

“And Fill It Solidly With Brushwood and Earth or Such of Them As Would Suit Him Best”: 18th and 19th Century Landmaking in Alexandria, VA

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Landmaking in the 18th and 19th centuries

Eighteenth century engineering was not the formal, standardized undertaking it became during the 19th century, especially for quotidian things like wharves. Individuals employed whatever means necessary to construct landmaking structures. Methods and materials varied even within the Anglo-American world, depending heavily on local environmental, economic, and corporate conditions as well as on the technical knowledge of those doing the construction. Archaeological evidence is critical for understanding and comparing these types of massive and largely undocumented undertakings.

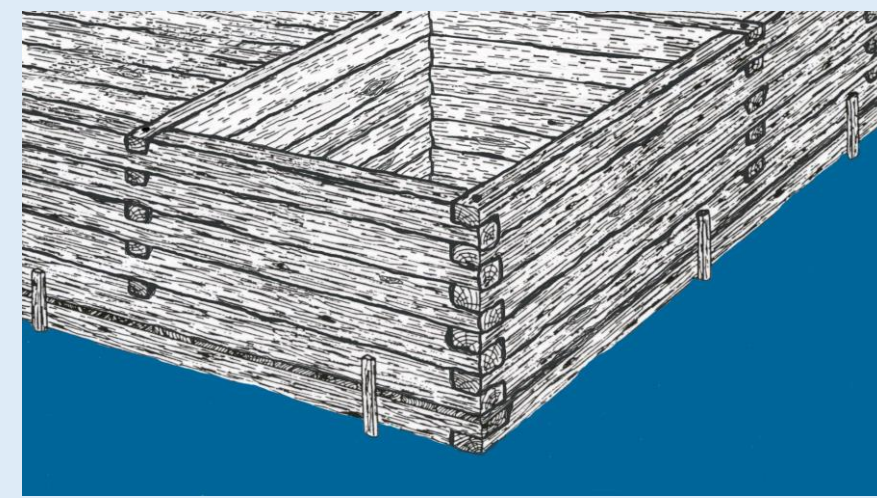
How do you make land?

Two basic methods:

- protruding structures perpendicular to shore (piers, jetties)
- three sided structures parallel to shore (wharves, quays)

Materials:

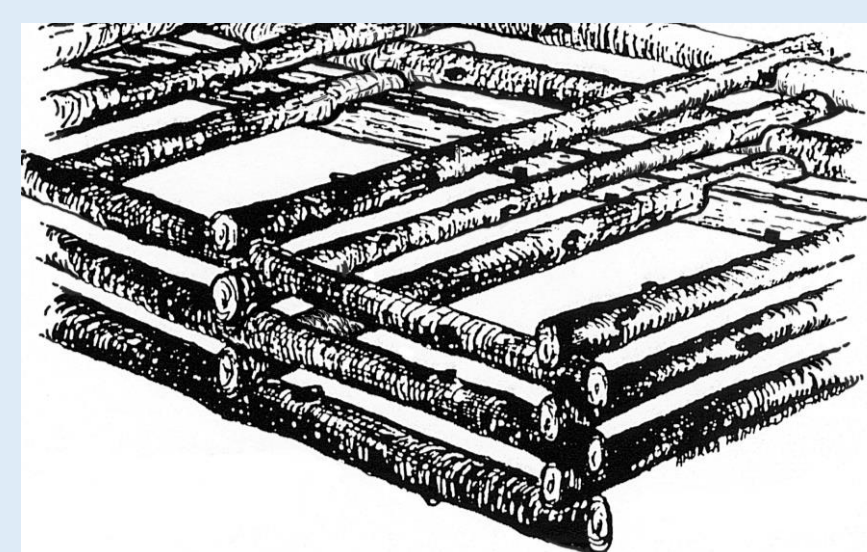
- Wood: boards, unhewn logs, saplings, twigs, brush, etc.
- Stone, cobbles, rocks
- Dirt, clay
- Old ships
- Trash



Cribbing (Alexandria Archaeology)

Cribbing

- Tightly stacked, notched, alternating courses of timber
- Form a box
- Secured with iron spikes or wooden dowels
- Filled with cobbles, gravel, or soil



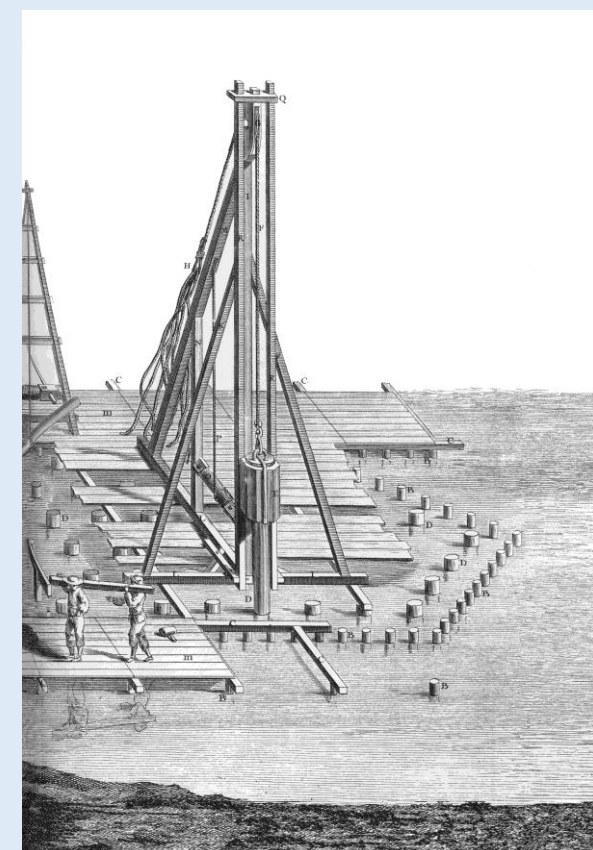
Cobbing (Alexandria Archaeology)

Cobbing

- Perpendicular, stacked timbers
- Not as tightly spaced as cribbing
- Larger fill materials needed

Linear Walls

- Horizontally stacked planking
- Secured with vertical piles
- Infilled behind wall



Pile driver, c. 1760s (Diderot's Encyclopedie)

Grillage

- Alternating, perpendicular layers of timber
- Weighted with stone
- No central box

Vernacular Architecture Approach to Land Making

- Situates wharves in broader context of early American vernacular architecture
- Better captures diversity of styles and techniques used
- Investigates:
 - materials used
 - joinery methods
 - fill materials
 - overall form and structure type



Robinson Landing Site, F161 cobbing bulkhead wharf (Alexandria Archaeology)

Banking Out in Alexandria

When a young George Washington mapped the town in 1749, it was located on a crescent-shaped bay between two points. The original shoreline consisted of 15-20 foot tall cliffs rising above the Potomac's mud flats. The immediately adjacent river was only 4-5 feet deep, too shallow for large vessels to dock. Early Alexandrians “banked out” to reach deeper water by cutting down the bluffs and constructing a variety of landmaking structures along the waterfront. Land creation was driven by individual waterfront lot owners with very little coordination or government oversight over how and where banking out occurred. Though there was no concerted municipal push to extend the shoreline, lot owners were encouraged to do so very early on by the town trustees.

Our understanding of when lot owners filled in the waterfront is largely based on a handful of maps each with omissions and biases. The very definition of “shoreline” is a fluid concept, potentially referring to the high water mark or the bluff tops. Deeds, tax assessments, and legal cases have furthered our understanding somewhat, but still provide a piecemeal vision of how land was created.

The City's Archaeological Protection Code allows us to study landmaking structures across a large portion of the waterfront. These shoreline structures provided the foundation on which early Alexandrians built their homes and commercial ventures and helped create the city's modern outline. Extending the shoreline provided access to deeper water, bringing ships, goods, and people from around the world to the city. Banking out was fundamental to the development of the port and these wharves and piers served as Alexandria's lifeline to the world.

Archaeological Evidence

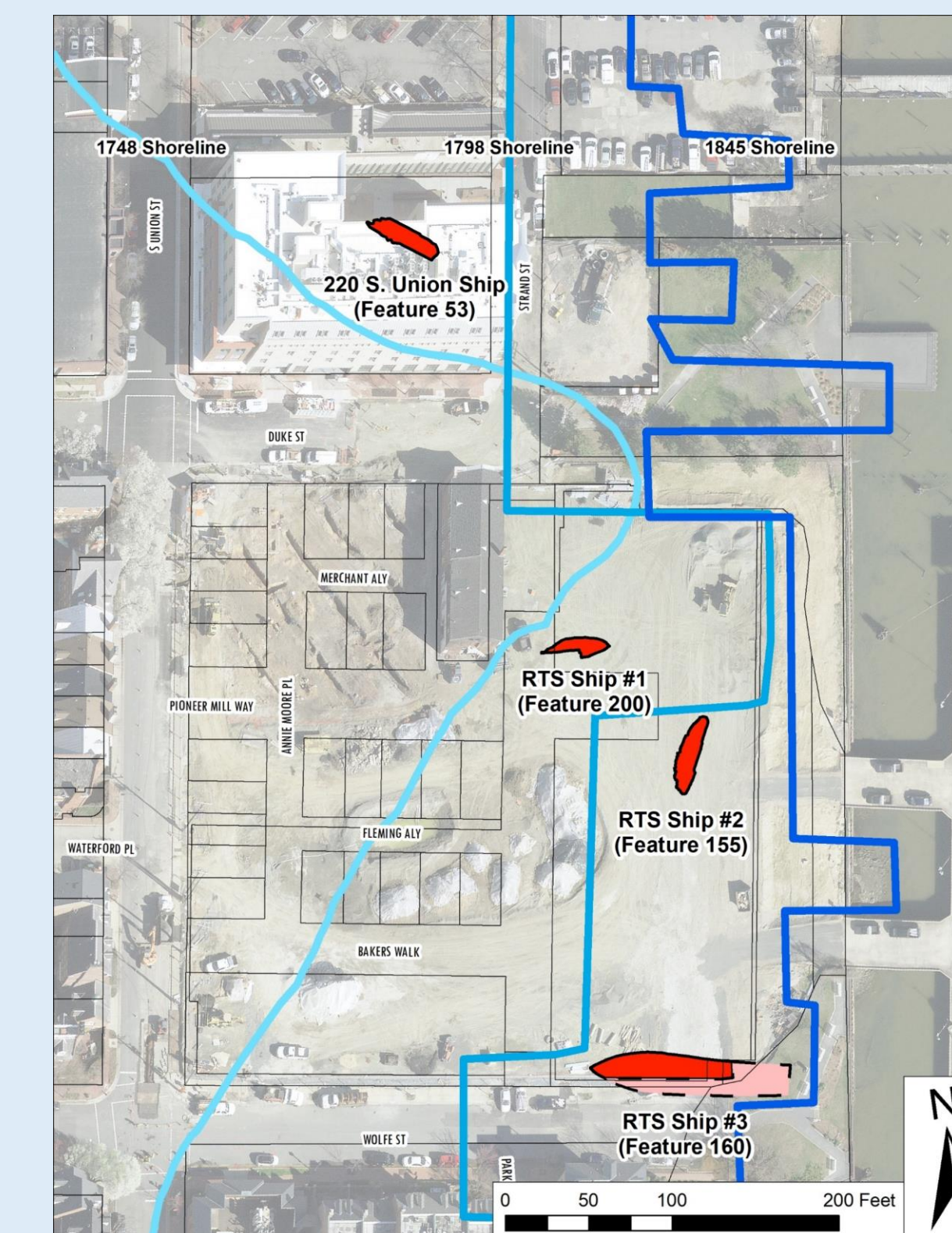
Archaeology is rewriting the history of maritime Alexandria, filling in the gaps left by documentary evidence. We are gaining a better understanding of who banking out, how, and when. Dendrochronology samples were taken from sites across the waterfront and may provide a tighter chronology of when specific lots and wharves were filled, maintained and repaired.

Wharves and the Reuse of Ships

- Using ships for landmaking common in 18th century, rarely newsworthy
- Multiple archaeologically documented instances in Alexandria, including four found in the past four years
- Reuse of private vessels as landfill dependent on preference of individual property owner
- Some vessels intentionally notched into wharves while others likely pulled to shore and filled around opportunistically
- Increasing construction standardization in the 19th century made vessel reuse less common over time



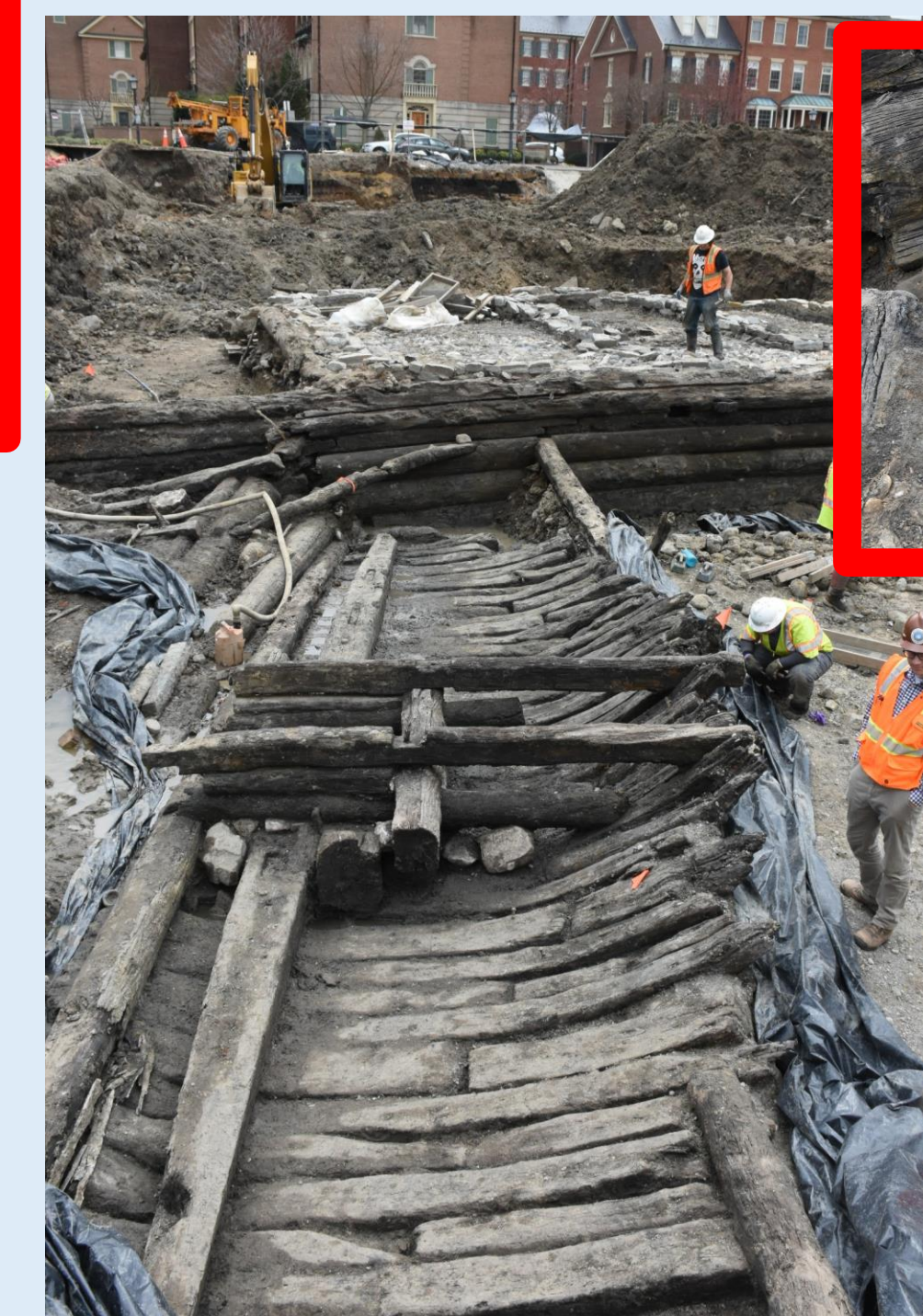
1749 George Washington map of Alexandria/Belhaven (LOC 98687108)



Map of historic shorelines and location of 4 ships (Alexandria Archaeology)



Robinson Landing Site, F200- Ship 1
Inset-end of ship slotted into bulkhead wharf (Alexandria Archaeology)



Robinson Landing Site, F155- Ship 2
Inset-end of ship slotted into bulkhead wharf (Alexandria Archaeology)



Robinson Landing Site, F161, bulkhead wharf (Alexandria Archaeology)

Comparing Land Creation Factors

Factor	Alexandria	NYC (South St Seaport Area)	Boston (Mill Pond)
Construction Method	<ul style="list-style-type: none"> • Cribs, cobbs, grillage, linear features, reuse of ships • Bulkhead wharves • Both perpendicular and parallel to shore-unknown yet if there is change over time • Filled with dirt from cut down banks 	<ul style="list-style-type: none"> • Cribs, cobbs,grillage, linear features, reuse of ships • Changes over time from parallel quays/wharves (17th and early 18th century) to projecting piers (later 18th century) • Early use of canals and slips • Filled with stone, dirt and local trash 	<ul style="list-style-type: none"> • Cove dammed • Grillage (early 18th century) • Bulkhead wharf parallel to shore around entire pond (1790s)
Environment	<ul style="list-style-type: none"> • Mudflats, tall banks • Shallow water, deeper channel • Stone not readily available, wood variably available 	<ul style="list-style-type: none"> • Mudflats, eroding shoreline • Shallow water, deeper channel 	<ul style="list-style-type: none"> • Coves along peninsula • Shallow water, marshy ground • 19th century: stone used more
Corporate Legal Economic Social	<ul style="list-style-type: none"> • 1760: Trustees specify that waterfront lot owners “have the benefit of extending the said Lotts into the River as far as they shall think proper” and to “build on or improve under his Bank as he should think proper” • City Council minutes suggest no concerted municipal push to extend shoreline 	<ul style="list-style-type: none"> • Economic power shifting from Dutch to English- lingering Dutch influence • 1731 Montgomerie Charter: Common Council granted permission to extend city's borders 400 feet beyond low water mark • Waterfront lot owners encouraged to improve lots and create land 	<ul style="list-style-type: none"> • This lot always conveyed as an entity with certain conditions placed on it by town council • Filled in by “Boston Mill Corporation” as a business venture • In other parts of Boston, waterfront lot owners allowed to improve lots and create land

Conclusions

Studying bulkhead wharves and other landmaking structures in their particular social, economic, and environmental contexts is critical for understanding how cities molded their shorelines to meet particular needs. Work in Alexandria and elsewhere shows that archaeology provides valuable additional details about early development beyond what is gleaned from historic documents. Archaeology provides a refined chronology of when shorelines were filled in and a physical, concrete understanding of the techniques and strategies used to make land.

The same basic construction methods were used to make land; there are only so many ways to construct soil filled boxes. However, a broader view of land construction suggests that the process of banking out differed even in the Anglo-American world. The corporate and economic environment under which shoreline extension occurred influenced the construction strategies and methods. This in turn directly impacted the physical form of landmaking structures, that can be archaeologically recovered.

Acknowledgements

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