

Is Game Design a Suitable Tool for Preserving History and Historical Sites

Final Viva

Independent Project 2025 -2026

BA Computer Games Design

Philip Richmond

2212266@student.uwtsd.ac.uk

Introduction

- Final Year Project Viva Presentation
- Is Game Design a Suitable Tool for Preserving History and Historical Sites
- Digital Heritage and Historical Preservation
- Historically Informed Reconstruction of the HMS Victory Middle Gun Deck
- Developed Using Unreal Engine 5, Autodesk Maya, and Substance 3D Painter
- Interactive Real-Time Environment with VR Integration
- Focus on Education, Immersion, and Historical Engagement

Aim and Objectives

Aim

- To develop a historically informed 3D reconstruction of HMS Victory's middle gun deck, designed for use within higher education and museum environments.

Objectives

- Conduct a literature review covering both historical context and technical approaches
- Gather primary and secondary reference material, including site-based research where possible
- Create accurate 3D assets and a coherent environment layout
- Develop a walkable prototype in Unreal Engine with optional VR support
- Carry out user testing and refine the environment based on collected feedback

Scope and limitations

Scope

- Initial aim was a full reconstruction of HMS Victory
- Planned as a fully interactive VR experience
- Intended to cover large-scale ship environments

Refined Scope

- Focus reduced to the middle gun deck only
- Prioritises historical accuracy and spatial layout
- Developed as a walkable real time environment in Unreal Engine
- Includes a VR version with interactive information boards to support learning

Scope and limitations

Limitations

- Full ship reconstruction is not achievable within the project timeframe
- Complete VR implementation and full interactivity unachievable in time frame
- Planned site visit to Portsmouth was cancelled, limiting access to primary reference material
- Reliance on secondary sources such as photos and online documentation
- Some key structural details (exterior doors) are missing due to a lack of photographic evidence

Supervisor Feedback & Direction

- Confirmation the project is progressing in the right direction
- Encouraged transition from PC version to VR implementation
- Advised development of an interactive VR walkthrough with information-based elements
- Recommended improving lighting within the VR environment to better support readability and interpretation

HMS Victory Visit Cancelled

Philip,

This sounds like quite the interesting project! I haven't used most of those programs before, but I'll try and answer any questions you have. It will of course vary from day to day, but I think I am typically most free on Mondays and Fridays, although we tend to end early on Fridays so I will likely not be around after 3 pm. If you decide on a day that works for your schedule, just let me know and I can see what time I can set aside from you.

I have briefly discussed this with our Interpretation lead, and I think the general rule of thumb is that most things within arm's reach of a normal visitor should be fair game. I would advise against photographing any sensitive areas of the ship if you can—which would be the areas sealed off by curtains, or the wardroom near the visitor entrance which is used by the Navy crew. You should be okay to lay a tape measure against what you can reach, although I do not think I should venture into employee areas or use flash on your behalf. I would recommend trying to go a bit later in the day, when most of the school tours have left.

Are you planning on getting everything done in one visit? If we run into any unexpected problems or you decide to come back to document something else, your ticket should be valid for a year, although I would not be sure if I could accompany you the second time. Either way, I would be happy to hear any further updates or questions you have.

Sincerely,
Kevin

Kevin Deng
Digital Archaeologist
☎ 02392 891370 Ext: 2028

Visit the National Museum of the Royal Navy shop
Show your support to us today by donating - nmnm.org.uk/donate



Portsmouth - Gosport - Yeovilton - Hartlepool - Belfast

Philip,

That all sounds good to me!

I will have a meeting that ends around noon that day, and I typically take my lunch break from 12:00 to 12:30. It would be no problem at all to delay my lunch break, I just wouldn't want to make you wait by being halfway through eating when you arrive.

If you don't mind, just send me a quick email day-of before you enter the museum, and I will come out to meet you. Of course, if anything happens on my end and I'm not able to honor our commitment, or I'm delayed for any reason, I will let you know right away.

I look forward to meeting you and hearing more about your project!
Kevin

Kevin Deng
Digital Archaeologist
☎ 02392 891370 Ext: 2028

Visit the National Museum of the Royal Navy shop
Show your support to us today by donating - nmnm.org.uk/donate



Portsmouth - Gosport - Yeovilton - Hartlepool - Belfast

Philip,

Sorry again about this whole situation. I have heard back from upper management, and you are still clear to come visit the HMS Victory and take the photos and measurements for your project, but there are going to be a few restrictions in place.

First of all, I will still need to hear more about your data collection and distribution plan as per my previous email. When I have that information, I will need you to sign it so that management is comfortable with the project. Furthermore, they have requested that you conduct this visit during "free-flow" hours, meaning that you come during the two weeks of Christmas holiday so there are no guided tours being conducted.

If your plans are already set, I'm sure you could still come as a regular guest on Dec 1, but I wouldn't be able to come meet you, and you wouldn't be able to publish those photos in any capacity or else we'd probably both get in trouble. If you have the time, however, I'm sure it would be fine for you to experience the Victory once as a guest, maybe take the tour, and think about your photo and measurement goals ahead of time while you're on board.

I really am quite sorry, I was not aware these limitations were going to be put in place or else I would have made you aware sooner. I understand this can be a lot to deal with as an undergraduate. If it's easier for you, I can co-ordinate some of this with your dissertation supervisor instead. Feel free to forward this email chain to them, and we can figure out the paperwork and logistics while you can focus on your work.

The most important takeaway is that **we would like you to push back your official research visit to the two weeks of the Christmas School Holidays**. I still want to help you complete your project, but we will have to navigate these restrictions together.

Thanks,
Kevin

Kevin Deng
Digital Archaeologist
☎ 02392 891370 Ext: 2028

Research & References



[Plan with AI](#) [Discover](#) [Review](#) [GBP](#) [Sign in](#)

[Portsmouth](#) [Hotels](#) [Things to Do](#) [Restaurants](#) [Cruises](#) [Forums](#)

[Europe](#) > [United Kingdom \(UK\)](#) > [England](#) > [Hampshire](#) > [Portsmouth](#) > [Things to do in Portsmouth](#) > [HMS Victory](#)

[See all things to do](#)

HMS Victory

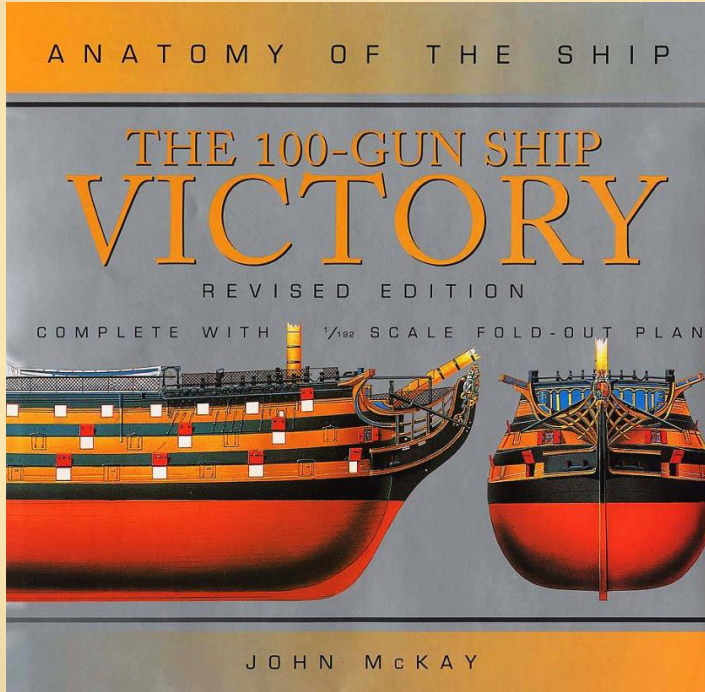
[Save](#) [Review](#)

4.7  (3,522 reviews) #5 of 115 things to do in Portsmouth

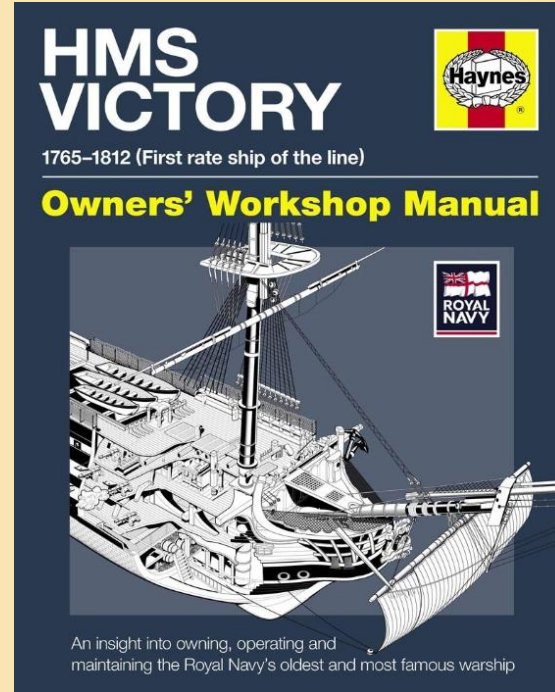


  2,073

Research & References



[2]



[3]

Research & References



Middle gun deck

This deck serves a battery of 28 long 24-pounder guns and, with the exception of access to the officers' accommodation aloft, it is usually clear of any transverse circulation from forward to aft. Along the center line of this deck are a series of hatchways providing access down to the lower gun deck below, each fitted with grating to permit ventilation. The main features ranged along this deck, from forward to aft, comprise the following: The lowest step, the ship's galley with its iron stove, the galley pantry with its capstan, the drumhead (upper part of the peer capstan, main mast, and the drumhead (upper part of the main capstan). The majority of this deck serves as the accommodation for seamen and all of the masts, each standing in hammocks and missing at tables between the guns or in the spaces behind them. Next is a large, wooden-paneled portable bulkhead that divides the officers' wardroom from the rest of the deck. The wardroom is fitted with tables along the ship's side for the most lieutenants and the Captain of Marines. The alternate cabin on the starboard side is to be allocated for the ship's First Lieutenant. A party is fitted in the fore part of the wardroom adjacent to the main mast. Doors either side lead off to the fore and aft decked quarter galleries, which serve as toilet facilities. That to starboard is to be allocated to the First Lieutenant only. At the aftermost part of the wardroom is the head of the ship's auditor.

ABOVE Tiller rope

lowering tackle in

the gun room

RIGHT Shooting rope

at the fore of the tiller

with its gooseneck

and overhead the

star quadrant

RIGHT A sea service

long 24-pounder carriage

gun in firing position,

toward battery, middle

gun deck

BELOW Mainmast

and hammocks

looking aft on the

middle gun deck



ABOVE The British pattern gun galley stove - elevated view showing fire box under baffles, heating water door and fire hearth, and rails for hoisting the fire.

RIGHT Galley pantry and cupboards.

24 pictures the vessel Jonathan (Figs 100)

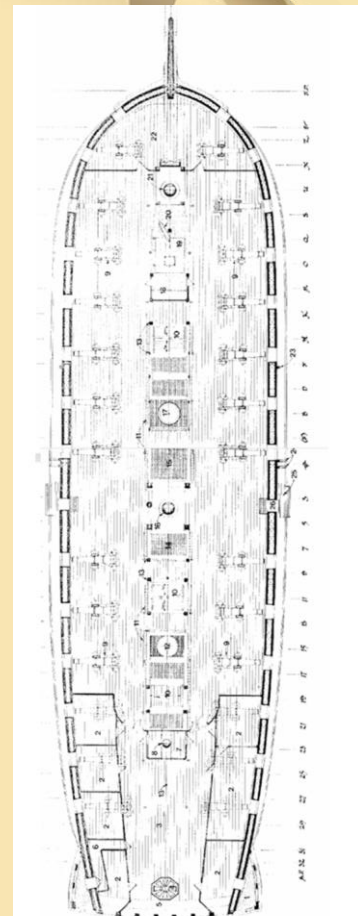


ABOVE Detail of galley hanging shelves.

[3]

A8 MIDDLE DECK (1/192 scale)

- 1 Quarter gallery
- 2 Officers' cabins
- 3 Wardroom
- 4 Cover for rudder head
- 5 Bench
- 6 Passage
- 7 Pantry
- 8 Mizzen mast
- 9 24-pounder gun (long)
- 10 Companionway
- 11 Shot garland
- 12 Main (jeer) capstan
- 13 Pillar
- 14 Aft hatch
- 15 Main hatch
- 16 Main mast
- 17 Fore capstan
- 18 Galley
- 19 Galley stove
- 20 Condenser
- 21 Fore mast
- 22 Sick bay
- 23 Chesstree
- 24 Fenders
- 25 Side ladder
- 26 Entry port



[2]

Research Difficulty



Sapper

Joined: Jan 12, 2024
Messages: 14
Points: 58



May 4, 2024

HMS Victory is almost always depicted with the external pedestrian doorways open and no doors. In trying to tailor my build, two questions arise which I can not find answers to:

1. What did the doors look like?
2. How were they fixed in place and where were they in the "open" position?

Any assistance appreciated please.

👍 Uwek



dafi

Joined: Mar 18, 2021
Messages: 340
Points: 323



May 5, 2024

If you mean the side entry port there is just one answer: We do not know ...

I am researching already for years but no contemporary evidence came up so far. Not in models, not in drawings or paintings and neither in admiralty orders. In the 1860ies there are french doors existing, upper half as one part, the lower half as 2 doors like in a western saloon.

If there are any new informations to come up, I would be happy 😊

XXDXDn

Last edited: May 6, 2024

👍 Alexander74 and Uwek

You must log in or register to reply here.



Museum Archive Access

Line	Plan	Scale
0	Lines/Profile no number (Modern plan drawn 1920s for refitting to 1805 configuration – this list is not exhaustive)	1:48
1	Body Plan Ia (Modern)	NS
2	Profile II (Modern)	1:48
3	Stern View Iia (Modern)	NS
4	Midship Section III (Modern)	1:48
5	Orlop Deck IV (Modern)	1:48
6	Lower Deck V (Modern)	1:48
7	Middle Deck VI (Modern)	1:48
8	Upper Deck VII (Modern)	1:48
9	Forecastle/Quarter Decks VIII (Modern)	1:48
10	Standing Rigging XL (Modern)	1:96
11	Running Rigging XLI (Modern)	1:96
12*	ZAZ0121 (J1850) Lines/Profile ca 1800 (dated 1925).	1:48
13*	ZAZ0122 (J1843) Inboard Profile, c1788	1:48
14*	ZAZ0123 (J1844) Orlop Deck, c1788	1:48
15*	ZAZ0124 (J1848) Gun Deck, c1788	1:48
16*	ZAZ0125 (J1846) Middle Deck, c1788	1:48
17*	ZAZ0126 (J1845) Upper Deck, c1788	1:48
18*	ZAZ0128 (J1849) Lines/Profile proposed 1759 (v. poor).	1:48
19*	ZAZ0127 (J1847) Upper Deck (1831).	1:48
20*	ZAZ0120 (J1842) Lines & décor'n (1830, pre1801)	1:48

Dear Dr Broadhead,

Many thanks for your email.

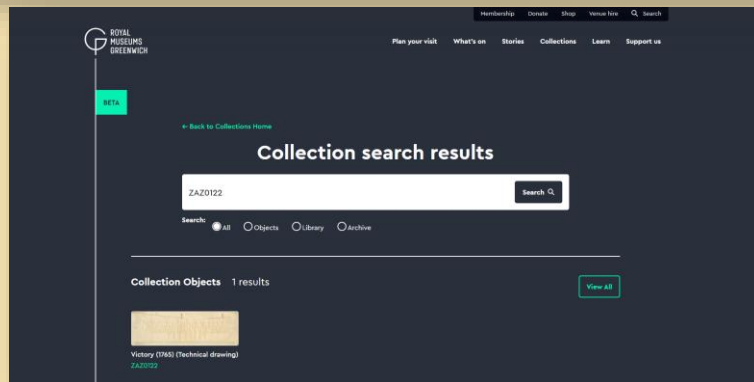
We do hold plans of the Victory which I have listed below. We have one "as intended" plan and then a number of plans from later configurations. We also have a large collection of plans that were drawn in the 1920s when they were restoring her to her 'Trafalgar' configuration, ready for her final life as the museum ship you see in Portsmouth today. I have colour coded the below list to show which plan relates to which period, but please do let me know if you have any questions.

Numbers 12 to 20 of the below list have been digitised and you can view them online here: [Search Results](#) | [Royal Museums Greenwich](#).

For the other plans you can either make an appointment to view or request digital copies for a fee.

For appointments to see the modern plans (yellow), you will need to make an appointment with us at the ship plans archive based in Woolwich. We are open 10am-4pm on Wednesdays and Thursdays. We have most days free in the new year so please let me know your preference. The plans with ZAZ references are stored at our collection's facility in Kidbrooke. Appointments to view these need to be made separately through our collections access team collectionaccess@rmg.co.uk. You can take photographs at either of these appointments for personal research, but you may need a license if they are going to be reproduced for public consumption.

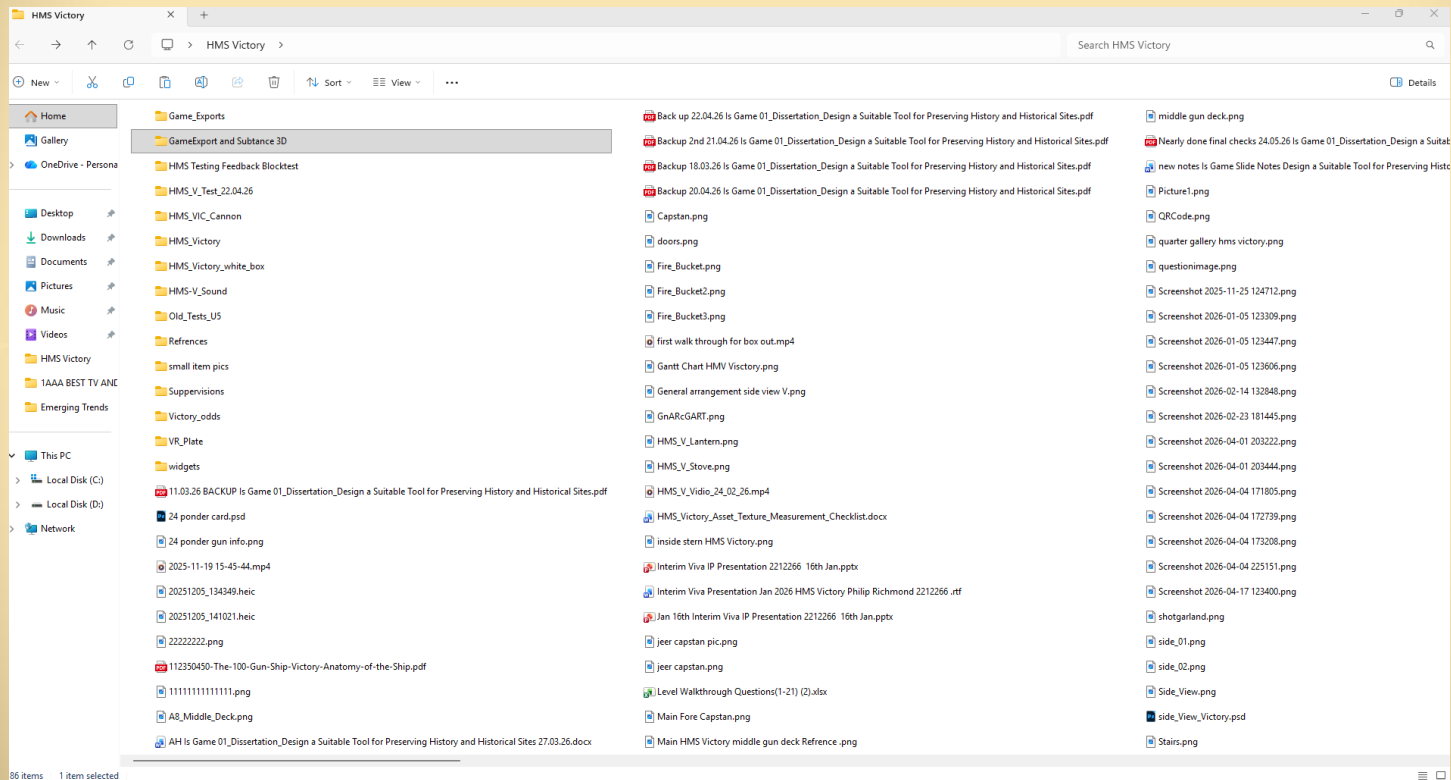
To order high resolution digital copies of any of the plans, or to discuss licensing please email images@rmg.co.uk



Project Schedule



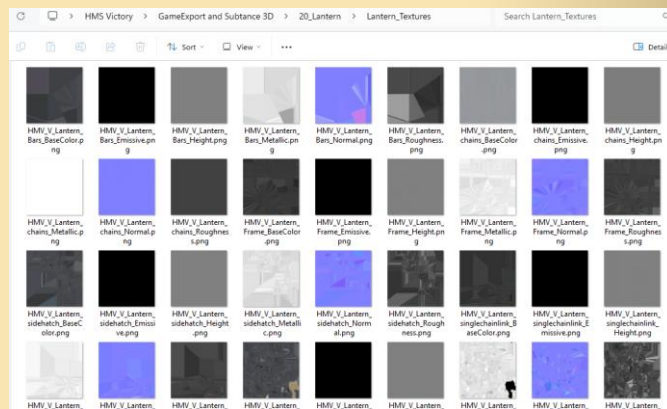
Organisation & Workflow Management



Organisation & Workflow Management

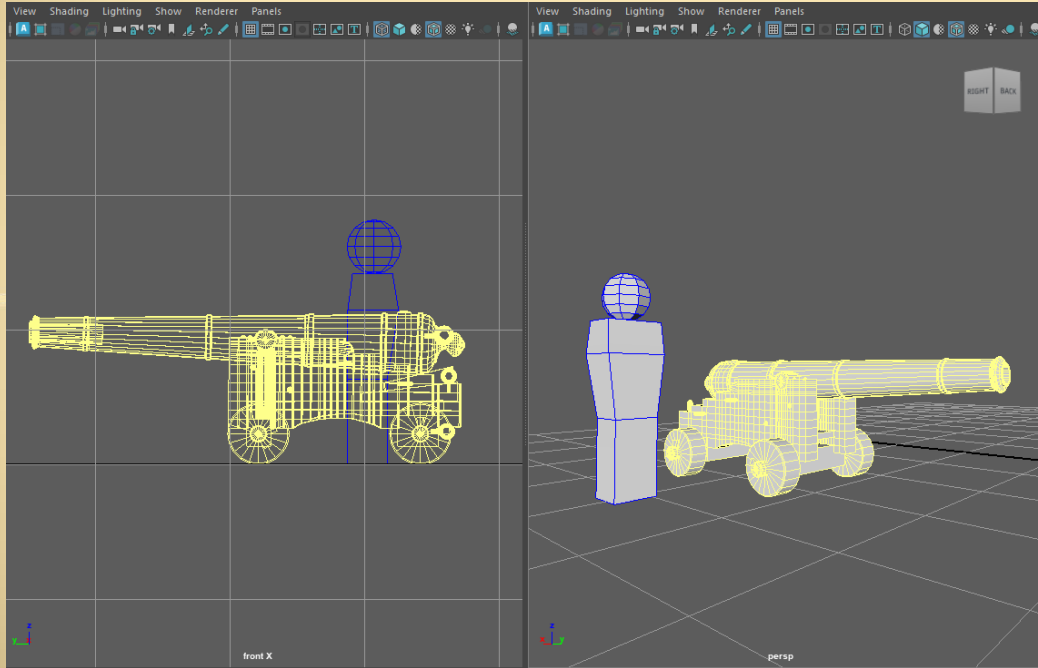
45_Uiving_Stove_working_interia_modling.ma	05/02/2026 16:21	Maya ASCII File	93,986 KB
46_Resize_Uiving_Stove_working_interia_modling.ma	05/02/2026 19:35	Maya ASCII File	96,736 KB
47_Resize2_Uiving_Floor_working_interia_modling.ma	05/02/2026 20:34	Maya ASCII File	103,326 KB
47_Resize2_Uiving_Stove_working_interia_modling.ma	05/02/2026 20:26	Maya ASCII File	103,315 KB
48_Resize2_Uiving_Floor_working_interia_modling.ma	07/02/2026 23:22	Maya ASCII File	99,184 KB
49_Resize2_Uiving_Hull_working_interia_modling.ma	08/02/2026 11:18	Maya ASCII File	99,268 KB
49a_Resize2_Uiving_Hull_working_bettervmapfor8k_interia_modling.ma	14/02/2026 13:18	Maya ASCII File	99,395 KB
50_Resize2_Uiving_Celing_working_interia_modling.ma	08/02/2026 11:38	Maya ASCII File	99,273 KB
51_Resize2_Uiving_ForeMast_Angle_working_interia_modling.ma	08/02/2026 19:33	Maya ASCII File	99,277 KB
52_Resize2_Uiving_ForeCoss_working_interia_modling.ma	08/02/2026 19:34	Maya ASCII File	99,310 KB
53_Resize2_Uiving_ForeMasts_working_interia_modling.ma	08/02/2026 20:44	Maya ASCII File	99,342 KB
54_Resize2_Uiving_Half_Arches_working_interia_modling.ma	08/02/2026 22:52	Maya ASCII File	99,344 KB
55_Resize2_Uiving_BreaceBeam_working_interia_modling.ma	08/02/2026 23:10	Maya ASCII File	107,019 KB
56_Resize2_Uiving_Stove_working_interia_modling.ma	09/02/2026 13:27	Maya ASCII File	107,209 KB
57_Resize2_Uiving_FoodArea_working_interia_modling.ma	09/02/2026 20:48	Maya ASCII File	108,298 KB
58_Resize2_Uiving02_FoodArea_working_interia_modling.ma	09/02/2026 22:24	Maya ASCII File	108,450 KB
59_Resize2_Uiving02_FoodDresser_working_interia_modling.ma	10/02/2026 13:34	Maya ASCII File	109,355 KB
60_Resize2_Uiving02_Single_Stairs_working_interia_modling.ma	10/02/2026 23:01	Maya ASCII File	111,857 KB
61_Resize2_Uiving02_MainMast_DoubleStairs_working_interia_modling.ma	11/02/2026 13:08	Maya ASCII File	117,219 KB
62_Resize2_Uiving_BrassMonkys_working_interia_modling.ma	11/02/2026 16:07	Maya ASCII File	118,159 KB
63_Resize2_Uiving_ForeCapstan_working_interia_modling.ma	11/02/2026 22:31	Maya ASCII File	119,079 KB
64_Resize2_Uiving_BraceBean_Uncambined_working_interia_modling.ma	12/02/2026 22:51	Maya ASCII File	121,727 KB
65_Resize2_Uiving_Stern_Window_working_interia_modling.ma	14/02/2026 11:54	Maya ASCII File	119,661 KB
66_Resize2_Uiving_Stern_Window_Hull_working_interia_modling.ma	14/02/2026 14:33	Maya ASCII File	120,414 KB
67_Resize2_Uiving_Stern_Window_Hull_working_interia_modling.ma	14/02/2026 22:57	Maya ASCII File	120,704 KB
68_Resize2_Uiving_Door_Pannelling_working_interia_modling.ma	23/02/2026 14:38	Maya ASCII File	132,328 KB
69_Rendering_Wireframe_practice_modling.ma	05/04/2026 17:31	Maya ASCII File	131,208 KB
70_VR_Wheel_modling.ma	05/04/2026 17:54	Maya ASCII File	134,503 KB
71_VR_Wheel_modling.ma	05/04/2026 19:45	Maya ASCII File	144,602 KB
72_Table_modling.ma	14/04/2026 11:57	Maya ASCII File	147,692 KB

01_Floor_Resize	12/02/2026 22:53
02_Hull_Resize	08/04/2026 22:08
03_Celing_Resize	14/02/2026 22:05
04_ForeMast_Angle	08/02/2026 19:14
05_ForeCoss	08/02/2026 19:41
06_ForeMasts	08/02/2026 22:24
07_Half_Arches	08/02/2026 22:23
08_BraceBeam	12/02/2026 22:27
09_Stove	23/02/2026 17:05
10_FoodArea	09/02/2026 21:58
11_Dresser	10/02/2026 21:08
12_Single_Stairs	11/02/2026 16:05
13_DOUBLESTAIR AND mAST	11/02/2026 16:05
14_BrassMonkys	11/02/2026 16:39
15_RuddenHeadCover	11/02/2026 17:45
16_Support_Posts	11/02/2026 17:51
17_ForeCapstan	11/02/2026 22:01
18_WindowFramStem	14/02/2026 22:05
19_Cannon	14/02/2026 22:07
20_Lantern	15/02/2026 19:52
21_Door_Panels	23/02/2026 12:17
22-Floor_Lantern	17/02/2026 12:06
23-Bread_Bench	14/04/2026 13:29
24-Table_Blench	14/04/2026 13:42
25_Kitchen_Ware	14/04/2026 21:43
26_FireBucket	16/04/2026 12:37
old	07/02/2026 23:10

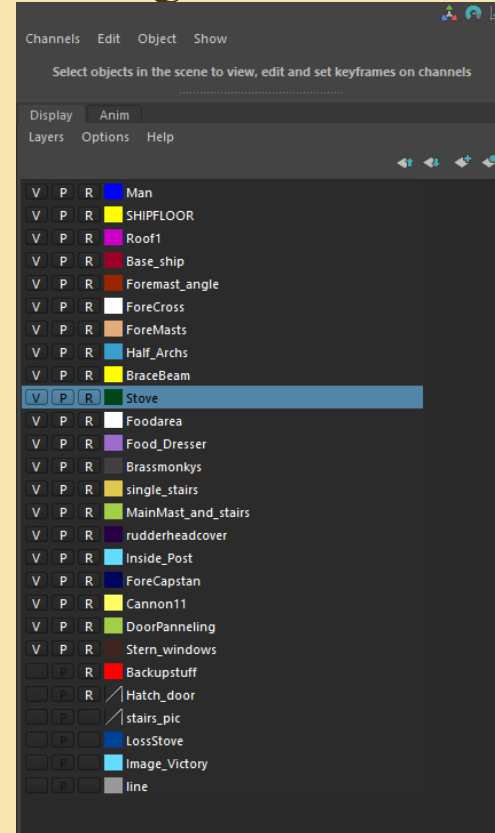
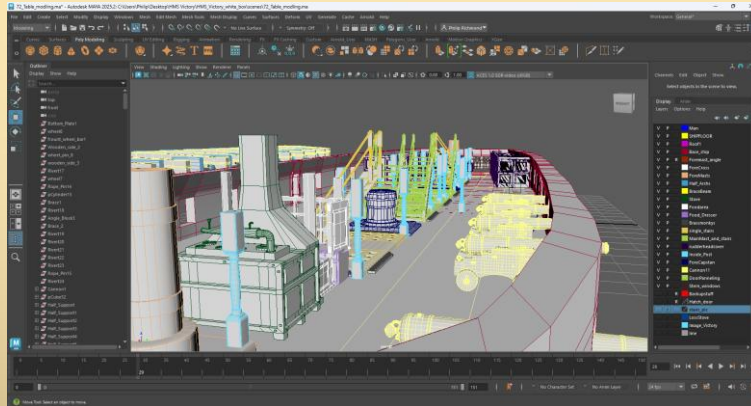
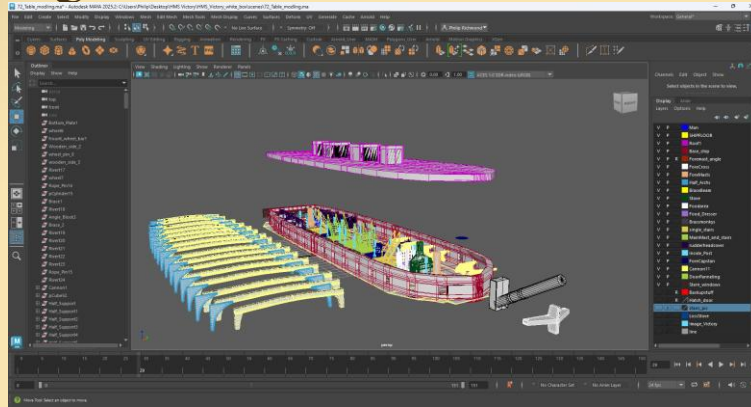


Name	Date modified	Type	Size
Lantern_Textures	15/02/2026 19:52	File folder	
HMS_V_Lantern.spp	15/02/2026 19:52	Substance Painter ...	137,697 KB
HMV_V_Lantern.fbx	15/02/2026 19:12	FBX File	1,017 KB

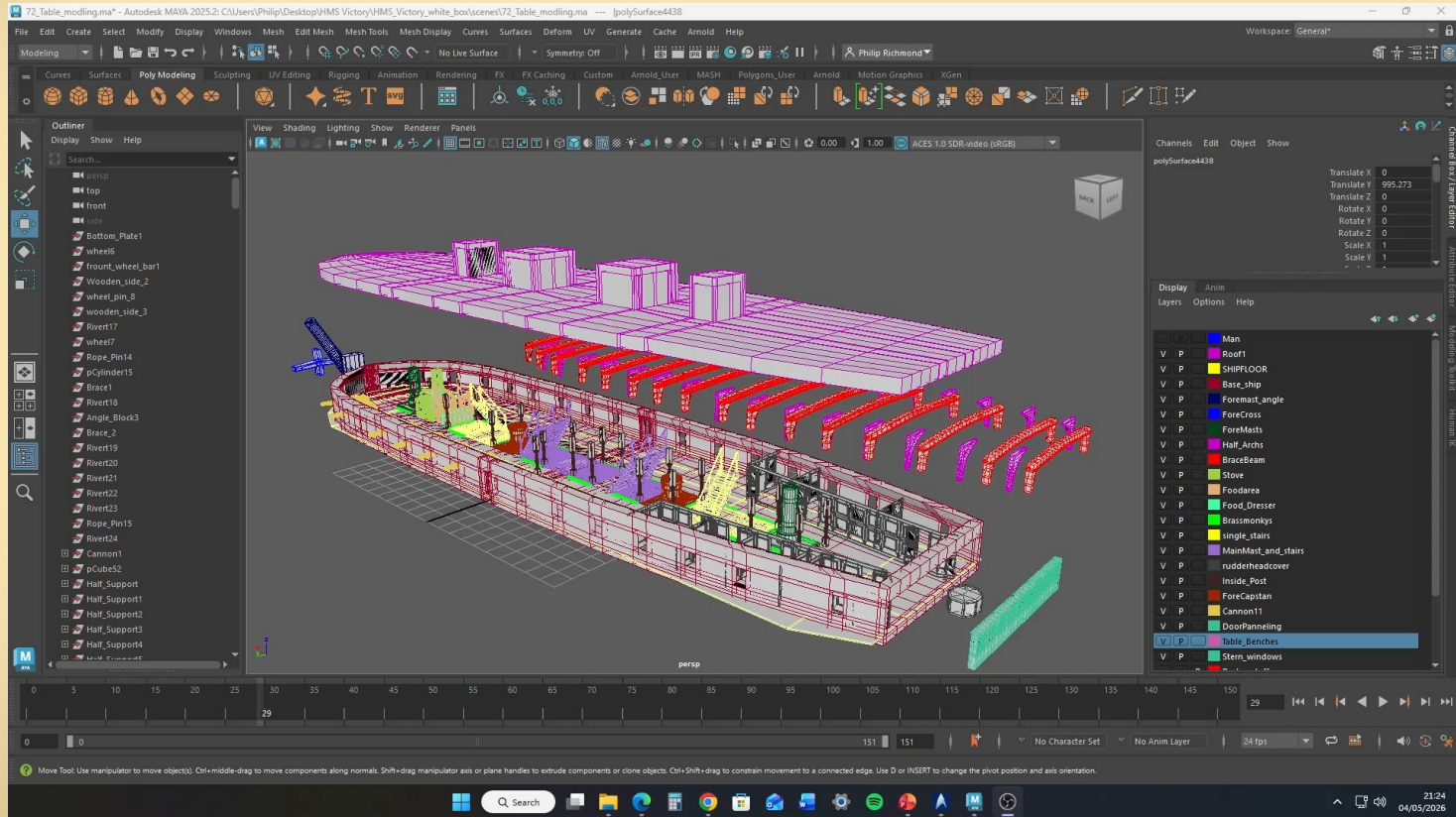
Organisation & Workflow Management



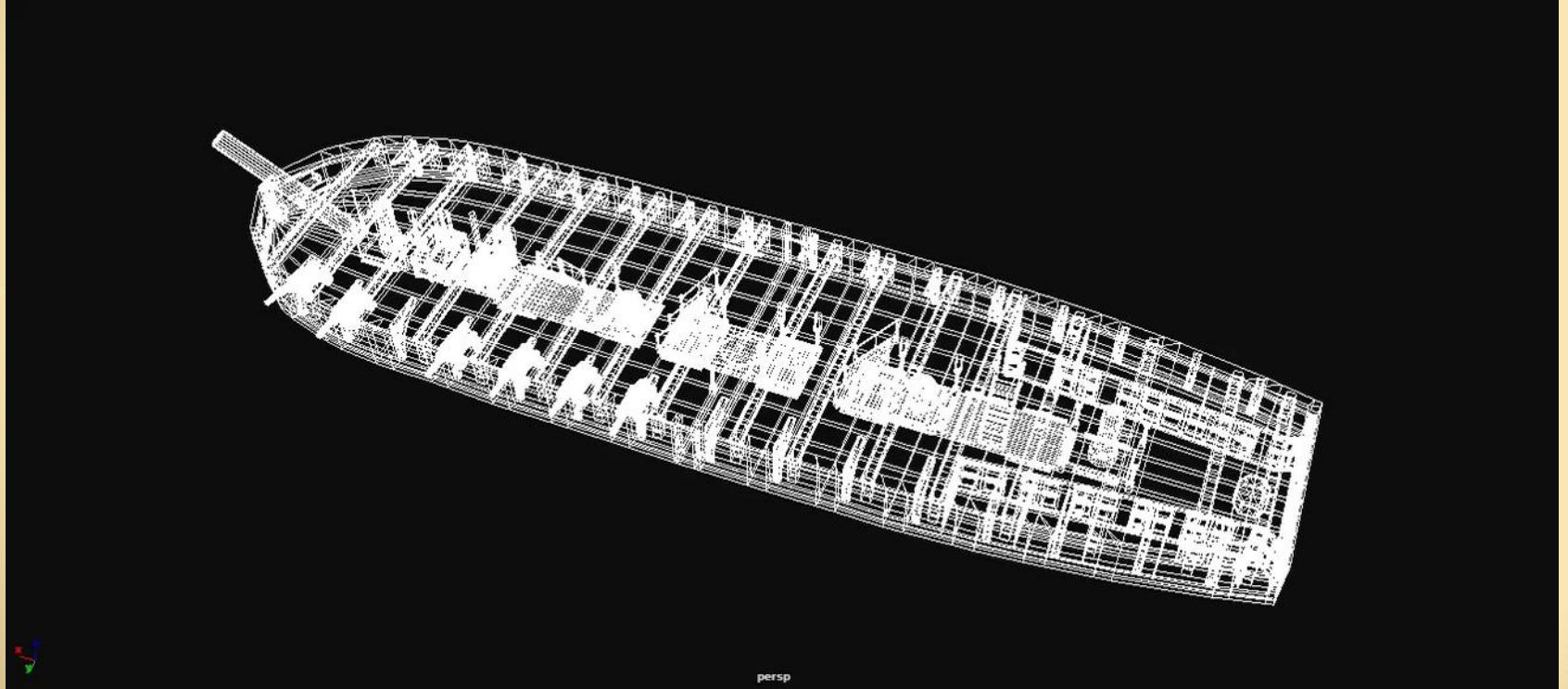
Organisation & Workflow Management



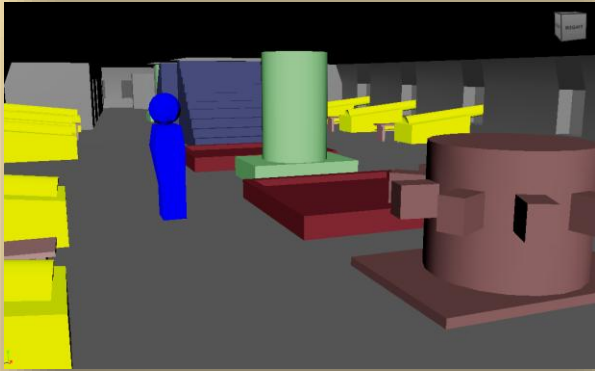
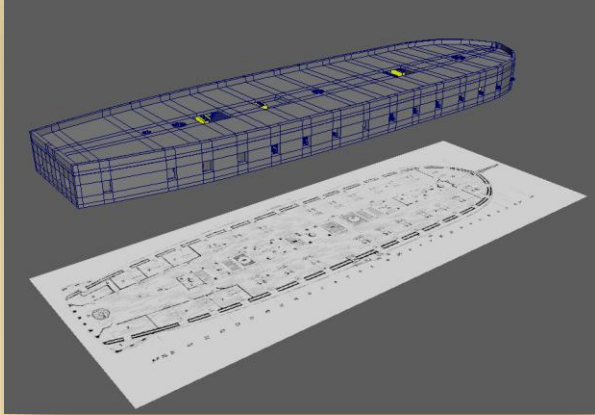
Organisation & Workflow Management



Development Progress



Development Progress From this



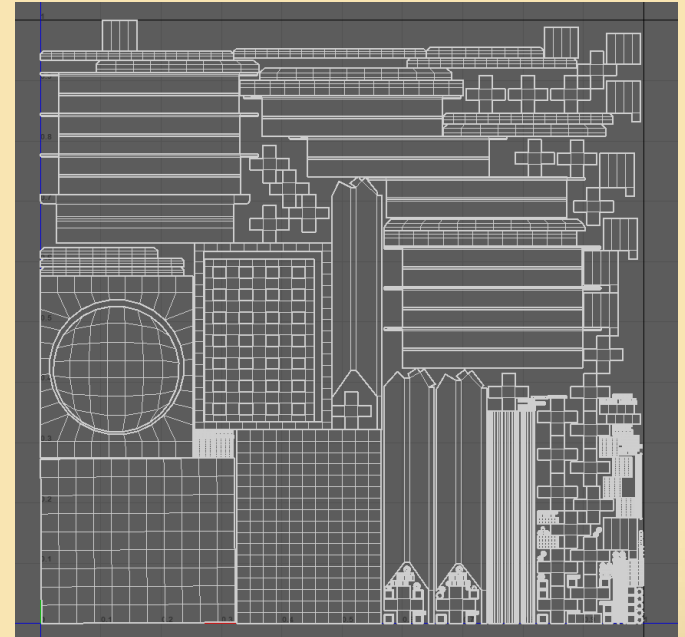
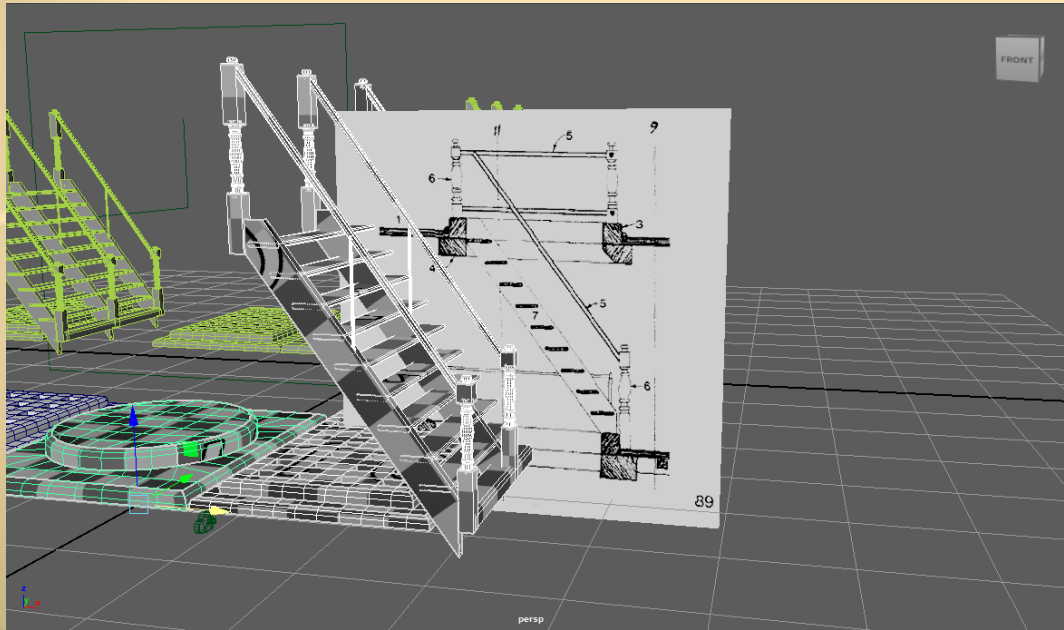
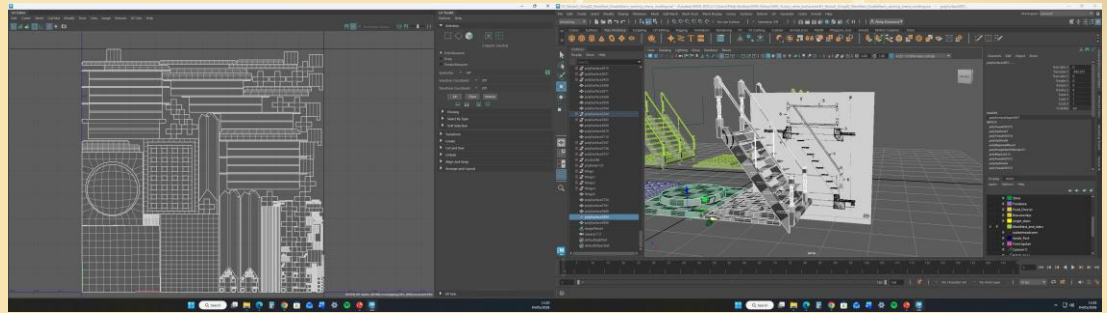
Development Progress



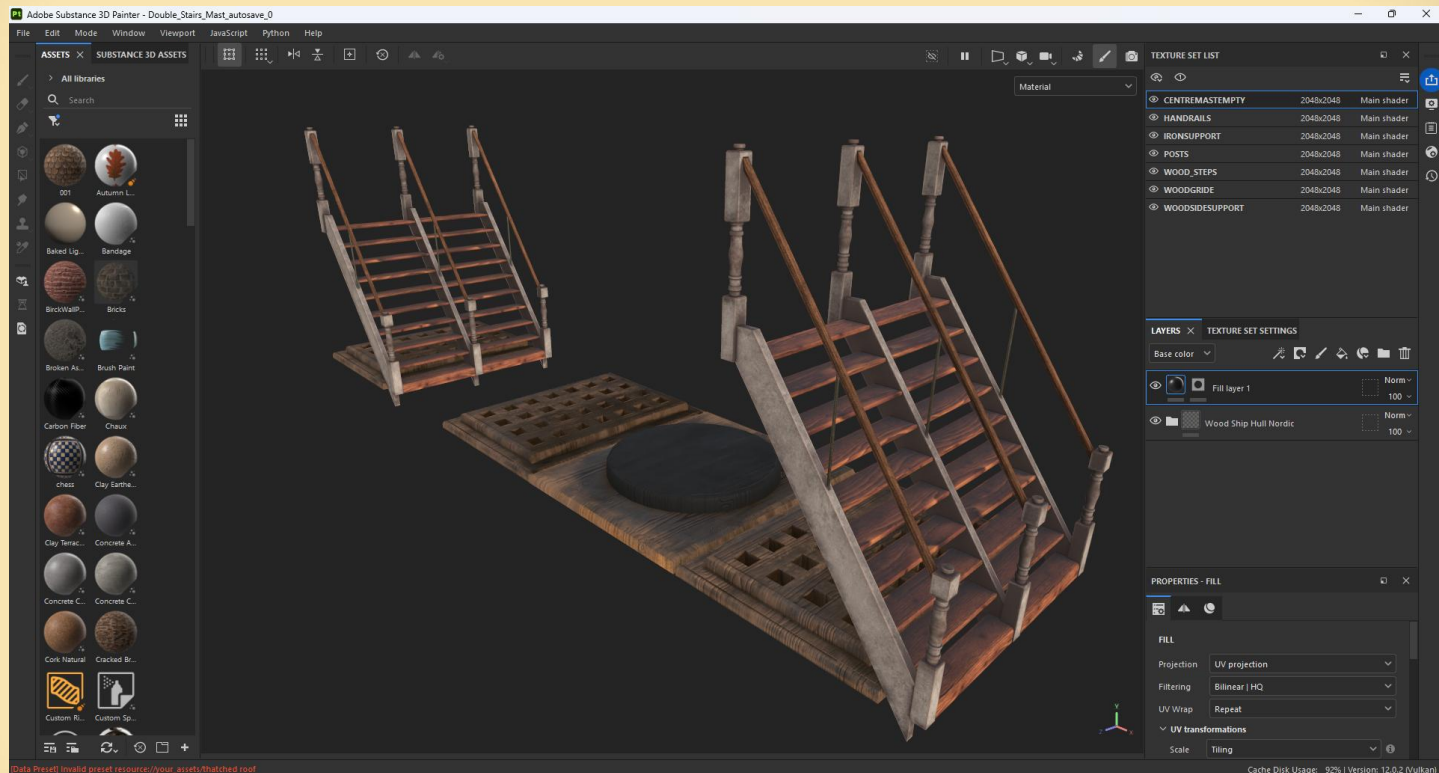
Development Progress



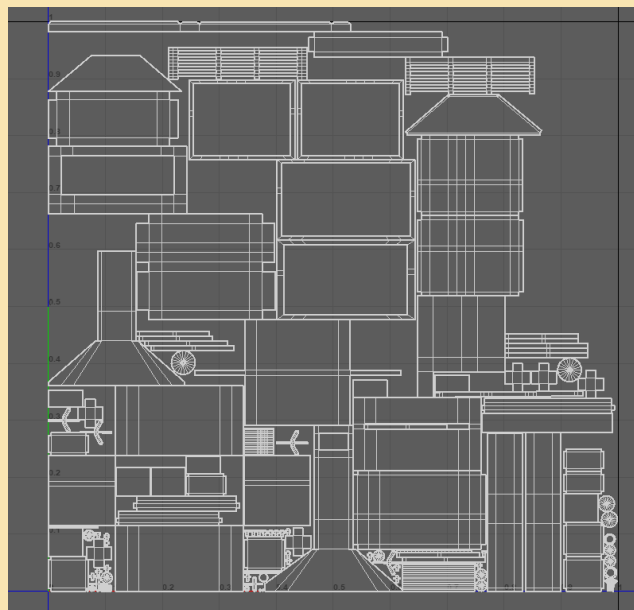
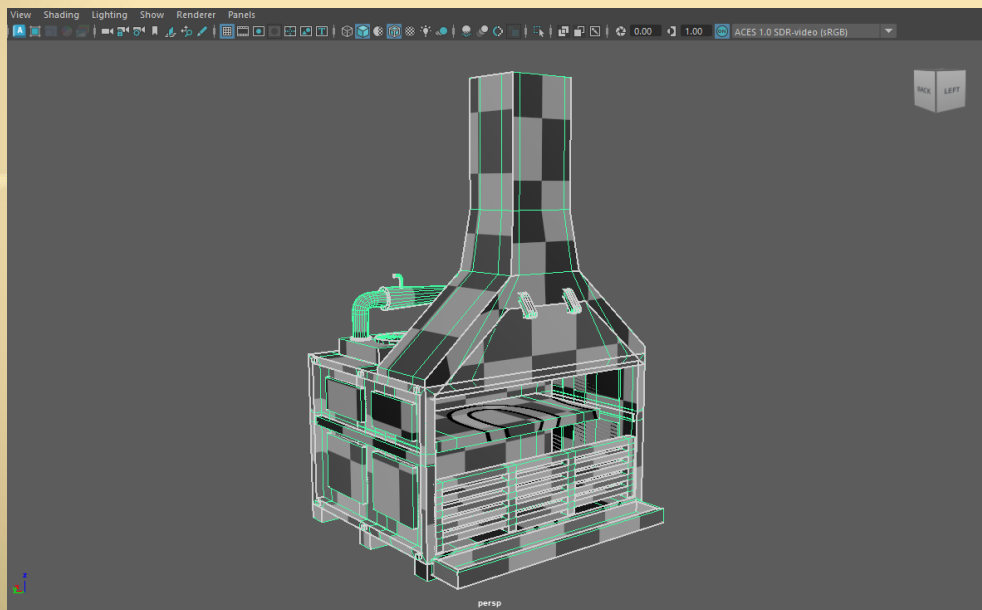
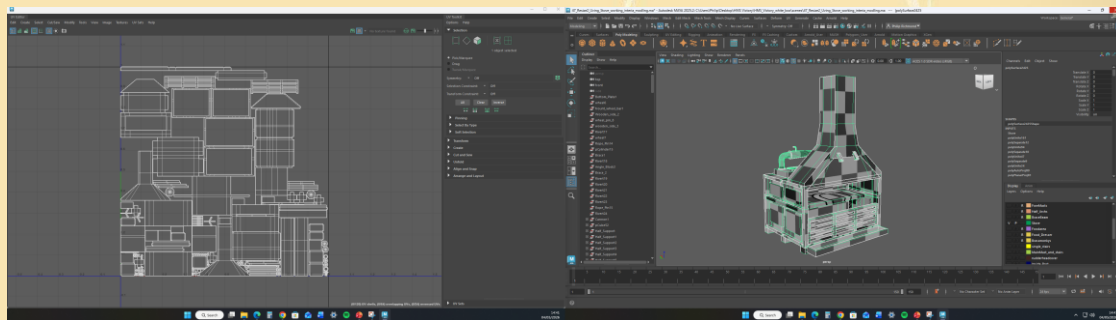
Development Progress Stairs



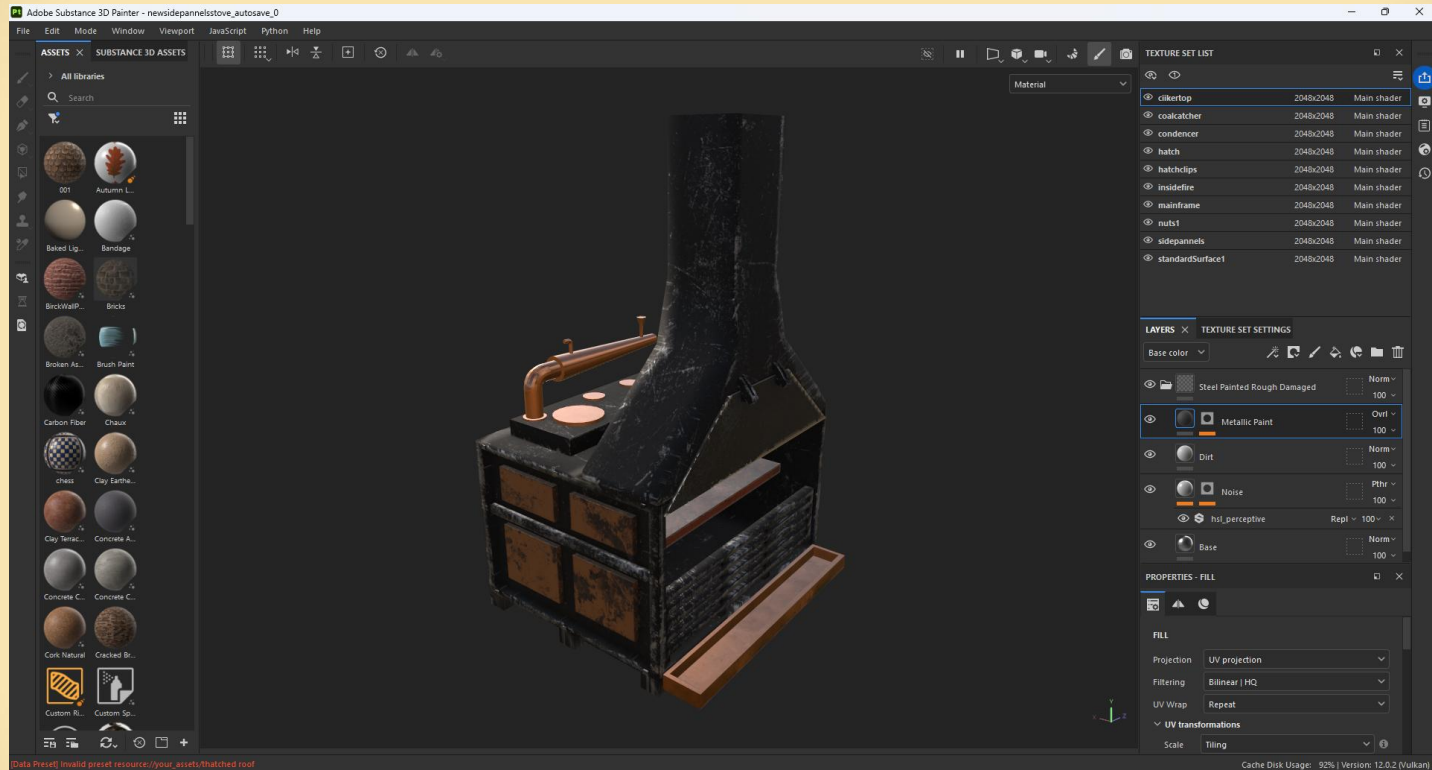
Texturing and Substance 3D Double Stairs



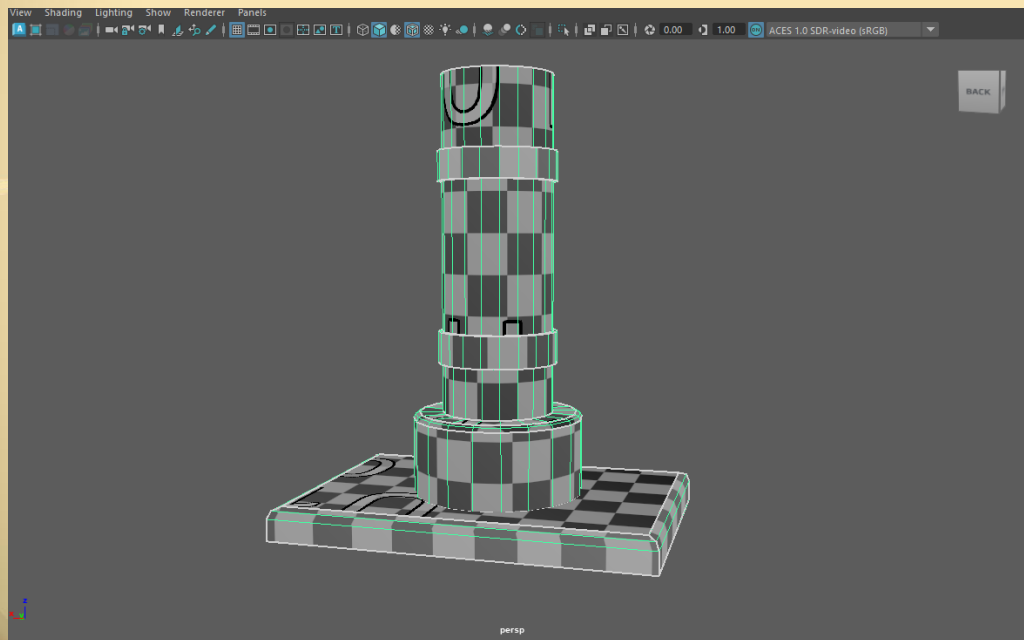
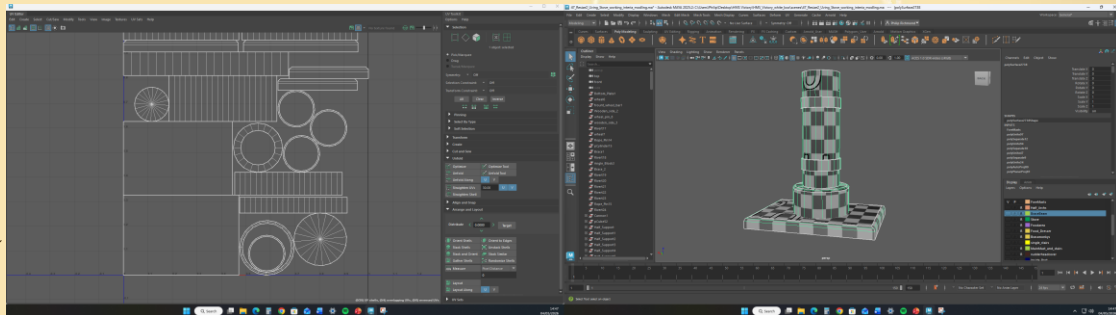
Development Progress Stove



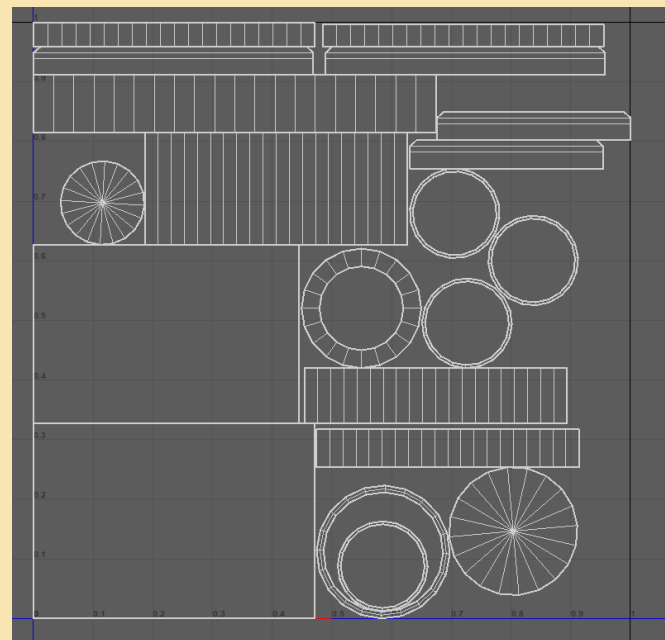
Texturing and Substance 3D



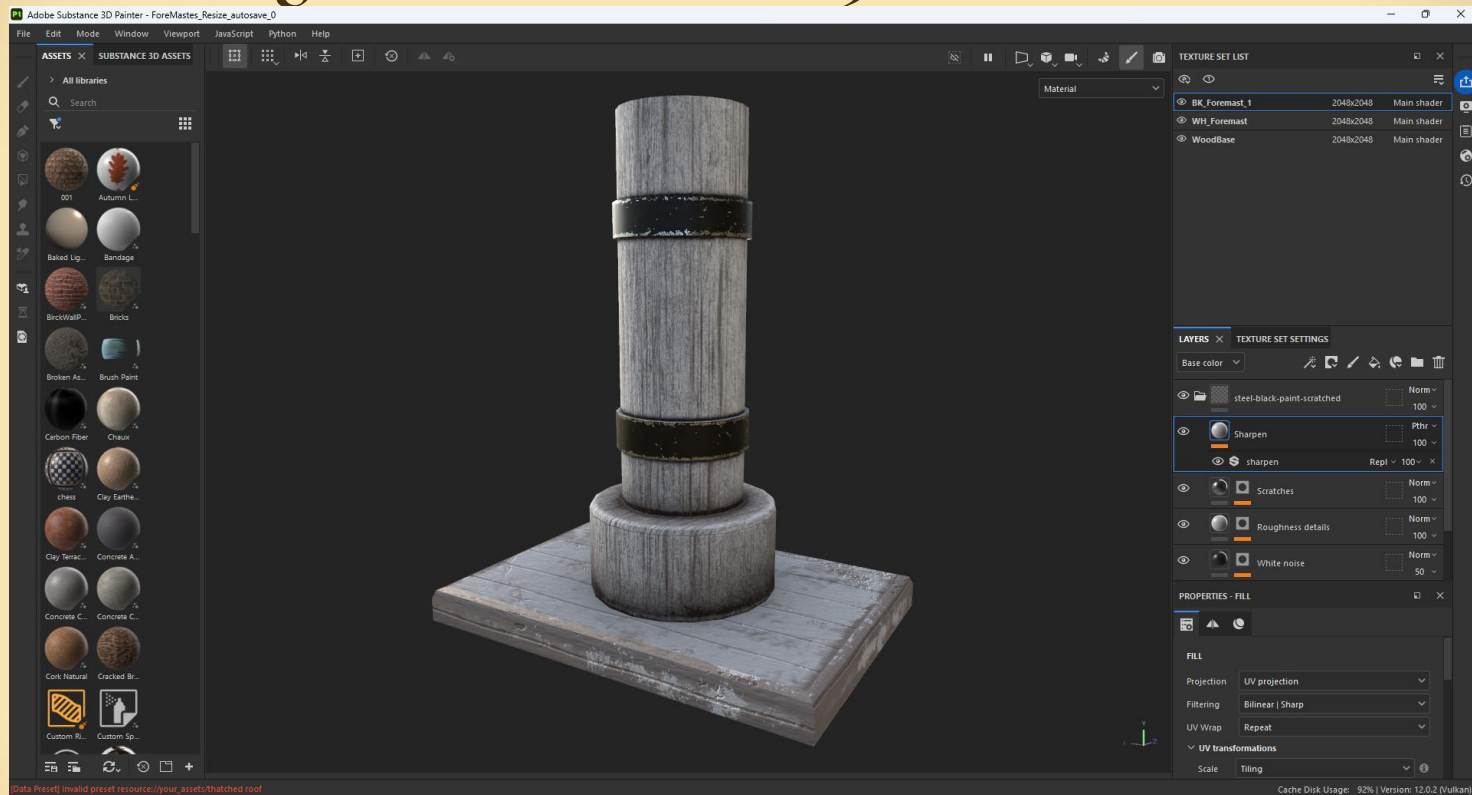
Development Progress Foremast



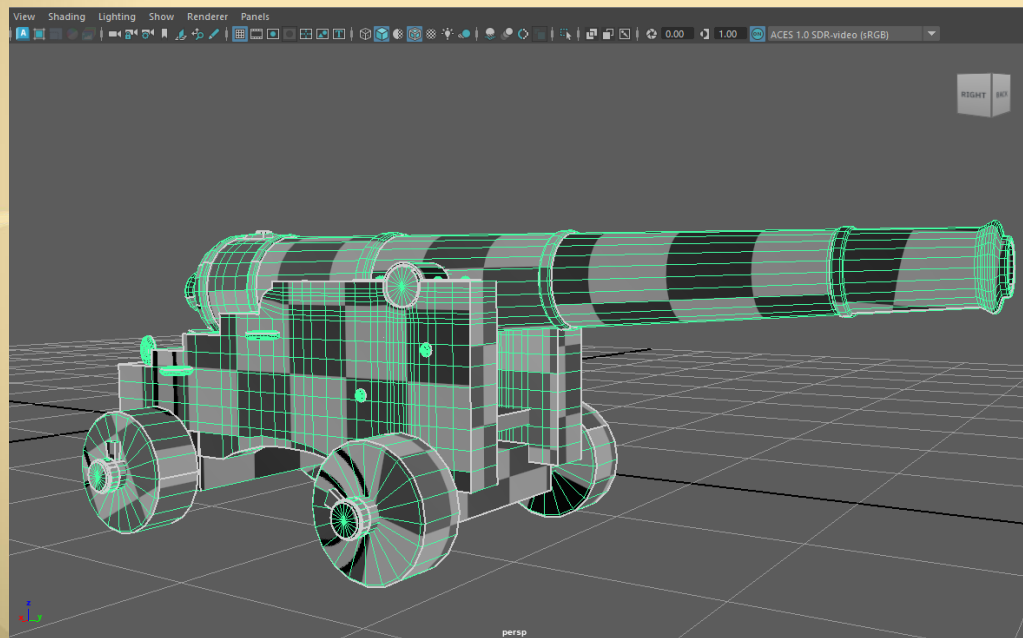
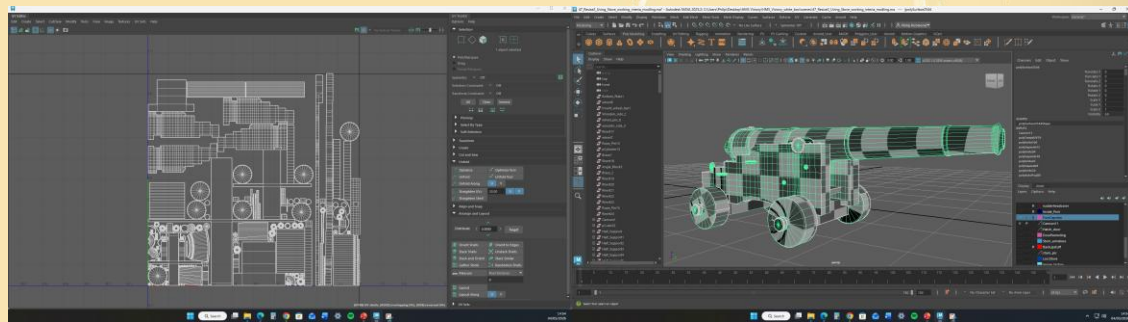
[7]



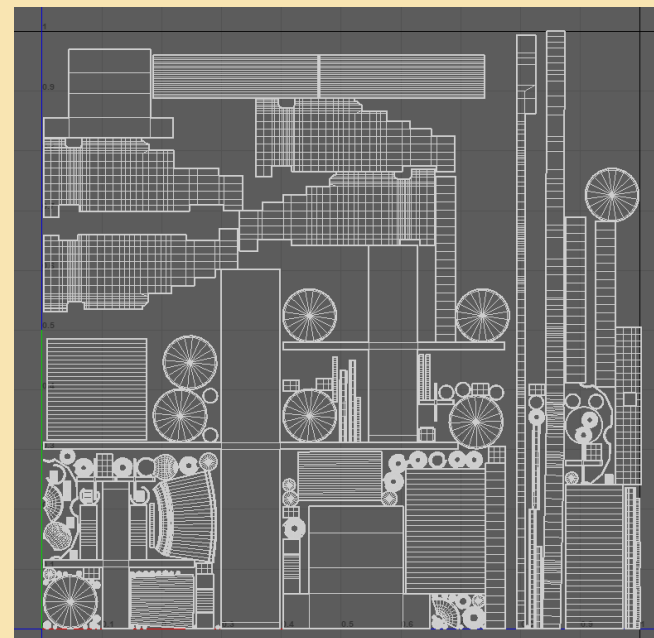
Texturing and Substance 3D Foremast



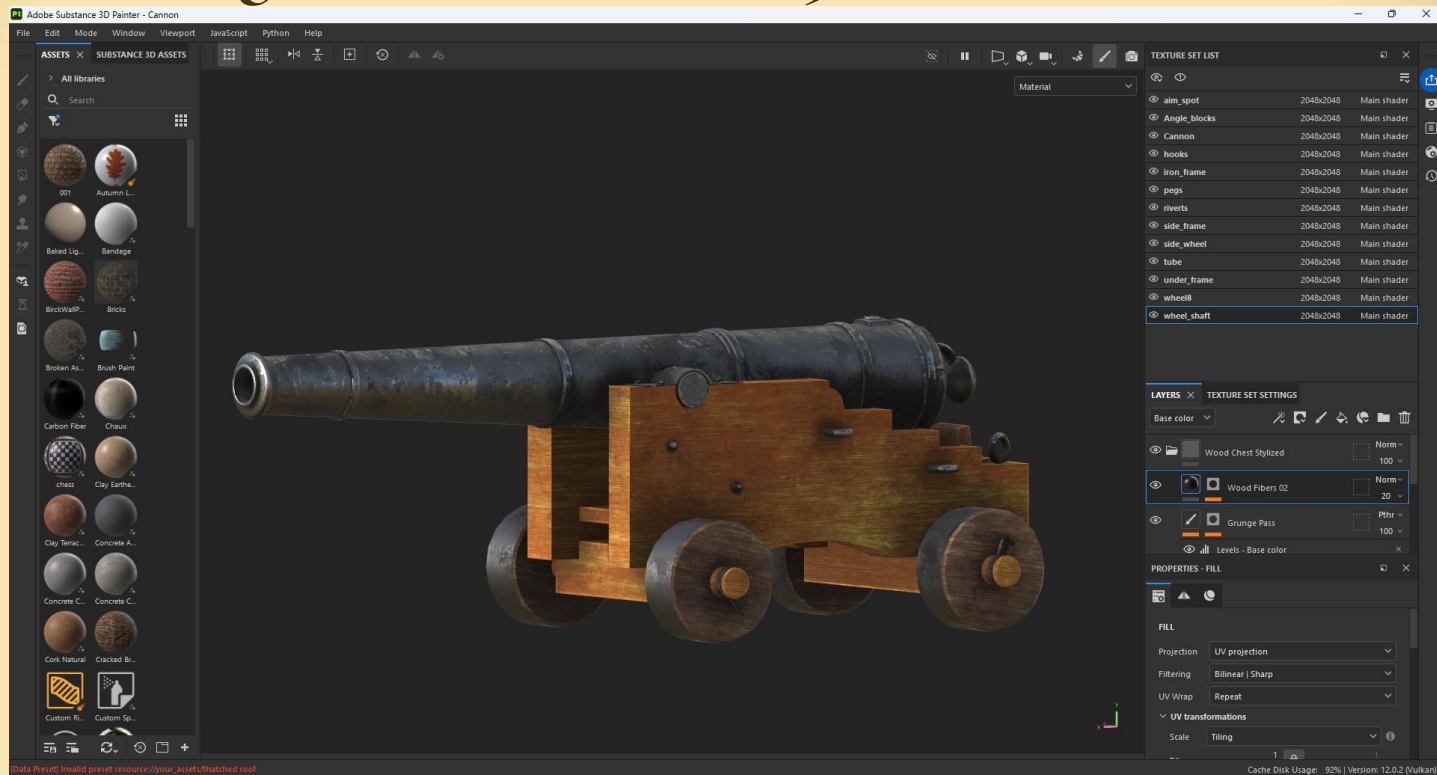
Development Progress Cannon



[7]



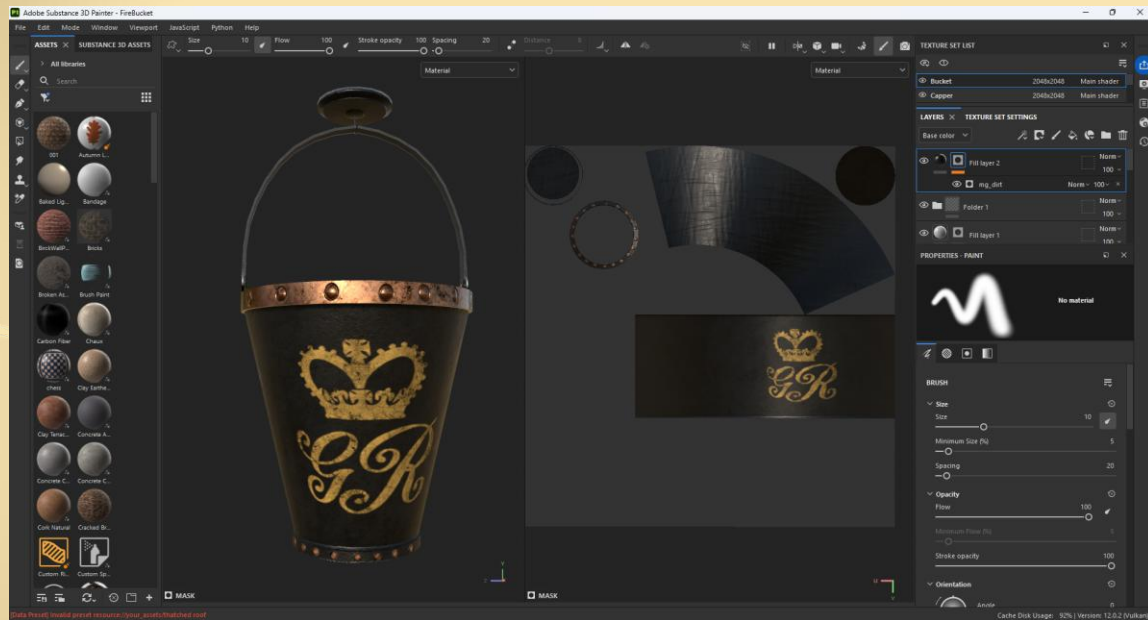
Texturing and Substance 3D



Asset Created



Texturing and Substance 3D Fire Bucket

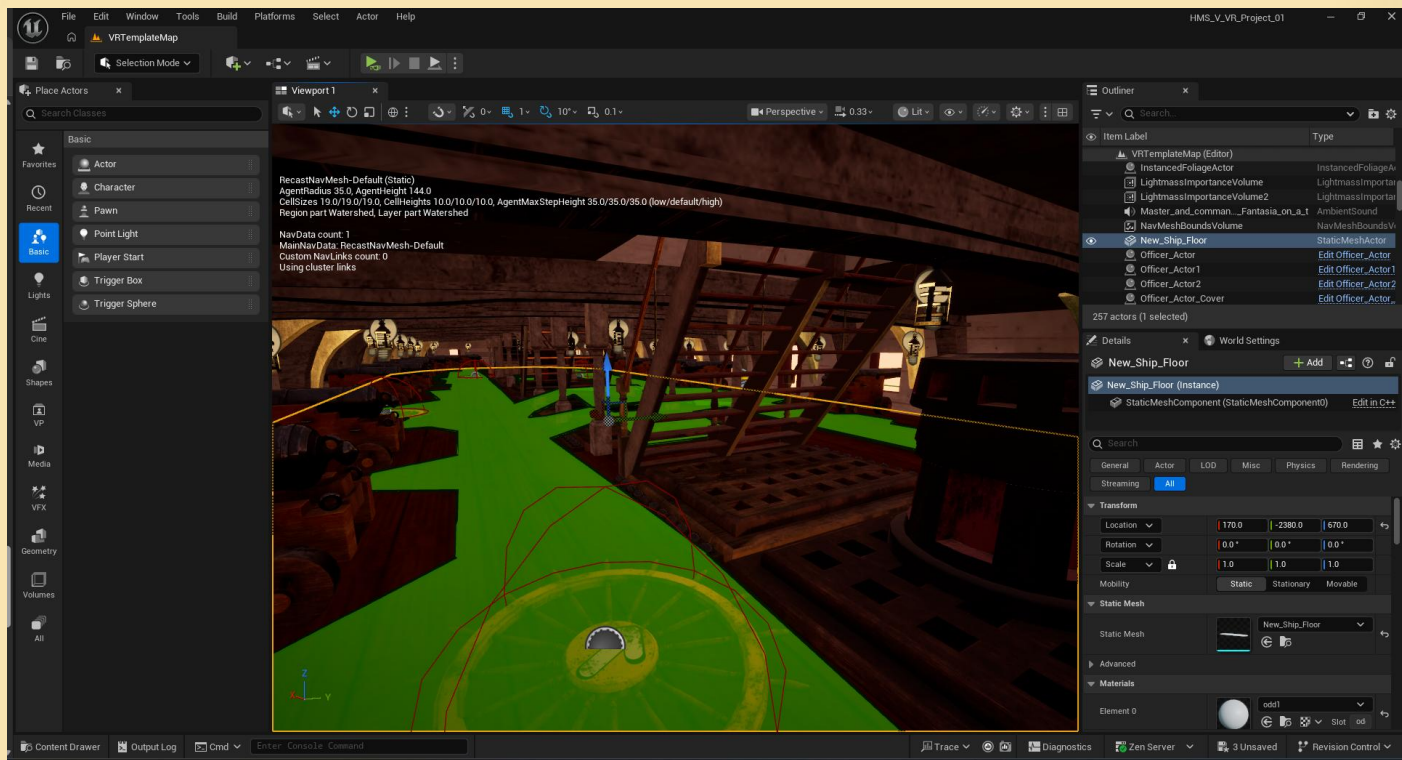


[9]

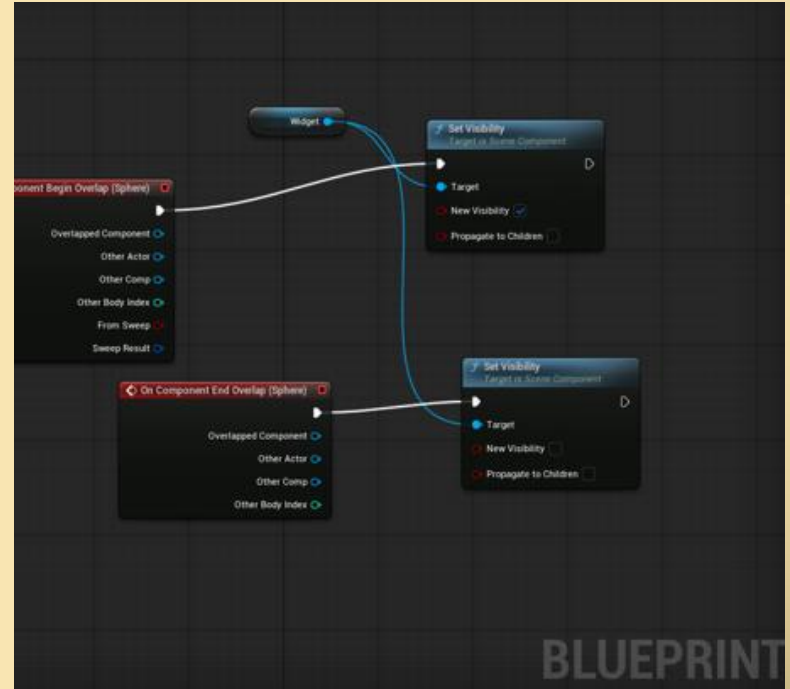
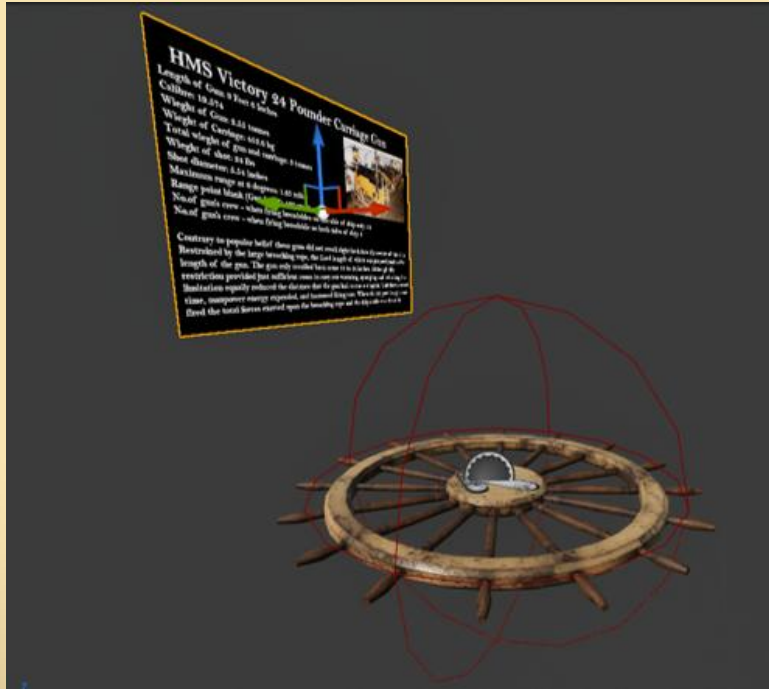


[1]

VR Learning



VR Learning



Iteration of Interactive Markers for VR



HMS Victory 24 Pounder Carriage Gun

Length of Gun: 9 Feet 6 Inches

Calibre: 19.574

Weight of Gun: 2.55 tonnes

Weight of Carriage: 453.6 kg

Total weight of gun and carriage: 3 tonnes

Weight of shot: 24 lbs

Shot diameter: 5.54 inches

Maximum range at 6 degrees: 1.25 miles

Range point blank (Gun Level): 400 yards

No. of gun's crew - when firing broadsides on one side of ship only: 12

No. of gun's crew - when firing broadside on both sides of ship: 6



Contrary to popular belief these guns did not recoil right back into the centre of the ship. Restrained by the large breaching rope, the fixed length of which was proportional to the length of the gun. The gun only recoiled back some 18 to 24 inches. Although this restriction provided just sufficient room to carry out worming, sponging and reloading this limitation equally reduced the distance that the gun had to run out again. This factor saved time, manpower energy expended, and increased firing rate. When the 24 pounder gun was fired the total forces exerted upon the breaching rope and the ship's side was about 14 tones.

Brodie Stove and Galley Cooking

The Brodie stove was a cast-iron ship's stove designed by Alexander Brodie and patented between 1780 and 1781. Installed during the ship's 1787–1789 refit, it replaced earlier brick hearth systems with a safer and more efficient iron design.

- Located on the middle gun deck (forward section)
- This stove fed over 800 crew members
- Built entirely from iron to reduce fire risk
- Used for boiling, baking, and cooking daily meals
- Fuelled by coal or wood
- Included a rotisserie system powered by rising hot air
- Can distil small amounts of seawater into fresh water (around 2 gallons per day), mainly for the sick bay



The stove was essential for feeding the crew, with meals typically consisting of salted meat, broth, and hardtack (ship's biscuit). Strict fire safety measures were always required due to the dangers of open heat onboard.

VR Widgets and Colour Theory

Jeer Capstan

Main Use on HMS Victory

The Jeer capstan was used for hoisting in stores, guns, and boats, as well as raising topmasts, yards, and the lower yards with their Jeer tackle.

- Name comes from Latin *capistrum* and Anglo-Saxon *capster*
- Upper section was called the drumhead
- Worked together with its matching capstan on the deck below
- Operated by around 140 men using 14 capstan bars

Before Use

Before the capstan was operated, the surrounding iron stanchions were removed. This was done by swinging out the heel and lifting out the retaining pins at the top. Nearby ladders, wooden pillars, and guns were also removed.

Historical Importance

This capstan still turns on its original bearings and is the only surviving example of a late 18th-century capstan.



VR Learning



VR Lighting Problem



User Testing Block out Test

Block-out walkthrough questions

Instructions

To begin, double-click the Unreal Engine project icon titled Block-Out-Test. You will then complete a short walkthrough of the block-out environment. Movement controls are W, A, S, and D on the keyboard, and the mouse is used to look around.

Please remain within the designated block-out area for the duration of the walkthrough and do not move outside the intended space. Observe the environment from start to finish, focusing on scale, spatial layout, and overall environmental coherence.

This study is fully anonymous, and no personal data will be collected. Your responses will be used solely to support the development and refinement of the block-out.

1. Does the scale of the space feel believable to you?
2. Based on the walkthrough, what environment do you think this is meant to represent?
3. Did the walkthrough create any specific feeling or atmosphere for you? If so, what?

How well does the block-out match the reference images. Circle the number that best represents your answer.

- 1 – Strongly Disagree
- 2 – Disagree
- 3 – Undecided
- 4 – Agree
- 5 – Strongly Agree



User Testing for Desktop Version

Level Walkthrough Questions

Thank you for taking part in this second walkthrough test. This version of the level includes updates and improvements based on feedback from the first round of testing. The aim of this session is to evaluate how these changes have affected the overall experience, including scale, layout, lighting, and sense of environment.

It does not matter if you did not take part in the first test. You can still complete this walkthrough and provide feedback as normal.

You will explore the level using the same controls as before: W, A, S, and D to move, and the mouse to look around. Please remain within the designated area and take your time to observe the space from start to finish.

Your feedback will help assess whether the level is becoming more believable, readable, and aligned with its intended purpose. This study is anonymous, and all responses will be used to support further development and refinement of the project.

When you submit this form, it will not automatically collect your details like name and email address unless you provide it yourself.

1

Year Of Study

- ☐ Year 1
- ☐ Year 2
- ☐ Year 3
- ☐ Masters
- ☐ Other



User Testing Table & Findings

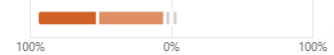
Summary of User Testing Findings and Iterative Improvements

Category	Year 2 Testing Initial	Year 1 Testing Refined	Interpretation	Design Response
Scale and Proportions	Scale perceived as believable and lifelike, cannon size supported human scale.	Scale again perceived as believable, comments noted accurate width and length.	Spatial scale validated across both groups.	Retain current proportions and apply to detailed modelling stage.
Spatial Layout and Navigation	General navigation understood, though some hesitation observed at the start of testing.	Navigation clear with no reported confusion.	Improved usability after control clarification	Maintain current layout; no structural changes required.
Environment Recognition	Identified as pirate ship, warship, or old sailing vessel	Identified more confidently as battleship or pirate era ship.	Ship interior clearly communicated, but historical specificity unclear.	Introduce HMS Victory specific layout and prop details.
Atmosphere and Mood	Described as dark, gritty, isolated, and eerie; some horror like associations.	Described as dark, cold, eerie, but immersive and engaging.	Atmosphere effective but overly dark for educational context.	Rebalance lighting to reduce horror tone while retaining historical weight.
Control Clarity	Some participants unsure of movement and camera controls.	No control related issues reported after instructions were added	Iterative refinement improved feedback reliability.	Retain explicit control instructions for future testing.
Reference Image Match (Likert Scale)	Mostly rated 4 (Agree), one instance of 5 (Strongly Agree).	Consistently rated 4 (Agree).	Strong early alignment with reference imagery.	Minor refinements only, final accuracy pass using official references.

12. Does the environment feel cohesive and historically appropriate?

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

Statement 1

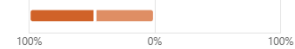


6. Does the lighting suit the environment being represented?

[More details](#)

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

Statement 1



7. Does the lighting help you understand the space clearly (visibility, depth, shadows)?

[More details](#)

Strongly agree Agree Neither agree nor disagree Disagree Strongly disagree

Statement 1



Dissertation and Practical Project Connection

- Connects practical work to dissertation research
- Explores game design as a digital heritage tool
- Combines historical research with Unreal Engine and VR
- Uses user testing to evaluate immersion and learning
- Examines historical accuracy and environmental storytelling
- Highlights limitations such as lighting, research access, and technical issues
- Supports the argument that interactive environments can preserve historical spaces

Next Steps

- Further environmental detailing and refinement
- Improved texturing and seam correction
- Additional lighting refinement and optimisation
- Expanded VR interaction and educational features
- Larger scale qualitative and quantitative user testing
- Further historical research and reference gathering
- Potential expansion into additional ship sections
- Improved accessibility and usability features

Conclusion

- Successfully developed a historically informed reconstruction of the HMS Victory middle gun deck
- Combined historical research with game design and VR technology
- Overcame research, lighting, VR, and technical challenges through iterative development
- User testing supported improvements in lighting, readability, and environmental storytelling
- Demonstrated the potential of game design for digital heritage preservation and education
- Established a strong foundation for future expansion and development



Find the Easter Egg in the Desktop Version

Thanks!

Do you have any questions?
2212266@student.uwstd.ac.uk

References

- [1] TripAdvisor, “https://www.tripadvisor.co.uk/Attraction_Review-g186298-d4354338-Reviews-Royal_Navy_Museums_HMS_Victory-Portsmouth_Hampshire_England.html,” *TripAdvisor*, 2023. <https://www.tripadvisor.co.uk/> (accessed Mar. 12, 2026).
- [2] J. McKay, *The 100-Gun Ship Victory*. Conway, 2000. Accessed: Nov. 05, 2025. [Online]. Available: <https://www.scribd.com/doc/155283973/Conway-Maritime-Press-Anatomy-of-the-Ship-Hms-Victory>
- [3] P. Goodwin, *HMS Victory Owner's Workshop Manual 1765 - 1812 (First rate ship of the line)*. Somerset: Haynes Publishing, 2015.
- [4] “Ships of Scale,” *Ships of Scale*, Nov. 08, 2024. <https://shipsofscale.com/sosforums/> (accessed Feb. 12, 2026).
- [5] “Collection Results | Royal Museums Greenwich,” *Rmg.co.uk*, 2026. <https://www.rmg.co.uk/collections/objects/search/hms%20victory%20plans> (accessed Dec. 06, 2025).
- [6] Canva, “Canva,” *Canva*, 2025. <https://www.canva.com/> (accessed Feb. 10, 2026).
- [7] “Autodesk empowers innovators everywhere to make the new possible,” *Autodesk.com*, Jan. 20, 2021. <https://www.autodesk.com/uk> (accessed Sep. 09, 2025).
- [8] “Unreal Engine 5,” *Unreal Engine*, 2026. <https://www.unrealengine.com/unreal-engine-5> (accessed Feb. 23, 2026).
- [9] “3D design software - Adobe Substance 3D,” *Adobe.com*, 2024. <https://www.adobe.com/products/substance3d.html> (accessed Feb. 07, 2026).
- [10] Adobe, “Buy Adobe Photoshop | Best photo, image, and design editing software,” *www.adobe.com*, 2023. <https://www.adobe.com/uk/products/photoshop.html> (accessed Nov. 12, 2025).
- [11] Microsoft, “Microsoft - Official Home Page,” *Microsoft.com*, 2024. <https://www.microsoft.com/en-gb> (accessed Feb. 12, 2026).

Bibliography

“How an 18th Century Sailing Battleship Works,” *www.youtube.com*. <https://www.youtube.com/watch?v=4Nr1AgIfajI> (accessed Feb. 10, 2026).

“Artesanía Latina,” *Artesanía Latina*, 2025. <https://artesanialatina.net/uk/en/62522-hms-victory-traffic-lar-1805-anatomy-version-1-84-wooden-scale-model.html> (accessed Mar. 20, 2026).

“Memorials and Monuments in Portsmouth - HMS Victory Muster at the Battle of Trafalgar,” *Memorialsinportsmouth.co.uk*, 2018. <https://www.memorialsinportsmouth.co.uk/dockyard/victory-muster.htm> (accessed Jan. 12, 2026).

“HMS Victory - Conservation log | National Museum of the Royal Navy,” *Royalnavymuseums.org.uk*, 2026. <https://www.royalnavymuseums.org.uk/hms-victory-conservation-log> (accessed Mar. 12, 2026).

“Manual 3 of 3 Parts List & Part Identification.” Available: http://www.jotika-ltd.com/Manuals/Victory_Parts.pdf

Alamy Limited, “HMS Victory 104-gun des navire de la ligne de la Royal Navy lancé en 1765. Le vaisseau amiral de Nelson, Trafalgar 1805,” *Alamyimages.fr*, 2017. <https://www.alamyimages.fr/photo-image-hms-victory-104-gun-des-navire-de-la-ligne-de-la-royal-navy-lance-en-1765-le-vaisseau-amiral-de-nelson-traffic-lar-1805-145505393.html> (accessed May 12, 2026).

“3D model created to help restore HMS Victory,” *BBC News*, Oct. 29, 2013. Accessed: Mar. 09, 2026. [Online]. Available: <https://www.bbc.co.uk/news/uk-england-hampshire-24729864>

PortsHistDockyard, “Incredibly rare cannon from the legendary HMS Victory 1744 wreck,” *YouTube*, Sep. 13, 2018. <https://www.youtube.com/watch?v=xbJNAR3FRsg>

Epic History, “3D Guide to Britain’s Most Famous Warship - HMS Victory,” *YouTube*, Oct. 21, 2023. <https://www.youtube.com/watch?v=KUERUnx2lms> (accessed Mar. 12, 2026).

Polyrendr, “Old Cannon | Autodesk Maya + Substance 3D Painter,” *YouTube*, Jul. 12, 2022. <https://www.youtube.com/watch?v=ScNFDfnNhDs> (accessed Oct. 12, 2025).

Epic History, “HMS Victory in 3D: Total Guide (1/2),” *YouTube*, Aug. 26, 2022. <https://www.youtube.com/watch?v=61SYvhojGvg>

Bibliography

CaljuCotcas, "Ultimate Sail Ship Size Comparison (3D)," *YouTube*, Dec. 04, 2024. https://www.youtube.com/watch?v=Yj_Px0IsCHk (accessed Feb. 06, 2026).

Epic History, "3D Guide to Britain's Most Famous Warship (2/2)," *YouTube*, Sep. 30, 2022. <https://www.youtube.com/watch?v=TrC3yMMDsc8> (accessed May 12, 2026).

History Dose, "The Nightmarish Battle of Trafalgar 1805 | Nelson vs. Napoleonic Navy," *YouTube*, Dec. 16, 2023. <https://www.youtube.com/watch?v=W6rOIMKmKs4> (accessed Jan. 16, 2026).

Big Ships!, "HMS Victory: The World's Oldest Warship Still In Commission," *YouTube*, Jun. 30, 2025. <https://www.youtube.com/watch?v=s1GCMvAseE> (accessed Feb. 07, 2026).

"Guns aboard HMS Victory," *www.houseoftheorangemonkey.co.uk*. <http://www.houseoftheorangemonkey.co.uk/monkey/trips/trip1461615.htm> (accessed May 12, 2026).

V. Brockwell, "Eight Facts about HMS Victory," *Hattons of London*, Oct. 23, 2023. https://hattonsoflondon.com/eight-facts-about-hms-victory/?srsltid=AfmBOoovosOKSyh1gLuTA9SJPWyxESQ9nkgdl_XHsNNszx2rBKol1_Us (accessed Oct. 19, 2025).

"SCHOOL TRIPS AT RISK OF BEING CONSIGNED TO HISTORY | English Heritage," *English Heritage*, 2023. <https://www.english-heritage.org.uk/about/search-news/school-trips-at-risk-of-being-consigned-to-history/> (accessed Feb. 12, 2026).

"Home - National Museum of the Royal Navy," *National Museum of the Royal Navy*, Dec. 18, 2025. <https://shop.nmrn.org.uk/> (accessed May 12, 2026).

W. Welgens, "Conway Maritime Press - Anatomy of the Ship - Hms Victory," *Scribd*, 2026. <https://www.scribd.com/doc/155283973/Conway-Maritime-Press-Anatomy-of-the-Ship-Hms-Victory> (accessed Jan. 12, 2026).

chave weather - daily videos, "HMS Victory | Walkthrough Tour April 2017 | 4k," *YouTube*, May 05, 2017. <https://www.youtube.com/watch?v=3O16e08S6tA> (accessed May 12, 2026).

"Insert multiple edge loops at once in Maya #maya #3dart #3dmodeling," *www.youtube.com*. <https://www.youtube.com/shorts/xgtNnSu881I> (accessed Mar. 10, 2026).

3DMegaverse, "Low Poly Model Texturing in Substance Painter, texturing a low poly house," *YouTube*, Oct. 24, 2021. <https://www.youtube.com/watch?v=fiH9VCoQm5c> (accessed May 04, 2025).

Bibliography

“Maya - Importing & Using Image Plane References,” *www.youtube.com*. <https://www.youtube.com/watch?v=Q8IMNtYMegU>

WINBUSH, “Centering the Axis Pivot on a Model in Unreal Engine 5 or UEFN,” *YouTube*, Jan. 15, 2024. <https://www.youtube.com/watch?v=BBhWW7ovpGs> (accessed May 12, 2026).

“Extrude multiple faces in Maya at once! #maya #tutorial #3dart,” *www.youtube.com*. <https://www.youtube.com/shorts/qDyAKdren84> (accessed May 12, 2026).

“Brass Monkey,” *Navy.mil*, 2025. <https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/b/brass-monkey.html>

A. Wieja, “Photos - Steps,” *HMS Victory - The Model*, 2026. <https://www.hmsvictory.com.au/photos/fittings-steps> (accessed May 12, 2026).

“Maya 2018 How to combine objects together,” *YouTube*. Nov. 18, 2017. [YouTube Video]. Available: <https://www.youtube.com/watch?v=zDjr6htHOeY>

“Quickly Create a 90-degree Pipe in Autodesk Maya,” *www.youtube.com*. <https://www.youtube.com/shorts/pgNnUU-VAsc> (accessed May 12, 2026).

WorldofLevelDesign, “Maya Beginner Tutorial Series 13/17: Deleting Faces, Edges, Vertices and Making Better Selections,” *YouTube*, Feb. 10, 2025.

<https://www.youtube.com/watch?v=9AWBnEaheDM> (accessed May 12, 2026).

Epona S Toose, “UV Mapping a Sphere in Maya,” *YouTube*, Jul. 19, 2017. https://www.youtube.com/watch?v=5i437Q_vvCk (accessed May 12, 2026).

Stylized Station, “Using Substance to Texture 3D Models in Under 10 Minutes,” *YouTube*, Jul. 30, 2020. <https://www.youtube.com/watch?v=yugiFNBT1YA> (accessed Apr. 04, 2026).

Drawcall, “How do I add a texture into Unreal Engine 5?,” *YouTube*, Apr. 27, 2023. <https://www.youtube.com/watch?v=F7NnLa7OEoo>

On Mars 3D, “How to Import 3D Models into Substance Painter,” *YouTube*, Oct. 25, 2020. <https://www.youtube.com/watch?v=zASPStN4Hl4> (accessed Feb. 04, 2025).

Unreal University, “I Wish I Had Known This Before I Started Unreal Engine Game Development...,” *YouTube*, Aug. 03, 2025. <https://www.youtube.com/watch?v=ZDqX6T1-tA0> (accessed Mar. 12, 2026).

Fist Full of Shrimp, “5 Essential Skills You NEED for VR Game Development in 2025,” *YouTube*, Jan. 20, 2025. <https://www.youtube.com/watch?v=haB9W5nDLEk>

Bibliography

- Quinn Kuslich, "Create Your First VR Project in Unreal Engine 5 | Meta Quest 3 | Quick Setup Guide for Beginners," *YouTube*, Aug. 17, 2024. https://www.youtube.com/watch?v=i3xNb5R_xos
- "How to Setup VR in Unreal Engine 5.1," *www.youtube.com*. <https://www.youtube.com/watch?v=Z4sClxhgsxk>
- EZ Unreal, "Player Start Position in UE5: How to Change and Customize It," *YouTube*, Aug. 01, 2023. <https://www.youtube.com/watch?v=9tge03p70Io> (accessed May 12, 2026).
- "How To Light Interiors In Unreal Engine 4 & 5 (Tutorial)," *www.youtube.com*. <https://www.youtube.com/watch?v=PKjnYulk1NA>
- "HOW TO RESET UI WINDOW LAYOUT UNREAL ENGINE 5 #gamedevelopment," *www.youtube.com*. <https://www.youtube.com/shorts/Uo9r9668szY> (accessed May 12, 2026).
- hawaiiifilmschool, "What's the rush? Slowing Down Your Player Character in Unreal Engine 5.3," *YouTube*, Nov. 01, 2023. <https://www.youtube.com/watch?v=DouClQpzf1w>
- "Set up your Meta Quest," *Meta*, 2021. <https://www.meta.com/gb/quest/setup/?srsltid=AfmBOoqMteWGaZLtw7k8Rzp3PJVVTXcfk0EFCDAEDMTqX61-UxT4ghjM> (accessed Feb. 11, 2026).
- Virtus Learning Hub, "Build User Interfaces In VIRTUAL REALITY For Unreal Engine 5," *YouTube*, Jul. 23, 2022. <https://www.youtube.com/watch?v=kM27HYbpvc0>
- EZ Unreal, "How To Easily Delete Unreal Engine 5 Projects," *YouTube*, Mar. 16, 2023. <https://www.youtube.com/watch?v=9k5aC8GuEoM> (accessed May 12, 2026).
- Kyle Geske, "Creating a VR Menu in Unreal Engine 5," *YouTube*, Sep. 12, 2024. <https://www.youtube.com/watch?v=0q2ij542l90> (accessed May 12, 2026).
- Maya Learning Channel, "Maya Quick Tip: Resetting Maya to the default state," *YouTube*, Jan. 22, 2019. <https://www.youtube.com/watch?v=HptugoNgwAU> (accessed May 12, 2026).
- "How To Enable Collisions In Unreal Engine," *www.youtube.com*. <https://www.youtube.com/watch?v=VIwYo3J2ez0>
- "Unreal Engine 5 Water Tutorial - Create Oceans, Lakes and Rivers (easy)," *www.youtube.com*. <https://www.youtube.com/watch?v=HOKR2pSzZSY> (accessed Mar. 12, 2026).
- Unreal Engine 5 Tutorials, "How to Fix SDK Not Setup Error in Unreal Engine 5 - SDK Windows Not Installed Launch On Menu Section," *YouTube*, May 04, 2022. <https://www.youtube.com/watch?v=EoIdyhjW9e0>

Bibliography

G. Games, “How to Build Your Game in Unreal Engine 5 - Super Easy,” *YouTube*. Jan. 13, 2023. Available: <https://www.youtube.com/watch?v=JOMrVMwGBso>

“Download .NET 8.0 SDK (v8.0.416) - Windows x64 Installer,” *Microsoft*, 2026. <https://dotnet.microsoft.com/en-us/download/dotnet/thank-you/sdk-8.0.416-windows-x64-installer> (accessed Mar. 11, 2026).

Karl-Bridge-Microsoft, “Windows SDK overview - Windows apps,” *Microsoft.com*, Mar. 31, 2026. <https://learn.microsoft.com/en-gb/windows/apps/windows-sdk/> (accessed Jan. 19, 2026).

Cinecom.net, “5 Tricks you (probably) don’t know about Unreal Engine 5,” *YouTube*, May 12, 2023. <https://www.youtube.com/watch?v=ZF7Vwc8L1ok>

U. Sensei, “Unreal Engine 5 Beginner Tutorial - UE5 Starter Course 2022,” *www.youtube.com*, Jun. 30, 2022. <https://www.youtube.com/watch?v=k-zMkzmdudqI>

KortAlx, “Andor S2 - ‘Mon Mothma dance’ - Brandon Roberts: Brasso - KORTALX Techno house Remix,” *YouTube*, May 05, 2025. <https://www.youtube.com/watch?v=fIJmNwZZbK8> (accessed May 12, 2026).

“Unreal Engine 5 Tutorial: Easy Water System Walkthrough for Beginners (Island, River, Lake),” *www.youtube.com*. https://www.youtube.com/watch?v=09SO3X_fUto

pinkpocketTV, “Unreal Engine 5 Beginner Tutorial | Sky And Clouds,” *YouTube*. Jan. 14, 2022. Available: <https://www.youtube.com/watch?v=IYZoR3ZLD-o>

GDXR, “How To Create VR In Game Notifications When Interacting With Actors In Unreal Engine 5,” *YouTube*, Nov. 29, 2024. <https://www.youtube.com/watch?v=82y4CyW7pN0> (accessed Apr. 08, 2026).

TUF, “The ONLY Unreal Engine 5 Rendering Guide You Need,” *YouTube*, Nov. 24, 2025. <https://www.youtube.com/watch?v=YT4JDg1TLJ4>

WorldofLevelDesign, “UE5 Quick Tip 23: Display Wireframe on Static Meshes in Shaded Mode in UE5,” *YouTube*, Jul. 19, 2022. <https://www.youtube.com/watch?v=QUgdzpubSuQ> (accessed May 12, 2026).

“How can I change an ue5 project to VR?,” *Epic Developer Community Forums*, Oct. 31, 2022. <https://forums.unrealengine.com/t/how-can-i-change-an-ue5-project-to-vr/680627> (accessed Mar. 12, 2026).

EZ Unreal, “How to MIGRATE ASSETS from ONE PROJECT to ANOTHER - Unreal Engine 5 TUTORIAL (5.4),” *YouTube*, Aug. 26, 2024.

Bibliography

<https://www.youtube.com/watch?v=6Y8pyncoD30> (accessed Feb. 04, 2026).

Tinkr Academy, “How to Set Up VR in Unreal Engine 5 | Complete Beginner Walkthrough,” *YouTube*, Sep. 18, 2025. <https://www.youtube.com/watch?v=ZbUVzy1DJr4> (accessed Jan. 16, 2026).

Zenva, “Create a NAV MESH with Unreal Engine,” *YouTube*, Nov. 20, 2022. <https://www.youtube.com/watch?v=dyenYdA6fb8> (accessed Nov. 25, 2025).

Unreal ART With Alireza, “How To Change Player Start Position And Character In Unreal Engine 5 Beginner Tutorial,” *YouTube*, Aug. 17, 2024. https://www.youtube.com/watch?v=MXmz_BhiZaY (accessed Jan. 09, 2026).

MrWonderHow, “How to Create a Dark but Visually Appealing Scene in Unreal Engine,” *YouTube*, Mar. 10, 2025. https://www.youtube.com/watch?v=Kwfn_TfJ7Ng (accessed Feb. 09, 2026).

Unreal ART With Alireza, “Why The Skylight Doesn’t Work In Unreal Engine 5,” *YouTube*, Sep. 09, 2024. <https://www.youtube.com/watch?v=V7sq3mLH6gE> (accessed Apr. 10, 2026).

VirtualRook, “Let’s Make A Physical VR Button In Unreal Engine 5.3,” *YouTube*, Oct. 20, 2023. <https://www.youtube.com/watch?v=m8DGSmDUHfk>

Gabrielle Snow, “Pop-Up Screen | UE 5.6 | Tech Art Tutorial | Game Development,” *YouTube*, Mar. 03, 2026. <https://www.youtube.com/watch?v=Q1odcuA9zMA> (accessed May 10, 2026).

Esports Players and Coding, “Unreal Engine 5 Tutorial #19 - Widget Blueprint,” *YouTube*, Mar. 21, 2023. <https://www.youtube.com/watch?v=KsjyDNyXuwE> (accessed Mar. 12, 2026).

VirtualRook, “A Better VR Button In UE / Tutorial,” *YouTube*, Apr. 27, 2024. <https://www.youtube.com/watch?v=bSKQGL9znTs> (accessed May 12, 2026).

Josh Antonio, “3 Ways to Render Wireframes in Maya,” *YouTube*, Mar. 24, 2020. <https://www.youtube.com/watch?v=fwB4iHUMpfa> (accessed Jan. 03, 2025).

“- YouTube,” *www.youtube.com*. <https://www.youtube.com/watch?v=MxjlkqNnTQ8> (accessed Feb. 12, 2026).

WINBUSH, “Unreal Engine 5 Quick Tip | Texture Streaming Pool Fix,” *YouTube*, May 25, 2022. <https://www.youtube.com/watch?v=ahAX3w5ovts> (accessed Feb. 10, 2026).

Unreal Engine 5 Tutorials, “How to Make an .exe File of Your Unreal Engine 5 Game,” *YouTube*, Jun. 06, 2022. <https://www.youtube.com/watch?v=BLXhZTK4HkY> (accessed Sep. 12, 2025).

Bibliography

“Substance 3D Community Assets Homepage on Substance 3D Community Assets,” *substance3d.adobe.com*. <https://substance3d.adobe.com/community-assets?trackingid=PQ7SQ4FG&mv=in-product&mv2=cc> (accessed Jan. 23, 2026).