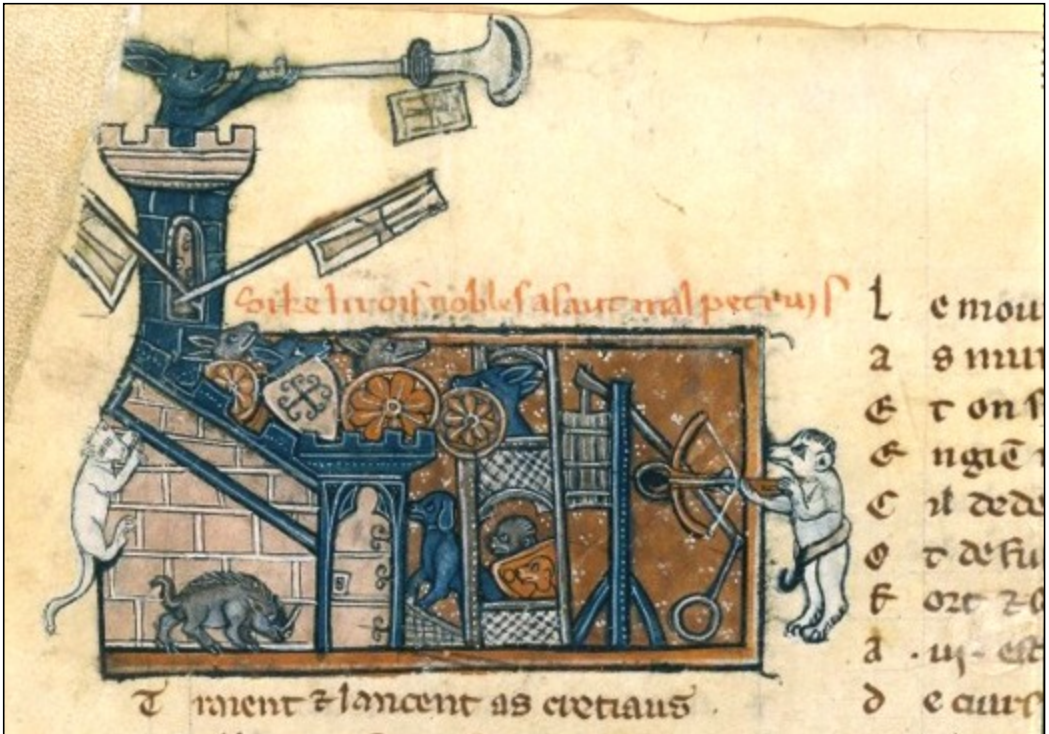


Fig. 5. ABOVE: French 1581. Fol 8v, Siege of Maupertuis described in the *Roman de Renard*, 14th century, cl. BNF.

Fig. 6 - BELOW: Castle of Saint Hilarion. Cl. N. Morelle, 2008.



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Kantara are also found in these castles. They can be compared to the Genoese barracks in Payas (Baia) (late 14th century). The installation of such well-equipped garrisons helped secure the Mesaoria plains.

It is probable that a prison or an arms dump was replaced by a cistern, in the basement of building to the south of the entrance, which was later converted into accommodation for the captain of the garrison, with large bay windows and a groined vault of *poros* (gritty limestone extracted by specialised labour in the Mesaoria plains, a substance resembling *kurkar* (aeolianite)). From Kantara, it was possible to observe the Genoese occupying Famagusta and their movements. James I also undertook the defence of the Nicosia plains by building Sigouri¹⁶ castle, located near Famagusta.¹⁷

Decommissioned by the Venetians

In 1489, the Venetians obtained the island from Queen Caterina Cornaro.¹⁸ In 1519, Kantara was judged obsolete compared to the new fortifications of Italian engineers such as Michele Sanmicheli and Ascanio Savorgnano.¹⁹

Due to the fear of internal menace on the island, the castle was abandoned at the same time as its counterparts, Saint Hilarion and Buffavento.²⁰ Shortly before its abandonment,

the castle possessed a small Italian garrison described by Florio Bustron in 1525. His chronicle talks of the majestic castle which would witness the passage of travellers for centuries to come such as English nobles in the 18th century and the adventurers of the 19th century.

In 1562, under the auspices of Sagredo, Kantara was considered not fit to be used and then gradually sunk into oblivion “*Ainfi le Senat confiderant qu’il auoit entiere puiffance fur le pais, fit abbatre les chateaux de fainct Hilarion, Bufaute, Cantare, Sigur, Caue, & Potame.*” Stephen of Lusignan.²¹

Finally, well preserved, the buildings were still in good shape in the early 20th century, when looting menaced its conservation.²² Classed as Historic Heritage in 1905, the castle gained recognition through the research undertaken by Camille Enlart, who described it in his work of 1899. In 1914, under the direction of George Jeffery, the colonial British Government undertook to restore some parts of the castle with a view to opening it to tourism. In 1939, the stonework of the horse-shoe tower of the castle was refurbished to keep it in place.²³

DESCRIPTION

It is situated approximately at 550-600 metres above sea level, lying at latitude of 35°24'25.37"N and longitude of 33°55'27.00"E (fig. 8). It offers an excellent view of the Mesaoria plains to the south, the Karpaz Peninsula to the East, and the Caramanian Sea serenading the northern coast of Cyprus. On a clear day, the mountains of Lebanon can be seen to the east, with Buffavento castle on the west and the Taurus Mountains in Turkey on the north. It also opens to a remarkable view in the direc-

esco Priuli in 1489, due to economic reasons.

²¹ Grivaud, 2004, p. 210 ; de Mas Latrie, 1861, Vol. 3, p. 54.

²² Jeffery, 1903.

²³ Megaw, 1937-1939, pp. 178-179; among the few recent studies of Kantara, Gianni Perbellini and Nicolas Faucherre have stressed the importance of establishing a historical and archaeological monograph of this little known site.

¹⁶ Schabel & Grivaud 2006, pp. 89-107; Molin 2001, pp. 105-122.

¹⁷ Morelle 2012, ‘Famagouste et la cathédrale Saint-Nicolas’ in *Histoire et Images médiévales* 43, 12-17.

¹⁸ Grivaud G. 1990, *Sur quelques contradictions de l’administration vénitienne à Chypre*, Venise, Leventis, 107 (French Anonymous) : [...] et sont les véniciens seigneurs du royaume à cause de la royne qui est de Venise.

¹⁹ Richard, in de Vaivre, 2006, pp. 87-88; Schabel & Grivaud, 2006, p. 95, on the evolution of fortifications in Nicosia.

²⁰ Jauna, 1747, p. 1049, Despite the abandonment of the site and the lack of water, Pietro Valderio reports that it housed 300 families and 30 knights in the summer 1570, when the Turks invaded the island. According to Jauna the decision of no longer maintaining the old fortress was taken by Franc-

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Fig. 7. ABOVE: - Cistern in Kantara; Cl. N. Morel, 2008. This enormous cistern, supported by three buttresses, is built outside the enceinte, below the castle, to optimise water reception. Built perhaps for providing for a considerable number of soldiers when the castle housed a garrison in the late 14th century, the tank reflects the importance of water in the region.

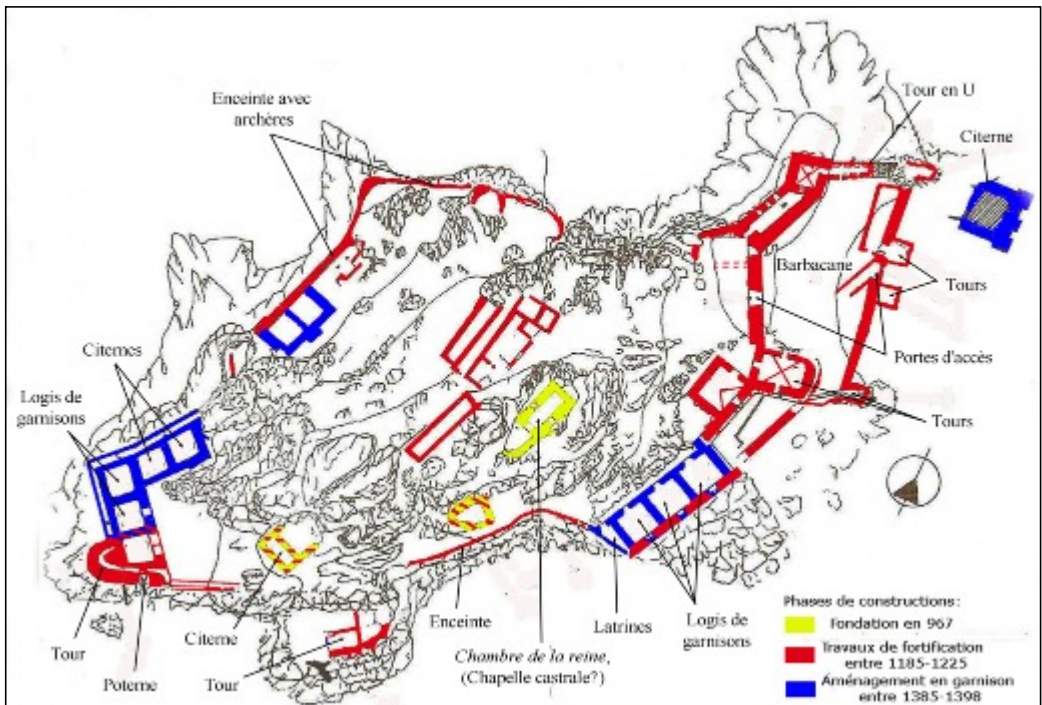


Fig. 8. The plan of Kantara, N. Morelle, 2009, (after Papageorgiou, 1969 fig. 1). The three main phases of construction observed in the castle correspond to its evolution from a Byzantine watch tower into the garrison castle of James the First.

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tion of the city of Famagusta. The castle can be accessed either via *Davlos* in the north or via *Iskele* in the south.

Built on the ridges of Pentadaktylos, Kantara is built on a granite and sandstone bedrock,²⁴ both of which were also used in the construction of the castle. The substratum is consistent throughout the site and is often used as the base for building walls. It is fascinating to ponder as to how stones to build the castle must have been brought to the site over difficult unruly routes and the walls built in such a steep and remote terrain. Moreover, it is rare to find human habitation in the vicinity, both in ancient times and at present. Only a few shepherds from the nearby village, *Davlos*, use the winding paths of moors and rocks connecting the summits of the Pentadaktylos. The slopes of the terrain are not conducive to agriculture, even when irrigated, unlike at Saint Hilarion with its ornamental gardens.²⁵ Droughts are as common today as in the past, and acclimatization to the conditions is indeed a feat.²⁶

With such contoured relief prevailing throughout the landscape, this eagle's nest is only accessed from the east through a narrow valley guarded by an ingenious system of defence towers that look like a pair of pincers. Nicolas Faucherre²⁷ has remarked that this system is singularly adapted to the constraints of the narrow landscape, and is "one of the most powerful and wise defence systems to be conceived by Western engineering between the 13th and the 14th centuries".

Simple and efficient defence:

Passing the first gate (we can see the traces of a portcullis in the wall), we enter into a barbi-

²⁴ Geological map of Cyprus, 1979.

²⁵ Of Arabic and Sicilian influence, the castle of Saint-Hilarion was probably used by the Lusignan kings for their summer castle and for rest. Its flower gardens were irrigated by large tanks between two rocky pits that form the site.

²⁶ Grivaud, 1990, p.107, speaking of animals common in the West (...) and cannot live there due to the drought and heat of the country.

²⁷ Faucherre in de Vaire, 2006, p. 376.

can. The first wall is supported at the rear by a gallery with a pointed barrel vault (now ruined), with two shooting platforms at each end.

With an imposing tower on each side, a steep *chicane* leads to the main gate of the castle (figs. 8, 9). The gradient decelerates the movement of the assailant, thus enhancing the defensive system of the castle at two levels.

To the north, a horse-shoe (or elongated D-shaped) tower provides a shooting platform (8×2m) accessible from the top of the funnel-shaped barbican. If the assailant takes the first ward (the barbican) and the platform, he would find himself in the cross-fire of the defenders, hidden in the towers of the barbican. This pincer arrangement, constitutes two spurs side by side, and also offers protection from undermining.

Going up the barbican leads to the high gate in the middle of the thick wall of the second line of defence. There is a pointed arch 3 metres wide, intact and which seems to have been later narrowed down into a simple pedestrian door. This gate is a simple one, without any pro-active defence mechanism (the offensive is offered by the flanks of the pincer system which provides for cross fire).

The upper part of this large wall is damaged. Originally, there must have been a wall walk, equipped with arrow-slits, connecting the first floor of the towers at each end. This curtain wall facilitated rapid movement between the towers, demonstrating the ingenuity of the active organisation of the defensive system. Unfortunately, the loss of all wall-head defences leaves us with no trace of 'vertical' defence, either in stone or wood (wood being a rare resource in the region, and used mainly in the scaffolding visible through the putlog holes).

The ensemble formed by the pincers seems to have been constructed during one building campaign, there being no indication of a change in its plan or its masonry.

The surrounding wall of 120×70m, almost intact, encloses the craggy site. The northern wall is largely lost, perhaps demolished, but its

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Fig. 9. ABOVE: - The entrance of Kantara, Cl. N. Morelle, 2008. In the foreground: the barbican is protected by the south tower and its turret below. To the right: the main entrance.

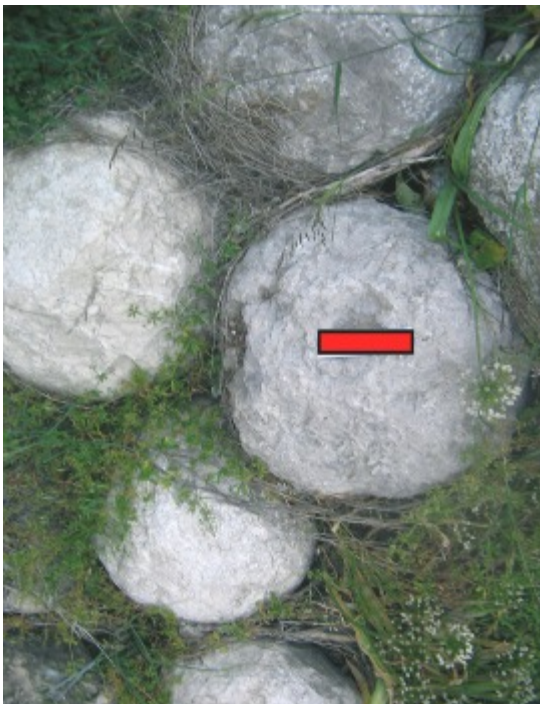


Fig. 10. LEFT: - Recovered stone round-shots by the entrance of Kantara. Cl. N. Morelle, 2008. These round-shots (of a trebuchet) are surely vestiges of the attack that took place in 1229, recounted in the chronicles of Philip of Novara during the siege of the War of Bailiffs (graphic scale: 14 cms).

first line of arrow-loops flanking the entire area is visible. In the late 14th century, a dozen garrison rooms were erected within the walls of Kantara. These barracks are all of the same model, having an outlet for smoke, arrow-slits in the niches and a latrine at each end of the line of buildings, thus giving rise to the name, “the castle of 101 chambers”.²⁸ These latrines are for direct disposal, drilled in the wall under a semi-pointed barrel vault.

A postern, guarded by a gatehouse flanked by two towers, lies hidden from the other side of this entrance, at the south-western corner of the castle. One of the towers may have been destroyed by a trebuchet during a siege in 1229.²⁹ The pieces of stone round-shots found in the early 20th century through clearing processes were put on display on the path leading from the barbican to the main gate. They are a dozen in number, of similar sizes (fig. 10). This postern may be accessed through a small staircase leading to a steep slope outside the walls.

To the south of the main gate stands the enormous tower, perhaps a *donjon*. It is a large rectangular room with an almost pointed-ridge barrel vault (the vaults begin almost at mid-height of the room), covering a cistern. A large, wide-open window may be found at the centre of the northern wall, as well as its counterpart on the wall opposite. With quarter round mouldings under the lintel, these win-

dows are of a refined style, characteristic of the Frankish style in the late 14th century. Is it likely that an arrow-slit embrasure was widened into a window to render the room fit for accommodation. This hypothesis seems probable considering the first Byzantine tower with rounded corners was built, connecting the *donjon* with the building in the north (presenting the same plan, before the addition of the horse-shoe tower). Inside, a culvert may be found to pass underground, emptying at the main-gate.

A second hypothesis is that this tower was formerly a fortified chapel. Indeed, *donjon* churches were common in Crusader castles such as Saphet and are often found close to the entrance, offering spiritual protection (Margat, Kerak, Kyrenia). But in the case of Kantara, it is likely that the Byzantine fortified chapel was originally built at the highest spot of the site.

Construction

The surrounding wall of Kantara does not house a consistent set of buildings. They are placed on easy spots along the walls and in other easily accessible areas where rocks were found to be less craggy. There is some circulation layout in the castle, carved into the rock (*‘calade’* stairs that are simply nick cut in rock with slots to accommodate wood work for accessing certain buildings). Rock nick lines found in the buildings are an indication, firstly, of how rock was levelled down to enable the construction of walls, and secondly, of how the workers exploited the rock.

On the mountain summit stands the ruins of a quadrangular building known as ‘The Queen’s Chamber’ which was greatly coveted by the treasure-hunters of the 19th century.³⁰ This building, probably situated on the Byzantine observation point, may have been a fortified chapel destroyed by the Turks during naval bombing in 1525.³¹ The elevated south wall retains elements of a magnificent wide pointed-arch window.

It is evident that the bedrock was subjected to optimum exploitation for laying the founda-

²⁸ Goodwin, 1985, *An historical toponomy of Cyprus*, vol. I, 5ème edition MAM, 1160, 713. London. Since its rediscovery in 1839 by Lorenzo Warriner, Kantara Castle is so called because of the local Turkish name *Yuz bir ev*. It is described to consist of 20 rooms, some of which are underground? J. Richard, 1997, « Les révoltes chypriotes de 1191-1192 et les inféodations de Guy de Lusignan », in *Montjoie. Studies in crusade history in honour of Hans Eberhard Mayer*, Paris, ed. B.Z. Kedar, J. Riley-Smith, R. Hiestand, Aldershot: Variorum, pp. 123-8.

²⁹ La Monte 1936, 106, « *Dont il avint que le seignor de Baruth fu alé à la Candare veïr I grant trabuc que sire Anceau de Brie faisoit faire.* » Based on *Les Gestes des Chiprois*, Raynaud, 1887, p. 63, Molin, 2001, p. 111.

³⁰ Jeffery 1918, p. 268.

³¹ Jeffery 1903.

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tion for the buildings, as well as erecting them. The sandstone used in the construction, often rough, was subjected to coarse masonry. Despite the poor construction techniques, we see that the builder was careful to lay the stone in successive mortar beds in the same building. Thus, the construction of walls took place with three regular masonry strips, then a rubble stonework from bedrock and fillings of mortar and chipped stones to level the bed of masonry. Most buildings are abundantly coated with primer or plaster to hide the vestiges of the poor materials used in the construction, which complicates the study of the building.

The stones used in the construction were obtained locally for both economic and practical reasons (transport); only objects such as windows and doors, as well as the quoins and some vaults were made of *poros* (see above). This is a characteristic found in most buildings of the Frankish period in Cyprus, used for both aesthetic purpose and durability³² (its use was confined to cupola bricks, lintels and door posts). A path, therefore, needed to exist to facilitate the delivery of the materials to the site. Mules were used to transport enormous quantities of sand and lime.

All buildings have a roof terrace, to suit the low rain fall condition of the region. According to Philip of Novara's chronicles, the buildings were provided with bread ovens, and perhaps, also a mill.

Water is a problematic resource in the Near-East, and especially in Cyprus. Water supply must have been a preoccupation at Kantara, as the Pentadaktylos Mountains are characterised by an absence of sources of water (there were only thin streams of water, often dry in summer). It may be supposed that the only solution was harvesting rain water in catch tanks.

A sufficient quantity of water was required for the maintenance of the castle, during sieges or for the daily needs of the garrison. There are six cisterns in Kantara, and the main tank which feeds the large garrison is located out-

side the walls. To prevent failures of water supply and storage and mitigate against the dangers of water loss, it was essential to have such a large number of tanks. The holding volume of the tanks was determined by their number and the prevailing climatic conditions (In Cyprus, the months of rain being few, so the maximum storage of water is indispensable). Most tanks are dug into the rock or supported by it, with a water-based plaster made of thick mortar concrete and ground brick lining their interiors. Tanks with covers, often a vault, have an opening at the top to receive rain water, which flows in through the terraces and the upper levels of the castle. The dimensions of these facilities allow for large storage capacities and they are often situated in the medial parts of the castle (other than the great tank outside the *enceinte*). They are not built on the highest parts of the site but inside the walls for maximum protection and are found to be on the lower levels in the castle. This is to ensure the maximum reception of water. The positioning of the tanks demonstrates the builder's flair for strategic, defensive and practical thinking.

The Horse-shoe Tower

The 'U' shape of this tower combines the advantages of both semi-circle and rectangle, providing a vaulted passage inside (*figs. 11, 12*). Thus, it facilitates circulation and also provides optimum flanking. The 'U' shape is a lot less bulky than circular towers. It serves the same purpose and facilitates effective absorption of violent shocks received on the face of the tower by deflecting the impact.³³ When the plan of the tower is geometrically pre-designed, such as those in Kantara and Kyrenia (1208-1211), there is a pronounced architectural and physical harmony contributing to the strengthening of the building. Moreover, as in Kyrenia, the apsidal vault on the front of the tower and its Y shaped interior vault facilitate further shock absorption (*figs. 13, 14*).

³³ Mesqui 1991, *Châteaux et enceintes de la France médiévale, de la défense à la résidence*, vol. 1, les organes de la défense, Paris, édition Picard, pp. 304-305.

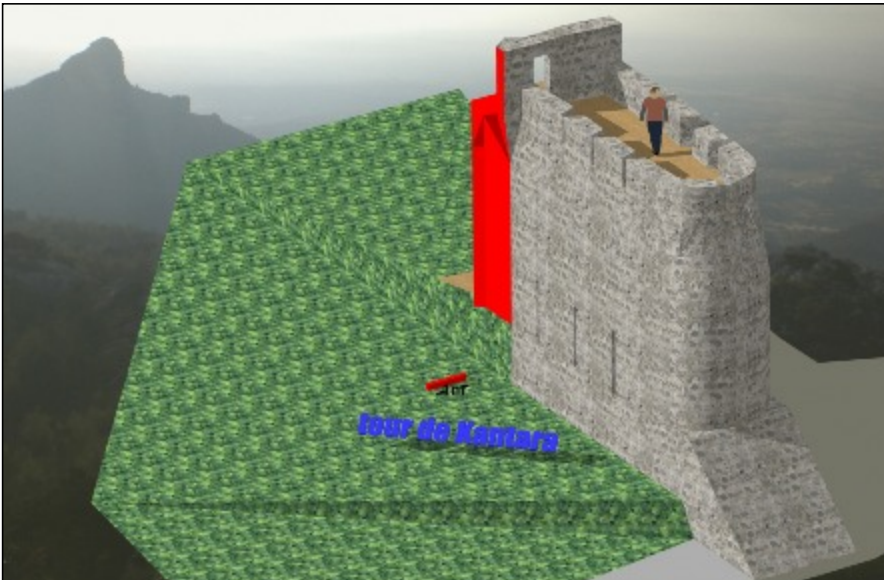
³² Faucherre in De Vaivre, 2006, p. 381.

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Fig. 11 - The Horse-shoe tower flanking the right-hand side of the entrance to the castle; Cl. Nicolas Morelle, 2008. Defence at two levels is perfectly adapted to the complicated relief features of the terrain. With 7 arrow-loops at each level - one is in the nose - the tower flanks the barbican as well as the platform below it.

Fig. 12 - A 3D computer rendering of the tower of Kantara, N. Morelle, 2011. The unique elongation of the tower offers better flanking and its U shape guarantees the plastic cohesion of the ensemble. The construction sits directly on the natural rock without any foundation except a talus protecting the face of the tower to prevent all possibilities of undermining.



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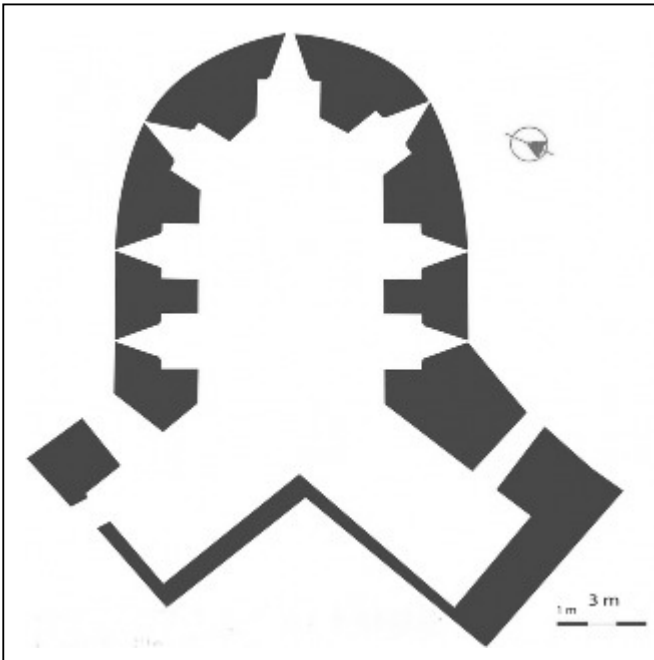


Fig. 13. ABOVE: - The Lusignan Tower of the castle of Kyrenia; Cl. N. Morelle, 2009. Also called the 'tour des Croisés', the tower may date from the Regency periods for either King Hugh I (1205-1218) or Henry I of Cyprus (1218-53) in the early thirteenth century. It remains the only unchanged part of the castle, with an innovative plan and its U shape easily adaptable to cannon. It has two vaulted levels as well as an intermediate terrace-like floor on the second level which has disappeared today.

Fig. 14. LEFT: - The plan of the castle of Kyrenia. The 'tour des Croisés', second level. N. Morelle, 2008.

Horse-shoe or U-shaped towers were common in Roman military architecture (Procopius, Philon of Byzantium, and Vitruvius). These treatises and this model were taken up by the Byzantines and were again brought to prominence in the 12th and the 13th centuries, particularly in the Crusader states. Though the model is often happily attributed to the Armenians, this theory has proved controversial with some preferring a western inspiration.³⁴ So how can it be supported? It is really difficult to substantiate the relationship of this model with the West, for example, by figures such as William Marshal at Pembroke or Chepstow, Richard I, or Peter of Savoy at Pevensey.³⁵ Therefore, one should avoid all chronological calibrations of towers of the 13th century in Cyprus during the reign of Hugh III in comparison to those in Western Europe because it is so uncertain. It is better to examine architectural influences from within Cyprus itself and the Near-East. An eastern inspiration is preferred and would generate an earlier date for Cypriot towers, either close to the period of Philip Chinard or before, during the reign of Henry Lusignan and the Regency of John of Ibelin. This seems more likely and in accordance with the history of the kingdom.

Arguably, the work of fortification in Cyprus, (especially in Saint Hilarion) and in Kantara for the construction of this tower, may have taken place before the War of Bailiffs, as it is a well-known fact that the Bailiffs chose to hide in this castle believing it to be capable of resisting the warfare practised during the time of Philip of Novara.³⁶

³⁴ Voisin, 2010, p. 241, Jean Claude Voisin shows that Armenians played a role in passing on the use of semi-circular towers of the Perso-Sassanids to the Byzantines and then the Crusaders. In contrast, Jean Mesqui suggests that this borrowing is from the West to the East in the thirteenth century; Mesqui, 2006, « la fortification des croisés au temps de Saint-Louis au Proche-Orient » dans *L'Architecture en terre sainte au temps de Saint-Louis, Bulletin Monumental*, pp. 5-29.

³⁵ Prouteau, 2008, p. 41; Petre, 2012 about Paphos

CONTEXTUALISING AND DATING

Kantara, an Eastern-Mediterranean fortress

In order to contextualise the castle of Kantara, it is necessary to examine the innovations and the architectural exchanges that took place between the West and the East. In such a setting, what was the role played by the seneschal John of Ibelin in the early part of the 13th century? Did he absorb the influence of Near-Eastern architecture that was then gaining impetus?³⁷ Following the battle of Hattin and associated events in 1187, new efficient military strategies were required to build new kinds of fortification and Oriental technicians were called for, which was beneficial for the renewal of the Crusader military architecture.

³⁶ Eydous 1982, 249, In the event that the tower dates from 1250 (assuming comparison with Cursat or Crac (Mesqui, Delorgne), it can be said that Philip of Novara besieged the castle of Kantara in 1229 while it was still in its Byzantine form, since there is no evidence of early phase of the *tenaille* (pincer) defensive system found on the site. on Cursat. The U shaped Towers date from 1256, and are built on the rock shape and have two defence levels with seven arrow-slits and a corridor leading to it.

³⁷ Molin 2001, 22. John of Ibelin strengthened and redeveloped Beirut citadel by the sea on the Levantine coast, after its destruction by the hands of Saladin, in an innovative way in the 13th century (William Oldenburg records a description in 1212), and Beirut would be besieged again in 1228 by the imperial troops during the Cyprus war between the Regent Ibelin and Frederick Hohenstaufen the Second. Although the recent excavation of Arsuf threw light on the campaign fortification undertaken by John II of Ibelin, and then his son Balian between 1241 and 1261, the defence system here is very different from that seen in Cyprus, perhaps built under John of Ibelin. It combines many Western-inspired elements, and its similarities are found in castles of the same period in France, Wales and England. Roll & B. Arubas in J. Mesqui, 2006, « Le château d'Arsur : forteresse côtière pentagonale du type concentrique du milieu du XIIIème siècle » dans *L'Architecture en terre sainte au temps de Saint-Louis, Bulletin Monumental*, pp. 67-80.

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For example, the concept of the barbican inspired by the East became a widespread feature in Crusader fortification of the second generation, and more importantly in the third. We find that the barbican in Kantara, in the form of an intermediary ward can be likened to the terrace wards of the castles of Cilicia in Armenia, where the topography of such wards show their defence hierarchy (Yilankale) (fig. 15). The Templars and the Teutonic knights were also important contributors of military techniques. For example, in the late 12th century, they introduced in Belvoir, Margat and Silifke, innovative and evolved gatehouses with wider entrance passages, often extending beyond the limit of the walls.

In Cyprus, the Ibelins called in Armenian experts from Cilicia³⁸ to construct their castles, and in fact it can be supposed that their similarities to many Armenian forts (Yilankale, Tumlu, Sis, Savranda) may be due to the aforementioned Armenian presence on the island³⁹ and the relationship between the two

kingdoms (though this assumption is questionable, it cannot be ignored, due to the convergence of historical sources and archaeological evidence). For example, the moulded arrow-loops of Kantara with lintels belong to a lesser known kind in the Near-East, but is found in some castles of Cilicia (Korykos, Silifke, Tumlu, Sis)⁴⁰ (figs. 16, 17). The fourth kind of masonry defined by Edwards comes from the Byzantine fortifications and shares some common aspects with Kantara. The summit chapel is characteristic of many Armenian fortifications and the building found high up on the site is likely to serve the same purpose.

In Cyprus, all castles belonged to the Crown, unlike the Oriental Latin states, Frankish Morea or the West (as before the growth of Royal power in France in the 13th century). Unlike kingdoms constantly prone to invasions, which were forced to depend on their vassals or the military orders for defence, Cyprus was rarely menaced by invaders, and therefore the island lived relatively in peace. Other than some Frankish towers to protect agricultural interests, Cypriot fortification was not intended for dominion over the territory.⁴¹ Its main purpose was to function as a fortified network around the coastline. Moreover, the island of Cyprus, like Rhodes Island,⁴² could count on its coastlines for defence, as the winds and the currents enhanced the natural defences of the coasts.

In Frankish Morea,⁴³ a plethora of castles were constructed between 1209 and 1278 by three Frankish princes who reused old or Byzantine

³⁸ Voisin 2010, 236, The presence of Armenian and Byzantine work is discerned in the Latin states of the East, such as Eumathias in Cyprus which sent assistance for building the castle of Tripoli, or such as the work of Armenians seen in Markab. So, perhaps we can think that the Ibelins used Armenians as builders.

³⁹ Kyrris 1970, 165; Kyrris 1984, 171; Morgan 1919, 178, Under the Byzantines, a large number of Armenians established themselves in Cyprus. The Byzantine army of Emperor Nicephorus II Phocas during the reconquest campaign of Cilicia, Cyprus and Crete in the late 10th century, already comprised a great number of Armenians, seen as great warriors. The garrisons installed on the island to control the coast were Armenian. Emperor Basil I the Macedonian chose Alexius the Armenian as the strategist for Cyprus, which was then under separate rule between Arabs and Greeks. Often linked to Byzantine rule, the Armenians of Cilicia gained greater independence with the arrival of the Crusaders and the emergence of the Latin States of the East. They turned against the Byzantines of Cyprus through the expedition of Renaud de Chatillon in 1155-1156 in order to destroy the island to set up a new Latin base. Many Armenians accompanied the crusaders.

⁴⁰ Mesqui 2003, *Quatre châteaux des Hospitaliers au nord du comté de Tripoli*. <http://pagesperso-orange.fr/jmsat.mesqui>

⁴¹ As opposed to the feudal model which sought to impose its controlling image on the people, its conspicuous role. Early Crusaders also built Frankish towers for this purpose in the Holy Land (Qaqun, Chastel Rouge) in Greece (Kalamata, Arcadia, Corinth, Neopatras).

⁴² The comparison ends there as Rhodes, unlike Cyprus which played a major strategic role, only had a symbolic role to play.

⁴³ Bon, 1969, 2 vol.

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Fig. 15. ABOVE: - The entrance to the Serpent Castle, Yilankale; Cl. N. Morelle, 2009. Flanked by two towers with arrow-slits, the double-door entrance is a common trait in the castles of Armenia in the 12th and the 13th centuries. Located on steep terrain at the heart of the Cilician plain, the Yilankale was long part of the principality of Antioch before coming into an intimate contact with Leo the First of Lesser-Armenia in 1188. Its plan and adaptation to suit the difficult topographical conditions of the terrain can be likened to the sites of the Pentadaktylos in Cyprus.



Fig. 16. LEFT: - The arrow-loop style of Kantara; Cl. N. Morelle, 2008; this pointed-arch niche embrasure perforates the enceinte, and flanks the barbicans and the towers at the entrance. The ingenious implementation of the construction far outstrips the pooriness of materials used, emphasising the use of good stonework in weak spots on the wall (here, the clavage or the junction of the vault of the recess is made of poros). Its typology and stonework are similar to Armenian craftsmanship (Edwards 1987; Hellenkemper 1976). (Toprakkale, Anazarva or (Anazarbus)) (Graphic scale: 42 cms).

sites. These appear to be castles of retreat, like in Cyprus, where the limited number of towers necessitated expert defence, and where, therefore, curtain walls were planned in accordance with the site's topography (a wide surrounding wall accommodating a number of buildings for the purpose of offering protection). These castles have few residential aspects to them, but come, nevertheless, with a fortified chapel. After 1204, they were also appointed to guard arterial roads and ports. Thus, when the Villehardouin prince occupied Clermont between 1222 and 1225, the castle he built cost him a lot less compared to those found on the Levantine coasts, built during the same period. Like in Kantara, the structure consisted of a barbican adapted to the topography of the site. Moreover, the scarcity of towers shows that this is also an observation fort. It is likely that the builders of this castle were natives⁴⁴ and used the locally available materials for its construction. Thus, the relatively poor construction techniques of architecture of the castle of Kantara, like those in Greece, hints a minor influence of Levantine Crusader fortification.

The figure of Filippo Cinaro/ Philip Chenart, Count of Conversano and Acquaviva emerges from this study. It is one of the rare names of lords to come to light from the period. Cinaro/Chenart, a native of Champagne of Troyes origin, settled in Cyprus, committed to Frederick II, and resisted the siege of John of Ibelin in Kyrenia until 1232. After his exile from Cyprus, he was designated by the emperor to oversee important constructions in Sicily and in Apulia.⁴⁴ He worked to defend the forts in Cyprus and it is to be noted that he was called for in the Latin states. His career shows his pragmatic approach to the technical exchanges between the East and the West.

⁴⁴ A more precise body of work is needed on sites in southern Italy (Bari, Rocca Janula or Trani, the latter completed by Filippo Cinaro in 1249). See: A. DIVICCARO, I castelli di Barletta e Trani, in *Castel del Monte e il sistema castellare nella Puglia di Federico II*, a cura di R. Licinio. (Bari, 2001), pp. 113-156.

Dating ⁴⁵

A comparative study of Cypriot fortification shows that the modification phases of Kantara are associated with building campaigns in the other parts of the island undertaken by the same patrons.

There are a few grey areas in its construction and its first modification (in 1092 by Alexius I Comnenus), or between 1185 and 1191 (by Isaac Comnenus), at the same time as its counterparts Buffavento and Saint Hilarion. Having brought forward the hypothesis of Armenian influence in the planning and building techniques of Kantara, it is necessary to state that the Armenians played an important role during the reign of these two Byzantine kings.⁴⁶ During Alexius' reign, it is possible they were appointed to construct forts along the northern coast and during his reign, a significant wave of migration from Armenia resulted in closely connecting Cilicia to Cyprus (although this would not be the first population exchange between the countries). Besides, Isaac's reign was during the same time as that of Leo I of Armenian Cilicia, who restructured the defence system of Cilicia, whose architecture, condi-

⁴⁵ With plans and careful study of elevations of Kantara Castle, a proper timeline may be established through a typology of the different parts of the fortress. Given the lack of archaeological data, that is to say the absence of archives of the ground and morphological and stratigraphic chronology, the information of the building are essential but must be treated with caution and systematically related to other sources.

⁴⁶ Howden 1867, 164-166; Kyrris 1970, 160; Hill 1940, 319-321. It is even suggested that the former Duke of Cilicia, the despot Isaac Komnenos placed great trust in the Armenians. Their immigration into Cyprus (1185) reinforced his troops, as noted by the chronicler of Richard the Lionheart, Roger of Howden, at the Battle of Agridi (1191), the opponent of the forces of Isaac: *venerut ad villam de Limezun, quam Grifones et Herminii* (Greeks and Armenians) together control the castles and towns of Cyprus. The Armenians had an equally important role in the revolt against Richard to restore the Byzantine emperor in 1191.

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Fig. 17 - Pointed-arch niche arrow-loop of Toprakkale; Cl. N. Morelle, 2009 (Graphic scale: 42 cms).

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tions and plan can be likened to those of Kantara. This first phase of Byzantine fortification between 1092 and 1191 can be validated by a comparison with Saint Hilarion castle which already had a defence system during the period with its long surrounding wall enclosing the two enormous peaks, which was added to the first watch tower and the orthodox monastery. Moreover, the castles on the Pentadaktylos were not included in the campaign fortification undertaken by Richard the Lionheart and Guy of Lusignan, because they were not found to require it, unlike the fortresses of the plains, and mainly those found on the coastal and the urban areas (Kyrenia, Famagusta, Nicosia,⁴⁷ Limassol).

This first phase is characterised by the addition of two tall square towers with rounded corners, flanking the entrance. Masonry tooling marks on walls and a change in the construction methods are visible on the stonework, connecting one of these towers to the horse-shoe tower. The latter thus completes the defence plan with 'pincers', whose platforms join these towers to form a barbican. A difference in the implementation can be noted between these two phases, as well as in the repair of the top of the curtain wall supported by the rounded corners of the northern tower. Therefore, a second modification can be dated between 1205 and 1228. The obsolete castles of the Pentadaktylos were remodelled using the innovative techniques from the Levantine coasts by John of Ibelin, Lord of Beirut, who could foresee the Lombard War from 1229 to 1232. The castle of Kyrenia was given a U tower, now called '*tour des croisés*' (either in 1208-1211⁴⁸ or 1219-1228⁴⁹), commissioned by the Regent. It is likely that the 'U' tower in Kantara was built at the same time, as it is based

on the same plan and is armed with the same kind of arrow-loops within deep arched embrasures.⁵⁰

The type of open fire and flanking used are also illuminating. The arrow loops of the barracks are placed at regular intervals and offer coverage of a moderate zone, where as those on the northern curtain wall, installed in accordance with the topography, have a wide range overlooking a cliff of 35 meters of height. The long stirrup-ended arrow loops of the entrance tower and flanks offer coverage of the barbican for cross fire. Chronologically, the arrow slits may be attributed to three construction phases: those on the Northern curtain wall are traditionally attributed to the Byzantine or Frankish period (given that this wall was demolished/lost, it is difficult to make a hypothesis⁵¹); those abutting the defence system of the entrance are of Frankish construction of the 13th century, and finally, those of the barracks were constructed in the 14th century.

The particular care given to the weak spots of the building such as the corners and the openings is also extended to the arrow slits. But this may have been out of ostentation or for ornamental purposes so as to bring them to the notice of the adversary. Visible from afar, these arrow loops complement the pincers entrance, playing their prestigious role of deterring the enemy. In Kantara, the shape of the arch of the arrow-slit niches is an indication of the use, almost exclusively, of the cross-bow. As the castle played a crucial role on the island, strict attention was paid to it. Despite masonry con-

⁵⁰ Enlart 1899, 653.

⁵¹ This problem of attributing either to the Byzantine or the Frankish rule arises from the poor conservation of the northern curtain wall. However, it seems that the arrow-slits are Frankish because their structures are constructed with *poros* (gritty limestone) and come with a plunging threshold. As seen on the arrow-slit almost completely preserved next to the latrines, all the arrow-slits had to be closed entirely by a vault. Some (northeast) are set in an arched embrasure. It can be found that the wall is built at the same time as the arrow-slits as their mortar is on the same level.

⁴⁷ The Byzantine citadel of Nicosia was destroyed and a Latin church was erected in its stead. The oldest visible parts of Limassol Castle are from the thirteenth century; however, it is possible that a Byzantine fortress predated it.

⁴⁸ Molin 2001, pp. 96-101. The campaign was possibly seen by Oldenburg during his visit that took place in 1212.

⁴⁹ Faucherre 2006, 388, this attribution is to the then Regent, Philip of Ibelin (1219-1228).

struction methods being rather archaic and local, the solidity of shapes and structures indicates a high degree of technical skill. The pincer system at the entrance is a product of great military thinking optimising the defence of the castle. A 'defence-spectacle' is seen in Kantara in accordance with the emergence of advanced treatises on defence and an improved concept of flanking. The pincer system must have been an impressive feature to behold at the time, and it would not be an unfitting statement to say that it still is.

An exceptional castle in all respects, Kantara merits a more detailed study. But the political issues in the northern part of Cyprus renders archaeological survey of the area difficult. My research highlights the importance of Oriental influences, be they Latin, Arabic or Byzantine. It is also likely that Armenian traditions and technologies played a part. A re-examination of Cypriot fortification within the overall subject of East-West influences, is necessary for its inclusion in the ensemble of Oriental castles, as it is difficult to argue the subject while dealing with Cypriot architecture studies only. Resemblances with the castles in the West must not be looked for, with a perspective of 19th century historiography. The plan of this mountain castle is atypical. It is adapted to the morphology of the site. Therefore, it is only with the defence system of the entrance, an example of 13th century active defence, that one can establish concrete comparisons with other areas. This type of entrance, that looks like the pincers of a crab, has a strong connection to Armenian Cilicia. The Oriental Latin nobility can be seen to participate actively in these exchanges and then in the diffusion of innovative techniques leading to the general evolution of architecture of fortification in the 12th and the 13th centuries in the East. Kantara is the fruit of myriad exchanges of techniques that took place in the Mediterranean belt, thus creating a common identity from all these cultures.⁵²

⁵² Prouteau 2008, a common heritage in the Mediterranean, *Fortifications of the Crusades*, ICO-MOS France, 119 pp.

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Illustrations

Fig. 1a - Kantara Castle from the south.

Fig. 1b - H. W. Seton-Karr, *Cyprus, Kantara Castle*, 1922.⁵⁴ Cl. N. Morelle, 2008.

Fig. 2 - Geographic location of the island of Cyprus in the Mediterranean, with its cities and principle medieval castles; below: part of the topographic map Cyprus, Kantara region, Lord H. H. Kitchener (Royal Engineers), 1882. Realisation N. Morelle, 2009.

Fig. 3 - Timeline. Developed by N. Morelle, 2009.

Fig. 4 - The War of Bailiffs 1229-1232 (frontiers as of 1241), Cyprus and Levantine coasts,⁵⁵ N. Morelle, 2009.

Fig. 5 - French 1581. Fol. 8v, Siege of Maupertuis described in the Roman de Renard, 14th century, Cl. BNF.

It may be supposed that this is an imaginary transposition of the siege of Kantara by the chronicler Philip of Novara, author of *Gestes des Chiprois*,⁵⁶ who took part the same in 1232.

Fig. 6 - Castle of Saint Hilarion.⁵⁷ Cl. N. Morelle, 2008.

Extending over the medieval port of Kyrenia, this ancient Byzantine monastery was transformed in early 13th century into a powerful fortress and the residence of the Lusignan kings.

Fig. 7 - Cistern in Kantara; Cl. N. Morel, 2008. This enormous cistern, supported by three buttresses, is built outside the enceinte, below the castle, to optimise water reception. Built for providing a considerable number of soldiers when the castle became a garrison in the late 14th century, the tank underlines the importance of water in the region.

⁵⁴ According to Severis, 2000, *Travelling artists in Cyprus 1700-1960*, London.

⁵⁵ For a better appreciation of the historical cartography of the Crusades: Riley-Smith 1996, *Atlas des Croisades*, Paris, France.

⁵⁶ Melani 1994.

⁵⁷ Megaw 1963.

The Castle of Kantara

Fig. 8 - The plan of Kantara, N. Morelle, 2009.⁵⁸ The three main phases of construction observed in the castle of Kantara correspond to its evolution from a Byzantine watch tower into the garrison castle of James the First, having been a power castle of the 12th and 13th centuries.

Fig. 9 - The entrance of Kantara, Cl. N. Morelle, 2008. On the foreground: the barbican is protected by the South tower and its turret below. To the right: the main entrance.

Fig. 10 - Stone round-shots recovered by the entrance of Kantara. Cl. N. Morelle, 2008. These round-shots (of a trebuchet) are surely vestiges of the attack that took place in 1232, recounted in the chronicles of Philip of Novara during the siege of the War of Bailiffs. (Graphic scale: 14 cms).

Fig. 11 - The Horse-shoe tower flanking the right-hand side of the entrance to the castle; Cl. Nicolas Morelle, 2008. Defence at two levels is perfectly adapted to the complicated relief features of the terrain. With 7 arrow-loops at each level, the tower flanks the barbican as well as the platform below.

Fig. 12 - 3D computer rendering of the tower of Kantara, N. Morelle, 2011.

The unique elongation of the tower offers better flanking and its U shape guarantees the plastic cohesion of the ensemble. The construction is directly on the natural rock without any foundation excepting a talus protecting the face of the tower to prevent all possibilities of undermine.⁵⁹

Fig. 13 - The Lusignan Tower of the castle of Kyrenia; Cl. N. Morelle, 2009. Also called the 'tour des Croisés', this tower is attributed to John of Ibelin,⁶⁰ when he was the Regent to Henry Lusignan the First, in the early 13th century. It remains the only unchanged part of

the castle, with an innovative plan and its U shape easily adaptable to the canon. It has two vaulted levels as well as an intermediate terrace-like floor on the second level which has disappeared today.

Fig. 14 - The plan of the castle of Kyrenia. The 'tour des croisés', second level. N. Morelle, 2008.

Fig. 15 - The entrance to the Serpent Castle, Yilankale; Cl. N. Morelle, 2009. Flanked by two towers with arrow-slits, the double-door entrance is a common trait in the castles of Armenia in the 12th and the 13th centuries. Located on a steep terrain at the heart of the Cilician plain, the Yilankale basked for long in the lap of the principality of Antioch before coming into an intimate contact with Leo the First of Lesser-Armenia in 1188. Its plan and adaptation to suit the unruly topographical conditions of the terrain can be likened to the sites of the Pentadaktylos in Cyprus.

Fig. 16 - The arrow-loop of Kantara; Cl. N. Morelle, 2008; this bay of shooting perforates the enceinte, and flanks the barbicans and the towers at the entrance. It was found within a building. The ingenious implementation of the construction far out-strips the poorness of materials used, emphasising the use of good stonework in weak spots on the wall (here, the clavage or the junction of the vault of the bay is made of *poros*). Its typology and stonework are similar to the Armenian craftsmanship⁶¹ (Toprakkale, Anazarva or (Anazarbus)) (Graphic scale: 42 cms).

Fig. 17 - Arrow-loop of Toprakkale; Cl. N. Morelle, 2009 (Graphic scale: 42 cms).

Nicolas Morelle, PhD student, LA3M (UMR 7298), University of Aix-Marseille, France.

Nicolas.morelle@hotmail.fr

⁵⁸ After the plan of Papageorgiou, 1969 fig. 1

⁵⁹ Edwards 1987, 12, this principle of perfect adaptation is also observed in the Armenian military construction in the contemporary Cilicia (preventing saps and mines)

⁶⁰ Megaw 1964.

⁶¹ Edwards 1987; Hellenkemper 1976.