Venetian and Ottoman Heritage in the Aegean

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Venetian and Ottoman Heritage in the Aegean

The Bailo House in Chalcis, Greece

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Chapter 3D

Dendrochronological Dating of the Bailo House with a Supplementary Comment on the Church of Ayia Paraskevi

Tomasz Ważny, Peter Kuniholm, and Charlotte Pearson

Restoration work on the Bailo House included also a dendrochronological survey of the building, with samples covering and providing evidence for all the detected building phases. Furthermore, the close connection of the complex to the adjoining building of Ayia Paraskevi (built as a Dominican church, then transformed into an Ottoman mosque, and now an Orthodox church),[1] is further documented thanks to the results of the dendrochronological examination carried out by Peter Kuniholm and C. L. Striker in 1977 and 1979. These are also here presented in detail for the first time, following a much earlier summary publication. We believe that the correlation of the data from the Bailo House and Ayia Paraskevi can offer an insight into the shared history and the transformations that this part of the city underwent over the centuries.

The Bailo House

The removal of numerous later elements, as well as being able to access the entire wooden structure exposed during the restoration work in the interior of the Bailo House, provided numerous opportunities for systematic dendrochronological study. Dendrochronology (or tree-ring dating) is a science based on wood biology and therefore is independent from other historical proxies. It provides precise dates for wooden elements and constructions and has become one of the most important analytical methods applied to the study of historical monuments both for the dating and the provenance of the timbers themselves. Timber was used for the construction of the floors and walls (**Fig. 1**), the roof, and reinforcement of the stone-masonry. At least five wood species have been used inside the building: an unidentified oak species (*Quercus* sp.), local fir (*Abies cephalonica*), imported fir (probably *Abies alba*), imported spruce (*Picea* sp.), and local pine (*Pinus brutia/halepensis*).

Fig. 1. Venetian part of the Bailo House. Southern wall with ends of the first floor beams exposed. Dating results: AD 1327–28.

Methods

Wood samples were taken in the form of saw-cut slices (**Fig. 2**) and drilled cores. The surfaces of the samples were prepared in the laboratory to expose the tree-ring boundaries. Next, the samples were measured using a LINTAB platform under a reflected-light microscope. Tree-ring widths were the measured parameter and had a 0.01 mm precision of measurement. The tree-ring series were registered on a TSAPWin system. Cross-sections of the oak support system (headers and stretchers) inside the masonry that could not be moved were cleaned with sandpaper and measured *in situ* (**Fig. 3**).

The procedure of dendrochronological analysis requires three steps. First, the tree-ring series representing different radii of the same timber are compared to verify the quality of the measurements and to assess possible growth

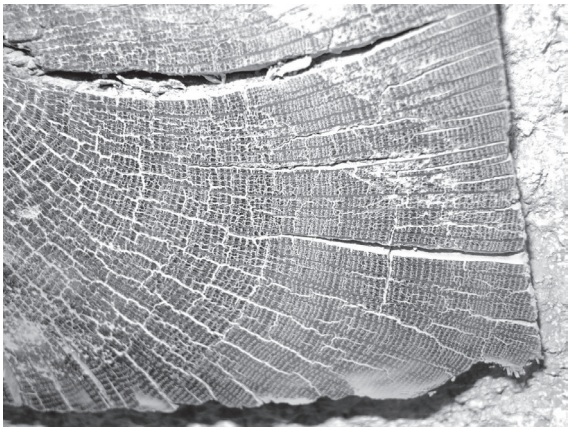


Fig. 2. Cross-section of an oak header, measured *in situ*. Sample number 79. The last preserved ring is from 1301, heartwood/sapwood boundary. The estimated felling date is AD 1327–29.

Fig. 3. Samples taken from both ends of beam no. 53, south wall, first floor (before sanding). The last preserved ring grew in AD 1327.

anomalies. Next, the datasets from each timber are cross-dated with other timbers from the same structure and of the same species. This ensures grouping of timbers representing the same period and geographical origin. In the third step the resulting chronology is compared with absolutely dated master chronologies. The TSAPWin[2] and DENDRO for Windows 10[3] systems were used for calculation of supporting statistical parameters.

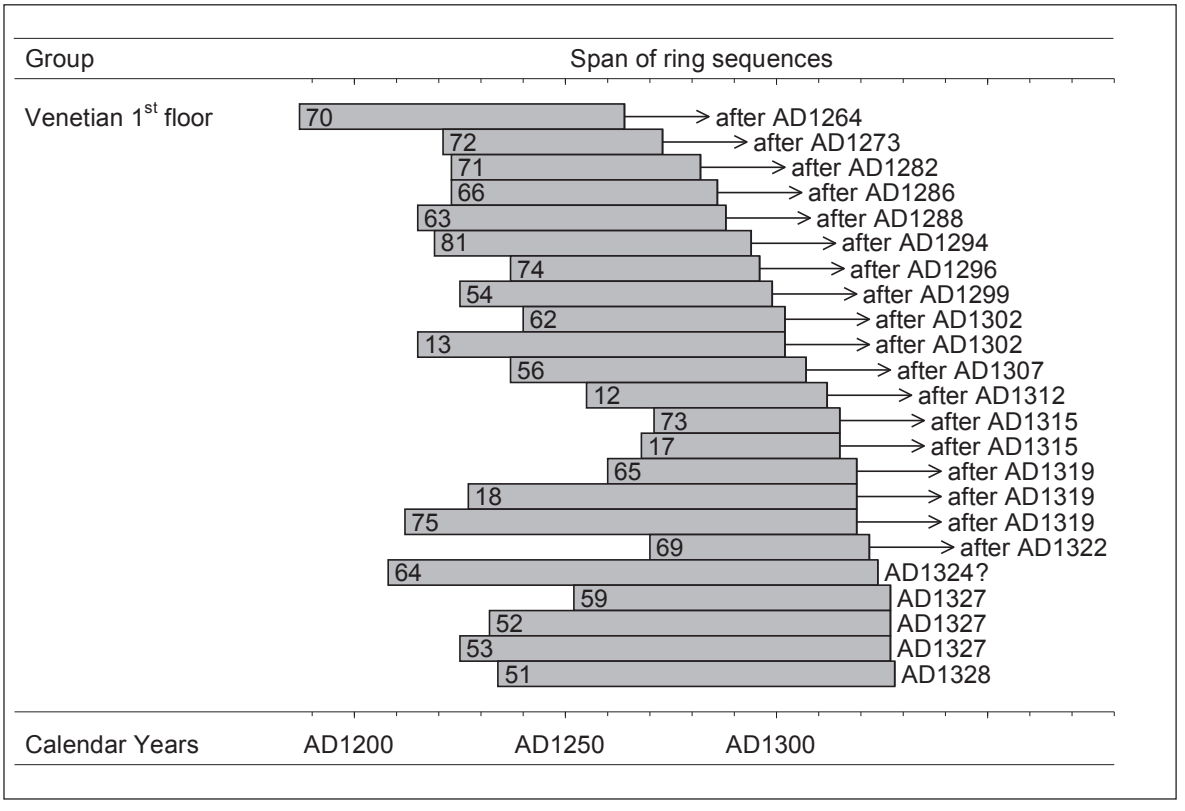


Fig. 4. Venetian first floor (fir) — dating results.

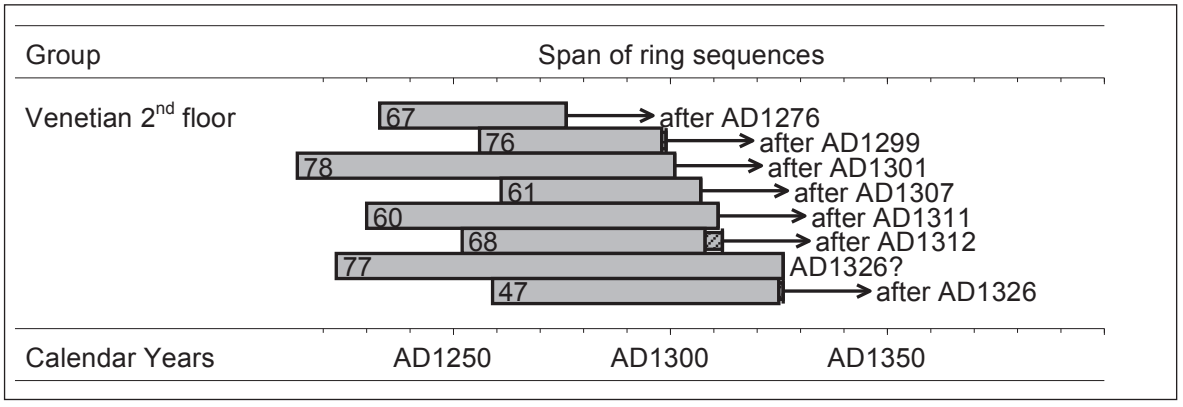


Fig. 5. Venetian second floor (fir) — dating results.

Results

South wing (Venetian)

The first floor was built according to a construction technique that was employed in Venice from 1300–1425.[4] Similarities with the Palazzo Ducale floor would likely place it after 1340. The dendrochronological dating results place the construction of the first floor at the beginning of the expected period — in the years 1327–28 (**Fig. 4**). All timbers are of local fir; therefore, long-distance transportation from forest to construction site could be excluded.

According to our original assumption, the second Venetian floor was built following a technique prevalent in Venice from 1400–1550.[5] The dendrochronological results from the same type of wood used in the second floor contradict this assumption and yield the same construction date as the first floor (**Fig. 5**).

Dating results are based on a 142-year-long fir sequence developed for twenty-seven selected pieces from the first and second floors of the Venetian wing (chronology CHAL101m). This sequence representing the total available sum for this construction was compared with all existing Aegean chronologies. Two of them gave highly significant results: Kuniholm's 'Aegean All' chronology and Ważny's cypress chronology. Statistical confirmation of the tree-ring dating is in **Table 1**.

Evidence for a similar date for the fir was provided by two oak headers protruding from the east wall of the Venetian wing. Cross-dating against the Aegean oak chronologies yielded identical dates in the early fourteenth century for the first and second floors (**Fig. 6**).

TABLE 1. Results of statistics displaying correlation between the tree-ring series CHAL101m and selected Aegean tree-ring chronologies. 'TH-values' (calculated according to Hollstein, 1980) above 4.0 are significant; 'GL' represents the percentage of year-to year changes in ring widths that are the same (both increasing or decreasing) between the ring-width sequence in a section and the reference chronology (Eckstein and Bauch, 1969); 'CDI' is 'Cross-Dating Index'.

Chronology	overlap	GL (percentage of agreement)	T_H (t-value after Hollstein)	CDI (Cross Dating Index)
Aegean all (Kuniholm)	142	67	**5.8**	**41**
Cretan cypress (Ważny)	142	67	**6.1**	**36**

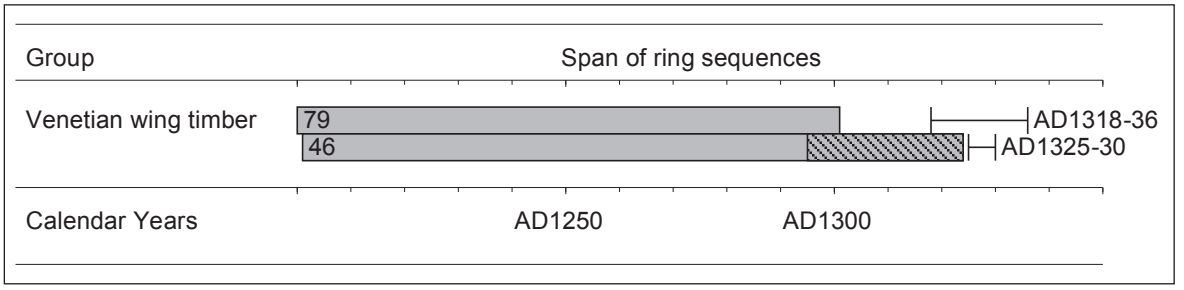


Fig. 6. Oak timbers from the Venetian wing — dating results. The hatched line indicates sapwood and the proximity of the bark.

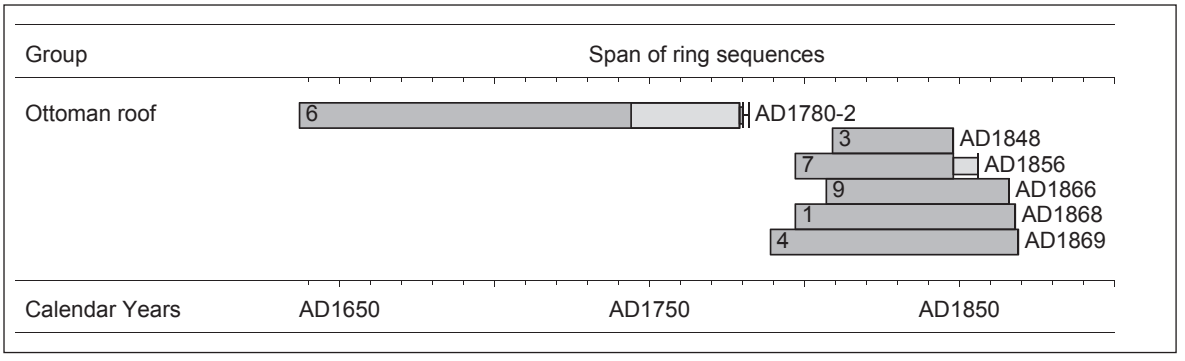


Fig. 7. Ottoman or post-Ottoman roof construction — dating results (hatching indicates sapwood).

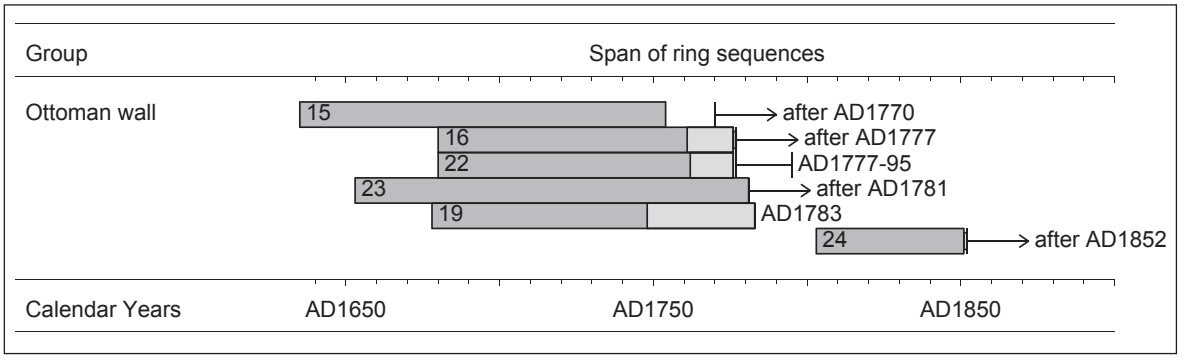


Fig. 8. Ottoman framework construction, five oak and one pine, first floor timber walls — dating results.

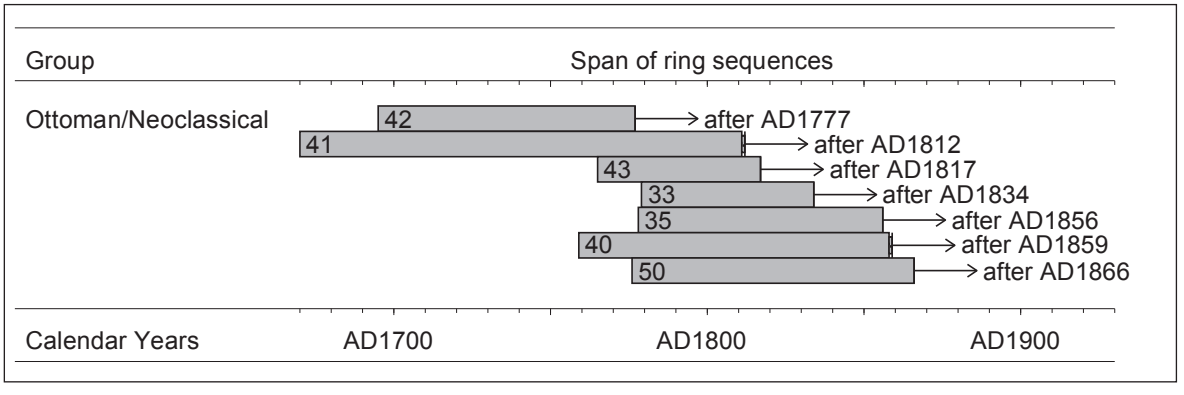


Fig. 9. Ottoman/neoclassical floor dating results.

North wing (Ottoman)

The north wing of the Bailo House, based on its architectural features and the excavation results, can be attributed to the eighteenth century. The big earthquakes in 1853–84 could have led to both repair and reinforcement work. In addition to the emergency earthquake repairs, modifications were also done to match the building to a neoclassical style sometime in the nineteenth century. In addition, the 1964 renovation work on the complex (doors and windows) is clear, as is the repair work to floors and roof in 1971.

The roof structure classified as 'Ottoman' contained mainly fir beams with end dates just after the middle of the nineteenth century, specifically from the time after the 1853 earthquake (**Fig. 7**). Only a single measurable and datable oak beam from the Ottoman roof was found in a heap of discarded roof timbers. The cutting year for the tree was 1780–82, so this represents a pre-earthquake modification.

The Ottoman framework is from the same time as the single dated oak roof beam. One beam with completely preserved sapwood and bark edge was dated to 1783. The other oak elements support this date (**Fig. 8**). An exception is timber no. 24 (pine) which was cut after 1852 and probably is a replacement after the 1853–84 earthquakes.

All dated floor planks were made of imported fir and spruce. Not one of the dated planks had a preserved bark edge; therefore, only the earliest possible cutting years could be obtained (**Fig. 9**). The origin of the dated planks is most likely the Adriatic region or the Alps, except for sample no. 50, dated after AD 1866 against the Gazipaşa fir chronology (Antalya, Turkey).

All details of obtained results are presented in **Table 2**.

The church of Ayia Paraskevi: supplementary comment by Peter Kuniholm on the dendrochronological results

In 1977 and 1979, dendrochronological investigations were made by Kuniholm and Striker in the splendid gothic church across the square and immediately to the east of the Bailo House. At that time, we reported an end date of 1726+ for oak timbers in various suppressed windows and doors in the north and south flank walls of the church (**Fig. 12**).[6] Our ladder gave us access to the roof from the west gallery (**Fig. 11a**). Cores taken from the heavily squared roof truss brackets were of a long-lived conifer that fit nothing we had in the Aegean, since the latter did not go

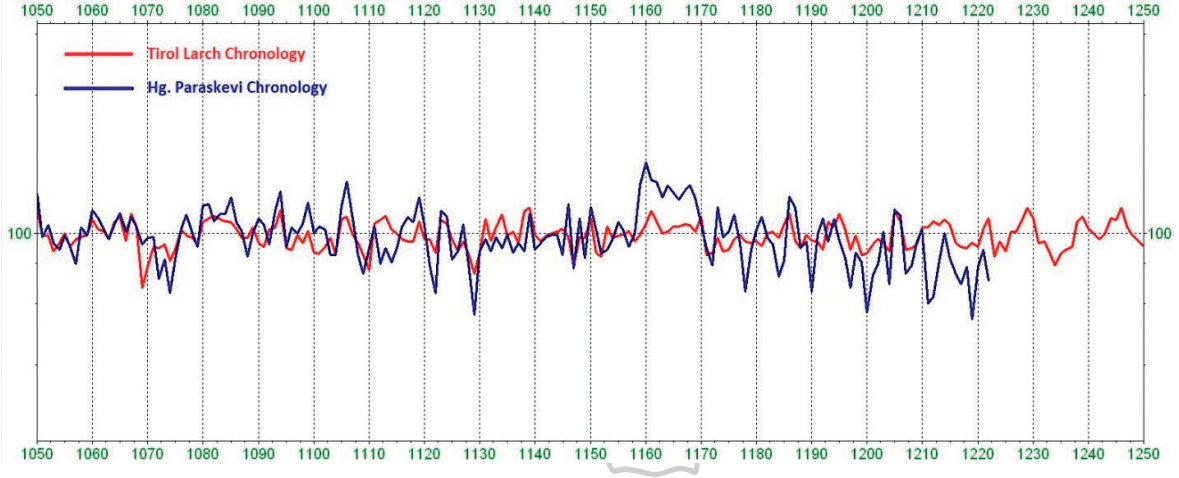


Fig. 10. Comparison of the PSKLARCH sequence with the Innsbruck Alpine larch chronology. The statistics confirm the visual correlation between the two tree-ring series: first, the overlap of 213 years is good; then the TH-value of 11.2 (calculated according to Hollstein 1980), where scores above 4.0 are significant; GL represents the percentage of year-to-year changes in ring widths that are the same, both simultaneously increasing or decreasing (45 per cent–55 per cent would be a random fit) between the ring-width sequences of the two chronologies (Eckstein and Bauch 1969); CDI, the Cross Dating Index which is the sum of the two, is 72. A CDI of 40 is good. A CDI of 72 is excellent.

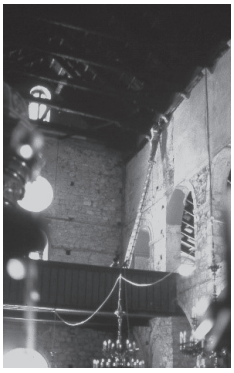


Fig. 11. (a) Access to the truss brackets. (b) The winged lion of St Mark holding the Bible on PSK-8. (c) The shield and cross, decorated with a bishop's crozier on the upper left and the crossed keys of St Peter on the upper right on PSK-9.

back before 1255. Many years later, on a visit to Innsbruck, Kuniholm exchanged data with Kurt Nicolussi, who had a long Alpine larch (*Larix* sp.) chronology against which we finally could match the Ayia Paraskevi timbers to 1223, with an unknown number of rings missing on the exterior.[7] So, the dendrochronological story at Ayia Paraskevi is as follows:

Primary phase (Venetian), four cores, all larch (*Larix decidua),* all heavily squared

PSK-8 North wall of naos, roof truss bracket, fifth from west, decorated with five tetrahedral saw teeth on each side, a standing row of red hooks, and on the end a painted shield with a rampant winged lion of St Mark holding the Bible (originally invisible from floor level until dusted off prior to the drilling). One hundred eighty-seven rings from 1026 p.-1212+?

PSK-9 North wall of naos, roof truss bracket, fourth from west, decorated with five tetrahedral saw teeth, painted triangles along the edges, painted decorations along the sides that could not be deciphered in the available light, and on the end a painted shield, large white cross, a bishop's or archbishop's crozier in the upper left quadrant, and crossed keys (representing the metaphorical keys of the office of St Peter) in the upper right quadrant (also invisible from floor level until dusted off). Two hundred thirteen rings from 1010–1222+? (**Fig. 11c**).

PSK-20 North wall of naos, third roof beam bracket from west. (The first four trusses were supported by wood corbels at the north end, which we were unable to core.) No decoration noticed. One hundred thirty-nine rings from 1026–1164+?

PSK-21 North wall of naos, north bracket of second nave rafter from west. Carved like PSK-8 and PSK-9, but wider and with a carved checkerboard pattern. Sixty-three rings from 1129–1188+?

These four cores were combined into

Fig. 12. (a) The north flank wall after the conservators had stripped off the plaster. The suppressed window is in the middle. (b) A typical Turkish-style lintel and transverse beams. (c) The south flank wall from the interior with the blocked window behind the candelabra. Before the nineteenth-century earthquakes the nave arcade, where now the rectangular windows are above the west gallery, would have continued on one more intercolumniation to the columns which abut the west wall on the exterior and then most likely one more interval beyond.

PSKLARCH, a 213-year sequence from 1010–1222. The quality of the fit with the Innsbruck larch sequence is presented above (**Fig. 10**). A missing two or three or four centimeters of wood, lost during the process of squaring the timbers, would add some 40/60/80 years to the end dates reported here, thus fitting in neatly with the time (1261) when the Latin Patriarchate was translated from Constantinople to Negroponte.[8] A missing four centimeters of wood would place the cutting date for Ayia Paraskevi at about the same time as the building of the Bailo House at 1328. Which building was built first is for the historians to tell us.

Larch timbers from this period whose ring-patterns match both those of the Ayia Paraskevi and the Alpine chronologies are to be found in the Church of the Nativity in Bethlehem and in the al-Aqsa Mosque in Jerusalem.[9] This means that the Venetians were busy transporting and selling their high-quality larch timbers all over the eastern Mediterranean to anybody who had enough silver to pay for them.

Later phases, all oak (*Quercus* sp.) from the Ottoman period

A number of plans of Ayia Paraskevi have been published, among them by R. Traquair, Th. Theochares, and I. Liapis.[10] There is considerable difference among them: notably an unnecessary squaring-off of the eastern end of the building. Only one of the architects seems to have been aware of the suppressed windows or doors on the north and south flank walls.

The earliest intervention seems to be in the naos, north flank wall, part of the filling below a disturbed western lancet window between the buttresses (see plan, **Fig. 12a**), drilled from the interior where it might still be visible. The last preserved ring is from 1467. With an allowance for some more years of sapwood, the cutting date should be in the late 1470s or early 1480s. Remember that the Ottoman conquest dates from 1470, only a decade or so earlier.

Later interventions (now suppressed windows or doors) are in the naos and all date from the early eighteenth century (Ottoman period). The following rennovations are not the ones with 'pointed relieving arches' mentioned by Traquair.[11]

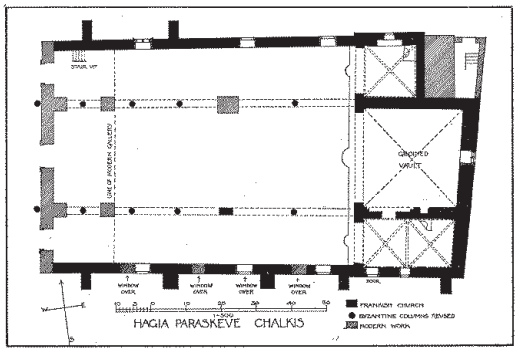
- South flank wall, upper east nailer (to which a door or window would have been attached) in the easternmost blocked window (the fourth blocked window from the west, behind the candles in **Fig. 12c**). Estimated date 1731. Since sapwood begins in 1714, 1731 is near the cutting date for PSK-15.

- South flank wall, second blocked window from east (the third blocked window from west, see **Fig. 12c**), last preserved ring on PSK-1, 2, 3, 11 is 1726. Since sapwood begins in 1709, 1726 is near the cutting date.

- South flank wall, third blocked window from east (the second blocked window from the west). Two samples, PSK-12 and

14, end in 1717 and 1716, respectively, with the latter having six sapwood rings. That would place the cutting date in the late 1720s or early 1730s.

Early in the Ottoman period, and again two and a half centuries later, these interventions were made, obviously by the Muslims using the mosque, and due to the need for more light. The construction style conforms to that of many monuments in northern Greece. These mosque rennovations date about half a century earlier than the oak constructions in the Bailo House.



Nineteenth century

During or after the nineteenth-century earthquake(s), the west façade of Ayia Paraskevi fell down and was rebuilt. We collected some small but very short-lived, and therefore undatable, samples. The longest one, PSK-5, had only fifty-nine rings. The original west wall of Ayia Paraskevi stood about 15 m west of where it is now. The nineteenth-century rebuilders of the church truncated it, leaving the westernmost columns standing in place as apparent decorative elements (**Figs 13a–b**).

Conclusions

In both the Bailo House and Ayia Paraskevi, dendrochronological analysis has provided some

Fig. 13. (a) The plan by Liapis showing how the exterior columns are at the exact proper distance from the westernmost column on the interior so that the arches seen in fig. 10c above would have continued beyond the present western wall of the church. (b) The west façade of the church from the nineteenth-century rebuilding. The Venetian building would have extended one more intercolumniation or some fifteen meters further out into the *plateia*.

important insight into the construction, dating, and definite or possible origin of structural wood materials. This evidence in turn feeds directly into the ongoing heritage of these important structures and expands detail on the Venetian and Ottoman period in Greece as a whole. This study demonstrates the value of tree-ring evidence, even when dealing with wood that has been cut and shaped for construction; even if the outer rings of the tree have been lost, the tree-ring data can contribute significantly to our understanding of buildings and those who built them.

Acknowledgments:
This study was realized with the financial support of the Malcolm H. Wiener Foundation and the National Science Centre, Poland (Grant Nr. 2016/22/A/HS3/00285). Kuniholm's and Striker's work in 1977 and 1979 was supported by the National Geographic Society, the National Science Foundation, and the National Endowment for the Humanities.

Notes

1 See below, Chapter 4A.
2 Rinn 2011.
3 Tyers 2018.
4 See Chapter 3C.
5 See Chapter 3C.
6 Kuniholm and Striker 1987.
7 Kuniholm, Griggs, and Newton 2007.
8 Koder 1973; Koder and Hild 1976.
9 For the Nativity Church, see Bernabei and Bontadi 2012; for the al-Aqsa Mosque, see Lorentzen et al. 2010.
10 Traquair 1923; Theochares 1960; Liapis 1972.
11 Traquair 1923.

A/A ΔΕΙΓΜΑΤΟΣ												
SAMPLE NO	PROVENANCE	IN SITU	PART OF THE BUILDING	EXPECTED DATING	NOTES	DATE SAMPLED	No of tree-rings	Sapwood	Bark	Cross-dating	Final result	wood ID
CHAL 1	Ottoman/neoclassical roof truss tie beam	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	72		Y	AD 1797-1868	1868/1869	Abies sp.
CHAL 2	Roof small beam (underneath trusses)	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	40		N	undated		Pinus brutia
CHAL 3	Ottoman/neoclassical roof truss tie beam	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	40		Y	AD 1809-1848	1848/1849	Abies sp.
CHAL 4	Ottoman/neoclassical roof truss tie beam	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	81		Y	AD 1789-1869	1869/1870	Abies sp.
CHAL 5	beam from roof timber heap	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	54		Y	undated		Picea sp.
CHAL 6	beam from roof timber heap	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	143 (+1)	35	?	AD 1637-1779	1780-1782	Quercus sp.
CHAL 7	beam from roof timber heap	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	52 (+8)		Y	AD 1797-1848	1856	Abies sp.
CHAL 8	beam from roof timber heap	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	59		N	undated		Abies sp.
CHAL 9	small beam from timber heap	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	60		Y	AD 1807-1866	1866/1867	Abies sp.
CHAL 10	small beam from timber heap	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	33		N	undated		Pinus brutia
CHAL 11	small beam from timber heap	YES	Ottoman Roof Construction	1700-1900	Either ottoman, or neoclassical	July 2013	34		Y	undated		Pinus brutia
CHAL 12	Venetian corbel, found on roof/walls of ottoman wing	NO	1st Venetian Floor ?	1300-1470	Venetian corbel reused in ottoman wall	July 2013	58		N	AD 1255-1312	after 1312	Abies cephalonica
CHAL 13	Ex situ venetian floor beam from first floor. It has mortises for fixing the *"pettenelle"*	NO	1st Venetian Floor ?	1300-1470		July 2013	88		N	AD 1215-1302	after 1302	Abies cephalonica
CHAL 14	Ex situ venetian beam from first floor.	NO	1st Venetian Floor ?	1300-1470		July 2013	75		N	undated		Abies cephalonica
CHAL 15	from timber frame wall (T21)	YES	Ottoman 1st floor timber frame walls	1700-1900	Either ottoman, or neoclassical	July 2013	120	0	N	AD 1635-1754	1780+x/-9	Quercus sp.
CHAL 16	from timber frame wall	YES	Ottoman 1st floor timber frame walls	1700-1900	Either ottoman, or neoclassical	July 2013	97 (+1)	16	N	AD 1680-1776	1787±9	Quercus sp.
CHAL 17	Ex situ venetian floor beam	NO	1st Venetian Floor ?	1300-1470		July 2013	48		N	AD 1268-1315	after 1315	Abies cephalonica
CHAL 18	Ex situ venetian floor beam	NO	1st Venetian Floor ?	1300-1470		July 2013	94		N	AD 1227-1319	after 1319	Abies cephalonica
CHAL 19	from timber frame wall (T21), #17	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	106	35	Y	AD 1678-1783	1783/1784	Quercus sp.
CHAL 20	from timber frame wall (T16), #133)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	60		N	undated		Abies sp.
CHAL 21A	from timber frame wall (T16), #98)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	94	3	N	undated		Quercus sp.
CHAL 21B	from timber frame wall (T16), #98)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013						
CHAL 22A	from timber frame wall (T21), #11)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	97	14	N	AD 1680-1776	1786±9	Quercus sp.
CHAL 22B	from timber frame wall (T21), #11)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013						
CHAL 23A	timber frame wall	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	129	0	N	AD 1653-1781	after 1781	Quercus sp.
CHAL 23B	timber frame wall	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013						
CHAL 24	timber frame wall	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	49 (+1)		N	AD 1803-1851	after 1852	Pinus brutia

TABLE 2. Provenance, characteristics and dating of wood samples and tree-ring series.

CHAL 25A	from timber frame wall (T16), #82)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	51		N	undated		Abies sp.
CHAL 25B	from timber frame wall (T16), #82)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013						
CHAL 26	from timber frame wall (T21), #20)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	50		N	undated		Pinus brutia
CHAL 27	from timber frame wall (T16), #129)	YES	Ottoman 1st floor timber frame walls	1700-1900		July 2013	92 (+1)		?	undated		Abies sp.
CHAL 28	ottoman floor or ottoman frame wall	NO		1300-1470		July 2013	63		N	undated		Pinus sp.
CHAL 29	floor plank	YES	Ottoman or Neoclassical floor	1700-1972	floor planks could belong to ottoman era, 19th century or even modern modifications	July 2013	58		N	undated		Picea sp.
CHAL 30	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	55 (+1)		N	undated		Picea sp.
CHAL 31	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	65		N	undated		Abies sp.
CHAL 32	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	29		N	undated		Picea sp.
CHAL 33	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	56		N	AD 1779-1834	after 1834	Picea sp.
CHAL 34	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	38 (+1)		N	undated		Abies sp.
CHAL 35	floor plank from ottoman bay window	YES	Ottoman or Neoclassical floor	1700-1800		July 2013	79		N	AD 1778-1856	after 1856	Picea sp.
CHAL 36	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	164 (+1)		Y	undated		Abies sp.
CHAL 37	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	35 (+1)		N	undated		Picea sp.
CHAL 38	South wall tie beam (level between 1 and 2)	YES	Venetian wing timber masonry lacings	1300-1470		July 2013	93	0	N	undated		Quercus sp.
CHAL 39	South wall tie beam (level 2), corner, right , coming from W extention of S wall	YES	Venetian wing timber masonry lacings	1300-1470		July 2013	45	0	N	undated		Quercus sp.
CHAL 40	floor plank	YES	Ottoman or Neoclassical floor	1700-1972	floor planks could belong to ottoman era, 19th century or even modern modifications	July 2013	100 (+1)		?	AD 1759-1858	ca. 1859	Abies alba
CHAL 41	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	142 (+1)		N	AD 1670-1811	after 1812	Abies alba
CHAL 42	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	83		N	AD 1695-1777	after 1777	Abies alba
CHAL 43	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	53		N	AD 1765-1817	after 1817	Abies alba
CHAL 44	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	106		N	undated		Abies alba
CHAL 45	floor plank	YES	Ottoman or Neoclassical floor	1700-1972		July 2013				missing		
CHAL 46	wall tie.1st level.E wall.S side of N opening	YES	Venetian wing timber masonry lacings	1300-1470		July 2013	124	29	N	AD 1201-1324	1325-1330	Quercus sp.
CHAL 47	4th beam , 2nd floor (core sample)	YES	2nd Venetian Floor	1300-1470		July 2013	67 (+1)		N	AD 1259-1325	after 1326	Abies cephalonica
CHAL 48	venetian beam of 1st floor, ex situ	NO	1st Venetian Floor ?	1300-1470		July 2013	59		N	undated		Abies cephalonica
CHAL 49	tie beam from west edge of southern venet. wall	YES	Venetian wing timber masonry lacings	1300-1470		July 2013	60		Y	undated		Abies cephalonica
CHAL 50	Ottoman/neoclassical roof truss tie beam	YES	Ottoman or Neoclassical floor	1700-1972		July 2013	91		N	AD 1776-1866	after 1866	Abies sp.
CHAL 51	south wall, 1st floor, beam no1B (from east)	YES	1st Venetian Floor	1300-1470		August 2014	95		Y	AD 1234-1328	1328/1329	Abies cephalonica
CHAL 52	south wall, 1st floor, corbel no2 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	96		Y	AD 1232-1327	1327/1328	Abies sp.

CHAL 53A	south wall, 1st floor, beam no2 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	103		Y	AD 1225-1327	1327/1328	Abies cephalonica
CHAL 53B	south wall, 1st floor, beam no2 (from east)	YES	1st Venetian Floor	1300-1470		August 2014						
CHAL 54A	south wall, 1st floor, corbel no15 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	75		N	AD 1225-1299	after 1299	Abies cephalonica
CHAL 54B	south wall, 1st floor, corbel no15 (from east)	YES	1st Venetian Floor	1300-1470		August 2014						
CHAL 55	tie beam from west edge of south wall, between corbels-beams	YES	1st Venetian Floor	1300-1470		August 2014	51 (+10)	15	N	undated		Quercus sp.
CHAL 56	south wall, 1st floor, beam no3 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	71		N	undated		Abies sp.
CHAL 57	tie beam	YES	Venetian wing timber masonry lacings	1300-1470		August 2014	43	0	N	undated		Quercus sp.
CHAL 58A	tie beam, decorated with carvings	NO	Venetian wing timber masonry lacings	1300-1470		August 2014	75	34	Y	undated		Quercus sp.
CHAL 58B	tie beam, decorated with carvings	NO	Venetian wing timber masonry lacings	1300-1470		August 2014						
CHAL 59	south wall, 1st floor, corbel no11 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	76		Y	AD 1252-1327	1327/1328	Abies sp.
CHAL 60	north wall, 2nd floor, beam no6 (from east)	YES	2nd Venetian Floor	1300-1470		August 2014	82		N	AD 1230-1311	after 1311	Abies sp.
CHAL 61	north wall, 2nd floor, beam no5 (from east)	YES	2nd Venetian Floor	1300-1470		August 2014	47		N	AD 1261-1307	after 1307	Abies sp.
CHAL 62	south wall, 1st floor, beam no4 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	67		N	AD 1240-1302	after 1302	Abies cephalonica
CHAL 63	south wall, 1st floor, beam no5 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	74		N	AD 1215-1288	after 1288	Abies cephalonica
CHAL 64	south wall, 1st floor, beam no6 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	117		?	AD 1208-1324	ca. 1324	Abies cephalonica
CHAL 65	south wall, 1st floor, corbel no7 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	65		N	AD 1260-1319	after 1319	Abies cephalonica
CHAL 66	south wall, 1st floor, beam no8 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	64		N	AD 1223-1286	after 1286	Abies cephalonica
CHAL 67	north wall, 2nd floor, corbel no7 (from east)	YES	2nd Venetian Floor	1300-1470		August 2014	44		N	AD 1233-1276	after 1276	Abies sp.
CHAL 68	north wall, 2nd floor, beam no7 (from east)	YES	2nd Venetian Floor	1300-1470		August 2014	57 (+4)		N	AD 1252-1308	after 1312	Abies sp.
CHAL 68B	north wall, 2nd floor, beam no7 (from east)	YES	1st Venetian Floor	1300-1470		August 2014						
CHAL 69	south wall, 1st floor, beam no9 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	53		N	AD 1270-1322	after 1322	Abies cephalonica
CHAL 70	south wall, 1st floor, corbel no10 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	78		N	AD 1187-1264	after 1264	Abies cephalonica
CHAL 71	south wall, 1st floor, beam no12 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	60		N	AD 1223-1282	after 1282	Abies cephalonica
CHAL 72	south wall, 1st floor, corbel no12 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	53		N	AD 1221-1273	after 1273	Abies cephalonica
CHAL 73	south wall, 1st floor, beam no13 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	45		N	AD 1271-1315	after 1315	Abies cephalonica
CHAL 74	south wall, 1st floor, corbel no13 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	60 (+1)		N	AD 1237-1296	after 1296	Abies cephalonica
CHAL 75	south wall, 1st floor, corbel no14 (from east)	YES	1st Venetian Floor	1300-1470		August 2014	108 (+3)		N	AD 1212-1319	after 1322	Abies cephalonica
CHAL 76	north wall, 2nd floor, beam no8 (from east)	YES	2nd Venetian Floor	1300-1470		August 2014	43 (+1)		N	AD 1256-1298	after 1299	Abies sp.
CHAL 77	core of an ex situ beam	NO	unknown venetian floor ?	1300-1471	larger cross section (25*17cm) than the two in situ floors	August 2014	104		?	AD 1223-1326	ca. 1326	Abies sp.

CHAL 78A	venetian ex situ beam	NO	unknown venetian floor ?	1300-1472	larger cross section (25*17cm) than the two in situ floors	August 2014	88		N	AD 1214-1301	**after 1301**	Abies sp.
CHAL 78B	venetian ex situ beam	NO	unknown venetian floor ?	1300-1473	larger cross section (25*17cm) than the two in situ floors	August 2014						
CHAL 79	SE window, S side, double lacing,interior lacing. Polished and measured on the spot. No Sample.	**YES**	Venetian wing timber masonry lacings	1300-1470		August 2014	102	0	N	AD 1200-1301	**1327±9**	Quercus sp.
CHAL 80	Venetian Corbel, reused as a ottoman timber frame wall column capital	NO	1st Venetian Floor ?	1300-1470		August 2014	49		N	undated		Pinus brutia
CHAL 81	Venetian Corbel, reused as a ottoman timber frame wall column capital	NO	1st Venetian Floor ?	1300-1470		August 2014	76		N	AD 1219-1294	**after 1294**	Abies sp.
CHAL 82	Cantinella,found nailed on top of Corbel of sample CHAL59	**YES**	1st Venetian Floor	1300-1470		August 2014						
CHAL 83	two pieces of carbon	NO	Archaeological excavation, interior of venetian wing, SW corner, depth -2,85 to -2,98 from our reference 0,00	around the 1680s ?		August 2014						
CHAL 84	small sample from decorative spiral, for species identification	NO	from 1st floor construction ?	1300-1470	juniper tree	July 2013						Juniperus sp.