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Unravelling a 17th-century prison escape: The quest to identify the original Hugo Grotius bookchest

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Abstract

In 1621, the humanist Hugo Grotius performed a masterly escape from life imprisonment at Loevestein Castle in the Netherlands by hiding in a bookchest. Currently, three museums in the Netherlands (Loevestein Castle, Rijksmuseum and Museum Prinsenhof) possess chests related to Grotius' story. This study presents research carried out to decipher whether any of them could actually claim to have been the one used for the escape. Inspection of the materials and structure of the chests allowed us to discard the one in Loevestein Castle from the outset, as it is unlikely to have been a bookchest. However, the other two most likely were, and dendrochronological research through digital photographs provided dates

INTRODUCTION

Hugo Grotius, born in Delft in the Netherlands in 1583 (Figure 1), was an influential Dutch humanist, jurist and author well known for his *De iure belli ac pacis* (*On the Law of War and Peace*). In 1618, he was imprisoned in Loevestein Castle for collusion in a religious conflict with the state (Nellen 2007). Being a political prisoner, he was allowed to continue studying while in jail. To that end, his family in Gorinchem (a Dutch town close to Loevestein) would regularly send him a chest full of books that was transported back and forth to Loevestein by the castle guards. In 1621, three years into his sentence, Grotius performed a masterly escape by hiding in the bookchest (Van der Ham 2004). Unaware that he was hiding inside, the guards carried the chest loaded with books back to Gorinchem. From there, he managed to escape to Antwerp and later to Paris. He lived as a free man in exile until his death in Rostock, Germany, in 1645. His unconventional escape has been recorded in Dutch history since the 18th century, but the whereabouts of the chest itself became unknown in the centuries that followed. Multiple claims that it had been found were made, but as of today, it is still a mystery which chest – if any – is the original one.

Currently, three museums in the Netherlands (Loevestein Castle, the Rijksmuseum in Amsterdam and Museum Prinsenhof Delft) possess chests that are said to relate to Grotius' story (Figure 2). Two of them, in the Rijksmuseum and Museum Prinsenhof, may be the original. In 2019, the Rijksmuseum embarked on a quest to find out by scientific methods if any of these chests could rightfully lay claim to being the real one.

Figure 1. Portrait of Hugo Grotius by Michiel van Mierevelt (oil on panel). Museum Prinsenhof (PDS 71), Delft

RESEARCH DESIGN

The research required an interdisciplinary approach. First, it had to be established whether the chests could actually have been bookchests. A close examination of their materials and structure, as

for three boards used to make them, resulting in an estimated felling date for the trees of after 1568 CE (Rijksmuseum) and 1586 CE (Prinsenhof). Consequently, both were made in the late 16th century or later and could have potentially been used by Hugo Grotius for his escape.

Figure 2. Chests displayed in relation to the Hugo Grotius escape. (a) Chest at Loevestein Castle; (b) chest at the Rijksmuseum, Amsterdam, on long-term loan from KOG (inv. no. NG-KOG-1208; https://www.rijksmuseum.nl/en/collection/NG-KOG-1208); (c) chest at Museum Prinsenhof, Delft

well as a search for parallels in paintings and drawings, would reveal information about their use. Then, non-invasive dendrochronology could be used to determine the date of the wood and possibly identify the likely candidate(s) by exclusion. If the wood of a chest dated from after the year of the escape (1621), then that chest could be discarded.

MATERIALS AND METHODS

Provenance of the chests

The chest at Loevestein Castle was acquired at a second-hand market and is used to present the story of Grotius' escape from the castle. There is no pretence that this is the original chest. The chest at the Rijksmuseum is on a long-term loan from *Koninklijk Oudheidkundig Genootschap* (KOG, the Royal Dutch Antiquarian Society), which acquired it in 1873 from the family of Grotius' book supplier. The chest at Prinsenhof was donated to the museum in 1925 by a family related to Grotius.

Construction materials

The three chests were brought to the furniture conservation studio at the Rijksmuseum in Amsterdam, where they were weighed and measured. The chest from Loevestein (L 132.0 × H 90.0 × W 68.0 cm) weighed 80 kg and was made from deciduous oak (*Quercus* subgenus *Quercus*). This species has distinctive large earlywood vessels, disposed along the tree-ring boundaries, and large multiseriate rays that allow their identification by the naked eye (Schweingruber 2001). The boards on the chest were thick with a few metal fittings. In contrast, the Rijksmuseum chest (L 158.0 × H 71.5 × W 67.0 cm) weighed 51 kg and was made of two different types of wood: one a conifer species and the other a broadleaf species. Micro-samples were collected from several of its boards for wood species identification. They were mounted on glass slides and analysed visually with a transmitted-light microscope using Grosser's identification key (1977). The Prinsenhof chest (L 124.0 × H 70.0 × W 57.0 cm) weighed 37 kg and was entirely made of conifer wood. Samples for wood identification were not collected in the hope that the dendrochronological research would provide clear dates with chronologies for a specific species, allowing the species to be determined by inference.

The Rijksmuseum and Prinsenhof chests were made of thin, downward-tapering boards covered by a layer of leather and reinforced with multiple metal straps. This construction makes them strong but lightweight. Patches of the leather covering were missing from different parts of both chests, exposing the wooden boards. The interior of both chests was lined with a thin cotton fabric attached by small upholstery nails, while the fabric lining of the inside of the lids was attached by small upholstery nails and ribbons. In the centre of the lid of the Rijksmuseum chest was a rectangular section with ribbons in a lozenge pattern. The whole of the inside of the lid of the Prinsenhof chest was decorated with a squared pattern.

Non-invasive dendrochronological research

Dendrochronological research of art objects is commonly done on the transverse ends of wooden boards (Domínguez-Delmás 2020). However, the

Figure 3. Photographing tree rings on the lid of the Rijksmuseum chest

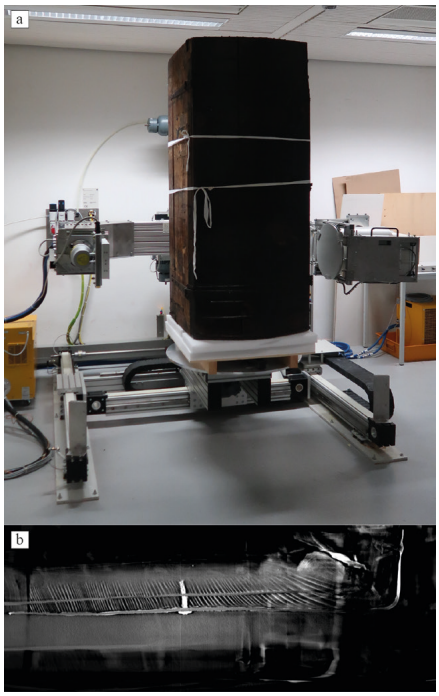

Figure 4. X-ray scanning of the Rijksmuseum chest. (a) Setup at the X-ray facility at the Rijksmuseum; (b) image of the lower board from the right side reconstructed from the line-trajectory X-ray scanning

transverse sections of the boards in these chests were mostly inaccessible due to the assembly technique, or because the transverse ends were covered by leather or metal strips. Therefore, dendrochronological research was carried out only on portions of the transverse sections of the few exposed ends, and also on the radial/tangential section of the parts where the leather was missing on the outside and on the exposed parts of the inside. Measuring tree rings on the tangential/radial section has proven effective for dendrochronological dating of furniture boards when the end grain is not accessible in the transverse section (Domínguez-Delmás et al. 2021). Digital photographs were taken with a macro camera (Figure 3), and then the tree rings were measured with the CooRecorder & CDendro software package v9.0.1 – April 19, 2017 (Larsson 2017).

Additionally, to capture the very narrow outermost rings on the boards with covered transverse ends, attempts were made to retrieve the tree-ring patterns by computed tomography (CT). The chests were mounted onto the rotation platform of the X-ray facility at the Rijksmuseum supported by a vertical structure (Figure 4a). This was a challenging endeavour, since the large size of the chests made the full rotation of the object (required for traditional CT scanning) impracticable within the scanning setup. However, it was discovered that due to the particular shape of tree rings (they look like lines in a cross-section), they can be captured in X-ray images taken along a line trajectory, so the chests could be moved only sideways during scanning. Sequences of hundreds of X-ray images taken in this way were subsequently processed through tailor-made reconstruction algorithms to produce tomographic images of the cross-section of the wood, in which the ring widths could be measured for dendrochronological purposes.

Selected elements for dendrochronological research

In the case of the Rijksmuseum chest, five parts were potentially accessible and interesting for research: the front panel, right side, back, lid and bottom (Table 1, Figure 5):[1]

- Front panel: made of three horizontal conifer boards (Figure 5a). The transverse ends were fully covered by leather and metal, but there was an exposed portion of the radial section at the front of the top board on the right-hand side (Figure 5b), where the tree rings were photographed (measurement code CRM011).
- Right side: made of two horizontal boards (Figure 5c); the top one was made of a broadleaf species. The bottom board was made of conifer wood and the tree rings were photographed on the radial section. This side was also X-rayed using the abovementioned technique (CRM020).
- Back: made of two horizontal boards (Figure 5d). The top one was made of a broadleaf species, the bottom one of conifer wood. Digital photos were taken of three parts of the radial section (CRM030; Figures 5d–e).
- Lid: made of three conifer boards running the length of the lid. Most of the left ends were covered with leather and metal. The right ends were too broken to obtain a continuous series. The front board was photographed from the inside (CRM041).

Table 1. Elements of the Rijksmuseum and Prinsenhof chests examined and selected for dendrochronological research

Chest	Part of the chest	Board	Wood type	Dendro-code	Type of images
Rijksmuseum	Front	Top	Conifer	CRM011	Digital/X-ray
		Middle	Conifer	-	-
		Bottom	Conifer	-	-
	Right-side panel	Top	Broadleaf	-	-
		Bottom	Conifer	CRM020	Digital/X-ray
	Back	Top	Broadleaf	-	-
		Bottom	Conifer	CRM030	Digital
	Lid	Front	Conifer	CRM041	Digital/X-ray
		Middle	Conifer	-	-
		Back	Conifer	-	-
	Bottom	Front	Conifer	CRM051	Digital
		Middle	Conifer	-	-
		Back	Conifer	-	-
	Left-side panel	Top	Broadleaf	-	-
		Bottom	Conifer	-	-
Prinsenhof	Lid	Front	Conifer	CPH011	Digital
		Middle	Conifer	CPH021	Digital
		Back	Conifer	CPH031	Digital
	Front	Top	Conifer	CPH041	Digital
		Bottom	Conifer	-	-
	Back	Top	Conifer	CPH051	Digital
		Bottom	Conifer	CPH061	Digital
	Right-side panel	Top	Conifer	CPH071	Digital/X-ray
		Bottom	Conifer	-	-
	Left-side panel	Top	Conifer	-	-
		Bottom	Conifer	CPH081	Digital/X-ray

Figure 5. Parts of the Rijksmuseum chest inspected and selected for dendrochronological research (the arrows indicate the growth direction and the portions where tree rings were photographed): (a) front panel; (b) detail of the top board on the front panel researched and dated (CRM011); (c) right-side panel (CRM021); (d) back panel (CRM030); (e) detail of the bottom board on the back panel researched and dated (CRM031); (f) bottom of the chest where the front board was researched (CRM051)

- Bottom: the chest was flipped onto its back to expose and examine the underside (Figure 5f). The bottom was made of three horizontal boards. Digital photographs were taken of the radial section of the front board (CRM051).

All of the boards on the Prinsenhof chest were made of conifer wood. Five parts were potentially accessible and interesting for research: the lid, front, back and sides (Table 1, Figure 6).

- Lid: made of three horizontal boards, all of which showed a slow-growth pattern (Figure 6a). Front board: fully covered in leather at the left end but exposed and accessible on the right (CPH010). Middle board: exposed and accessible at the right end (CPH021). Back board: exposed and accessible on the right and partly on the left (CPH030).
- Front: made of two horizontal boards (Figure 6b). Top board: very slow growing towards the outside, with partial sapwood in the upper right side. The tree rings were accessible only at the right end, but the surface was very rough and only a portion could be measured (CPH041; Figure 6c). The left transverse end was fully covered with metal and leather. Bottom board (not measured): slow growing, but the right side was broken at several points and the left side was fully covered with leather.

Figure 6. Parts of the Prinsenhof chest inspected and selected for dendrochronological research (the arrows indicate the growth direction and the portions where tree rings were photographed): (a) lid, right-hand side; (b) front panel; (c) detail of the front panel where the tree rings were photographed and measured; (d) back panel; (e) right panel; (f) detail of the top board on the right panel where the tree rings were photographed and measured; (g) left panel

- Back: made of two horizontal boards (Figure 6d). Top board: faster growing. The tree rings were photographed and measured on the upper portion of the right side of the board (CPH051). The left side was covered with leather and metal. Bottom board (CPH061): slow growing, but few tree rings. They were photographed on the upper part of the left side and on the lower part of the right side.
- Right side: made of two horizontal boards (Figure 6e). The transverse sides were inaccessible. Top board: slow growing, it was photographed digitally (CPH071; Figure 6f) and also X-rayed. Bottom board: fast growing with few tree rings; very similar to the mirror board on the left side. Not measured.
- Left side: two horizontal boards (Figure 6g). The transverse ends were not accessible, because they were covered by the front and back elements. The tree rings could only be measured in the radial/tangential section. Top board: big knots and distorted pattern, but lots of tree rings (similar to the mirror board on the right side, but this one was not measured). Bottom board: fast growing, but measured (CPH081).

RESULTS AND DISCUSSION

Rijksmuseum chest

The wood species analysis revealed that the conifer boards were made of pine (*Pinus* sp.), probably Scots pine (*Pinus sylvestris*), as this is the predominant pine species in northern Europe. The other samples from the three non-conifer boards (Table 1) were identified as poplar (*Populus* sp.).

Dendrochronological research on the digital photographs was able to date two of the pine boards with Norwegian pine chronologies: the top board on the front panel to 1568 CE and the bottom board on the back panel to 1473 CE (Figure 7a, b). The bark of the trees was absent on all of the boards, therefore these are *terminus post quem* dates (dates after which the trees were cut). The early date of the back board indicates that it was either reused or that it originated from the inner part of the stem of the tree, closer to the pith. In this case, it is possible that many of the rings up to the date of its felling are still missing. The wood in both boards originated from Norway. Dendrochronological research on archaeological sites and historical buildings in the Netherlands has shown that Norway was a regular supplier of oak (*Quercus* sp.) and pine (*Pinus sylvestris*) timber from at least the second half of the 16th century (Domínguez-Delmás et al. 2011, Domínguez-Delmás et al. 2012, Duin 2018). The date of the front board places the date the chest was made to after 1568 CE.

The tree-ring series obtained from the tomographic image of the bottom board on the right side showed an excellent match with the one obtained from the digital photo, but they remain undated. The reconstructed images from the other elements that had been X-rayed had blurred areas where the tree rings were very narrow and could not be measured correctly. They also remain undated.

Museum Prinsenhof chest

The top board on the right side could be dated to 1586 CE with Norwegian reference chronologies for Scots pine (*Pinus sylvestris*) (Figure 7c). As with the Rijksmuseum chest, the bark of the tree was absent on the board, which implies that this date must be regarded as a *terminus post quem*. This wood also originated from Norway.

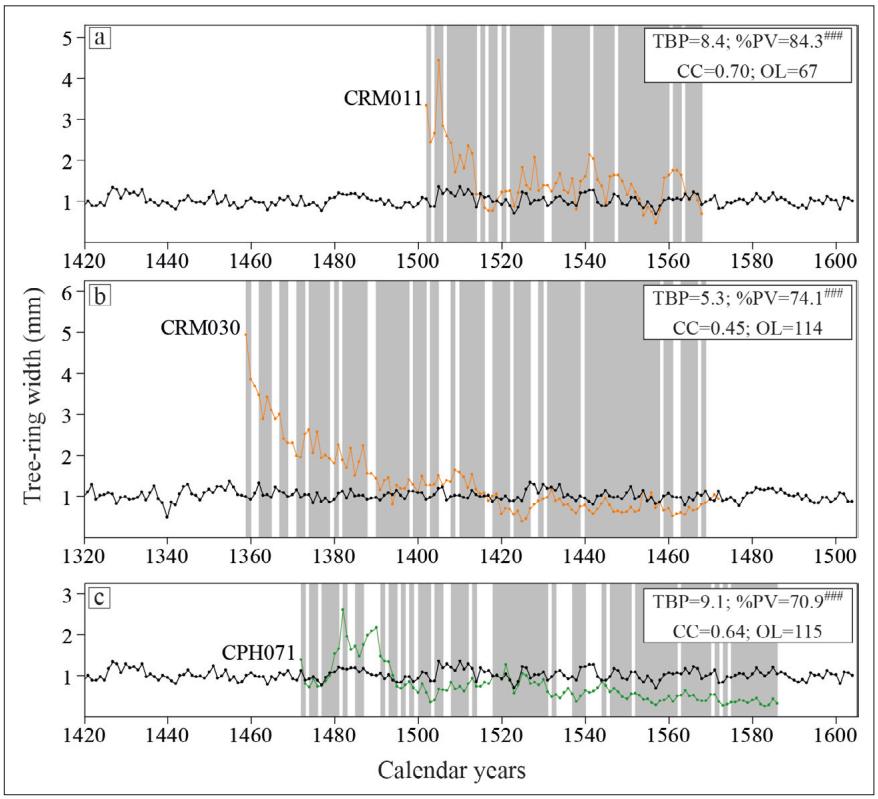

Figure 7. Visual and statistical dendrochronological results with the Norwegian pine chronology NLPISY03_Sj (in black): (a) tree-ring series obtained from the top board on the front panel of the Rijksmuseum chest (CRM011); (b) tree-ring series obtained from the bottom board on the back panel of the Rijksmuseum chest (CRM030); (c) tree-ring series obtained from the top board on the front panel of the Prinsenhof chest (CRM011). TBP: student's *t*-value as implemented by Baillie and Pilcher (1973) for tree-ring studies; %PV: percentage of parallel variation between the compared series as defined by Eckstein and Bauch (1969) (###, significance level of the %PV at $p<0.001$); CC: correlation coefficient; OI: overlap. The shaded area highlights the %PV

Presumed use of the chests

The pine and poplar wood used to build the Rijksmuseum and Prinsenhof chests are light-weight, which would have been desirable for transporting books. In these chests, the boards on the sides, front and back are thicker at the top and taper towards the bottom, where metal straps reinforce the structure. This feature demonstrates the intentional pursuit of a light but strong container, and is thus consistent with the use of both chests to store books.

The structure of these chests seems to conform to a common type of chest for transportation of goods which was in use from at least the late 16th to mid-18th century. A painting from ca. 1590 at the Mauritshuis attributed to François Bunel the Younger, entitled *The Confiscation of the Contents of an Art Dealer's Gallery*, depicts three chests that are very similar to the ones researched here (Figure 8a). One of them is open, showing an inner lid lining with a similar pattern to that of the

Figure 8. Pictorial evidence of the existence of this type of chest from the late 16th to the mid-18th century. Top: *The Confiscation of the Contents of an Art Dealer's Gallery*, attributed to François Bunel the Younger, 1590. Oil on panel, H 28.1 × W. 47 cm, Mauritshuis, The Hague; inv. no. 875. Bottom: *Hugo de Groot verstopt zich in de boekenkist, 1621* (*Hugo Grotius Hiding in the Bookchest, 1621*), etching on paper signed by Simon Fokke in 1754, H 17.4 cm × W 20.5 cm, Rijksmuseum RP-P-OB-80.939

Rijksmuseum and Prinsenhof chests. The other two are being carried on the back of two men, which suggests that the chests and their contents were light enough to be transported in that way. Another print from the mid-18th century at the Rijksmuseum depicts the escape of Hugo Grotius (Figure 8b). In this print, the chest is also very similar to the ones researched here, with the inner part of the lid also covered by a pinned cotton layer with the same pattern. This demonstrates that these types of chests either had a long life or were produced up to at least the mid-18th century.

Line trajectory X-ray tomography on large wooden objects

Close collaboration with imaging scientists resulted in a breakthrough in non-invasive imaging methods for dendrochronological study of large wooden objects (Bossema et al. 2021). The line trajectory X-ray technique yielded enough information to obtain sharp images of the wider tree rings in the chests (and of narrow rings of ca. 0.30 mm on test boards). Therefore, although this technique failed to record neatly the most promising boards in the chests due to interference from the metal fittings, it opened the door to further use of limited-angle CT scanning for large objects.[2]

CONCLUSION

Could one of these chests have been the actual one in which Hugo Grotius escaped? This interdisciplinary study led to the conclusion that while the chest at Loevestein Castle is unlikely to have served as a bookchest, both the Rijksmuseum and Prinsenhof chests were probably used for that purpose. The successful implementation of non-invasive dendrochronology through digital images provided the date and provenance of several of the boards. The pine timber used to make these boards originated from Norway. The dates of the boards place the earliest possible production dates for the chests in the late 16th century, but the lack of bark in the wood prevents the felling date of the trees from being determined, and thus the exact time of production. Late 16th century *post quem* dating makes it plausible that both chests were made before 1621 CE, the year of the escape. However, these dates must be taken with caution, as small portions of absent sapwood in pines may contain numerous tree rings. Consequently, it is impossible to know with certainty whether the chests were made before or after the date of escape in 1621 CE.[3]

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NOTES

[1] The left side is made of three horizontal boards (the top one is made of a broadleaf species, the other two of conifer wood). The transverse edges are covered by the front and back panels and are therefore not accessible for dendrochronological examination.

[2] This interdisciplinary collaborative research was rewarded with a national Team Science Award in 2021 by the Dutch Research Council (https://www.nwo.nl/en/news/winners-nwo-science-awards-2021-announced).

[3] A team of historians also dug into historical documents related to Grotius' escape. They found an eyewitness report that stated that Grotius laid in the chest 'between eight and nine hours, so tightly that one could not even insert a pair of shoes between him and the chest'. Since the chest in the Museum Prinsenhof is shorter than the one in the Rijksmuseum, and it had been in the possession of descendants of Grotius at least since the beginning of the 19th until the beginning of the 20th century, it was concluded that it is more likely to have been the one used for the escape.

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