

Model Shipwright Guild

OF WESTERN NEW YORK

Planking Ship Model Hulls – Part 1

A 2 part tutorial on the method(s) of hull planking

Part 1 (February Meeting)

- The median plank width

- General approach to lining off a hull for planking bands

- Spiling plank methodology

- Using the MSW planking graph

- Exceptions and cautions

Part 2 (March Meeting)

- A review of method from Part 1 and answering questions

- Installing the garboard plank

- How to install drop planks

- How to install steelers (stealers)

- Planking metrics

Planking Ship Model Hulls – Part 1

Hull planking may be the most difficult task in model ship building

Some view it as an art form and execute it to an amazing level

Others only wish they could

It is doable with practice, discipline and method

I don't qualify as an expert even though I have studied it!

However, with your experience and involvement, I believe I can lead an ***interactive*** discussion

Planking Ship Model Hulls - Part 1



Rusty's Confedereacy Scratch Model

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Are there different approaches?

Not really, just variations of a theme!

The Jim Roberts', "Planking The Built Up Ship Model" has been the de-facto standard, a Model Shipways publication

Other documented and downloadable variations exist, for example:

- Antscherl (Admiralty Models, MSW)
- De Bakker/Brooker (MSW)
- Underhill, Plank On Frame Models, Volume 1
- Confederacy **Kit** Instructions, Chapter 6 (Passaro, Model Expo)
- Cutter Cheerful **Kit/ Semi-scratch** Instructions (MSW, Syren Ship Models)

Do you know of/use others?

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Proceeding given the various treatments

Propose utilizing the Robert's approach as the general guide and detailed reference

- Weave in elements from other sources especially Passaro and Anterschel
- Introduce the planking graphic tool
- Utilize an enhanced NRG Conference Presentation made available to us for Part 2, compliments of Bob Filipowski
- Interject ideas from the members as we move along

Use an unfinished model to illustrate and drive home points

Formalize somewhat

- Introduce/refresh standard terms as we progress.
- Maintain a running list of dos and don'ts
- Provide helpful graphs and reference tables
- High light some conventions and standards for period vessels

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All methods begin with common elements

- Tools; basic and enhanced
- Hull preparation and considerations
 - The hull type
 - Layers of planking
- Preferred/common planking materials
- Wood behavior when twisted and/or bent
- Plank Bending
- Fastening

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Tools: Basic

- Dividers/compass, a decent one, preferably with lead screw adjustable legs
- **The Planking Fan (MSW pdf); obviates the need for proportional dividers**
- Fine line markers/pencils (2H)
- Knife (Xacto #11 blades)
- Sanding boards and blocks (for plank shaping and fairing)
- Sharp diagonal pliers (for cutting bunt ends of planks)
- Straight edge
- Battens, tape (automotive detail or art), or thread
- Hair dryer/curler/soldering iron

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Tools; Extended

- The Basic Set Plus:
 - Small low angle block or shoulder plane
 - French or other drawing curves or a flexible curve
 - Plank cutting tool
 - Plank bending tool
 - Shop made plank vise

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Hull Types and Preparation

- Hull type (Solid, POB, POF) considerations
 - Solid hulls need a good deal of reduction, if kit, to account for planking thickness
 - Fully framed and solid hulls facilitate scale butt planking execution and more ‘landing area’ for planks
 - Most commercial POB kits may require fillers and compromise if butt planking is employed
- Take the time to fair the hull properly
 - Batten testing identifies areas to work
 - Sanding blocks that span more than 3 stations is recommended
 - Continual sighting
 - Preserve the edge of any bulkhead during sanding (aft edge for stem, forward edge for stern) as much as possible
- Account for the layers of planking in your keel rabbet (generally 1/8” adequate for single layer planking)
- Shape in the bearding line on false keel

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Wood selection

- Choose close grained and non figured wood types; white maple, boxwood, Swiss pear, holly, some exotics such as ebony
- Boxwood and Swiss pear are the standards used by most
- Open grained woods such as oak, mahogany not preferred
- Basswood is acceptable for underlayment plank material
- Again watch the grain, even South American box wood can be a bit wild
- Painting the hull ?
 - Grain usually does not matter
 - Bass wood requires proper prep
- Check the kit material
 - It's most often bass wood
 - Not always machined to high standards
 - May not be to scale or correct for an entire hull!

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Wood Sources:

- *Crown Timberyard*: Swiss pear, Costello Boxwood, Cherry, Mahogany, Holly
[www.crowntimberyard.com]
- *Wood Project Source*: Swiss pear, Costello Boxwood, Cherry, Maple, Mahogany, Cedar, Purpleheart
[[www.woodprojecthttp://www.dlumberyard.com/wood.html](http://www.dlumberyard.com/wood.html)source.com]
- The Lumberyard for Model Shipwrights: Swiss pear, Costello Boxwood, ebony, beech and many exotics [www.dlumberyard.com/wood.html]
- *Midwest*: Cherry, Mahogany, Walnut; Basswood, exotics
[www.midwestproducts.com]
- *Pittsford Lumber*: Bloodwood

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A Few Words About Wood Behavior

- Wood fibers
 - Long fiber woods bend along their length relatively easily
 - Short fiber woods can't be sharply bent without fracture
- Wood density is also a factor when bending
 - The denser the wood the harder it is to bend
 - Basswood for example is easier to bend than boxwood
- Wood shrinks and expands across its face much, much more than its length
 - Acclimatize your wood supply

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Wood Bending

- If you use water, steam, ammonia or any other wetting agent
 - Form it in place or on a mold
 - Let it completely dry before fastening.
- Application of heat on dry planks is a relatively effective way to bend planking with little or no moisture treatment
 - Advisable to over bend somewhat to compensate for spring back
 - Edge bending applicable
 - With limits
 - Moisture aid a help
- No experience with cold bending tools such as “crimper pliers”

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Fastening Planking

- Poly Vinyl Acetate (PVA)
 - Conventional
 - Acceptable for museum quality models
 - See our Shop Note on properties
 - Slow going
- Cyanoacrlate (CA)
 - Gaining acceptance but may be/is rejected by museums
 - Don't use the "instant" low viscosity type
 - See our Shop Note on properties
 - Relatively fast with the 20 second variety
- Tree Nailing
 - No experience with it
 - POB models require many simulated sites
 - Documented patterns (part 2)
- New PVA type on market: "Rapid Fuse" by DAP

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Onto The Planking Methodology

- The Jim Roberts', "Planking The Built Up Ship Model" and the NRG presentation
- Integrate elements of Passaro and Anterschel contributions
- Employ the MSW planking graph

The other documented/undocumented variations weaved in

- Antescherl (Admiralty Models, MSW); utilizes the planking graph
- De Bakker/Brooker (MSW)
- Passaro (MSW, Syren Ship Models); utilizes the planking graph
- Underhill (Plank On Frame Models, Vol. 1)
- Confederacy, Chapter 5 and 6 of instructions (Model Expo, pdf); **does not since it is a kit but that does not preclude its use**

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Some terms we will use along the way (All defined in Robert's handbook)

- Broad Strake
- Garboard Strake
- Median Plank
- Sheer strake
- Wales
- Hooding end/Hooding
- Spiling
- Deadwood
- Deadrise/Turn of the bilge
- Steelers (Stealers)
 - Half
 - Quarter
- Drop (Joggle)Planks

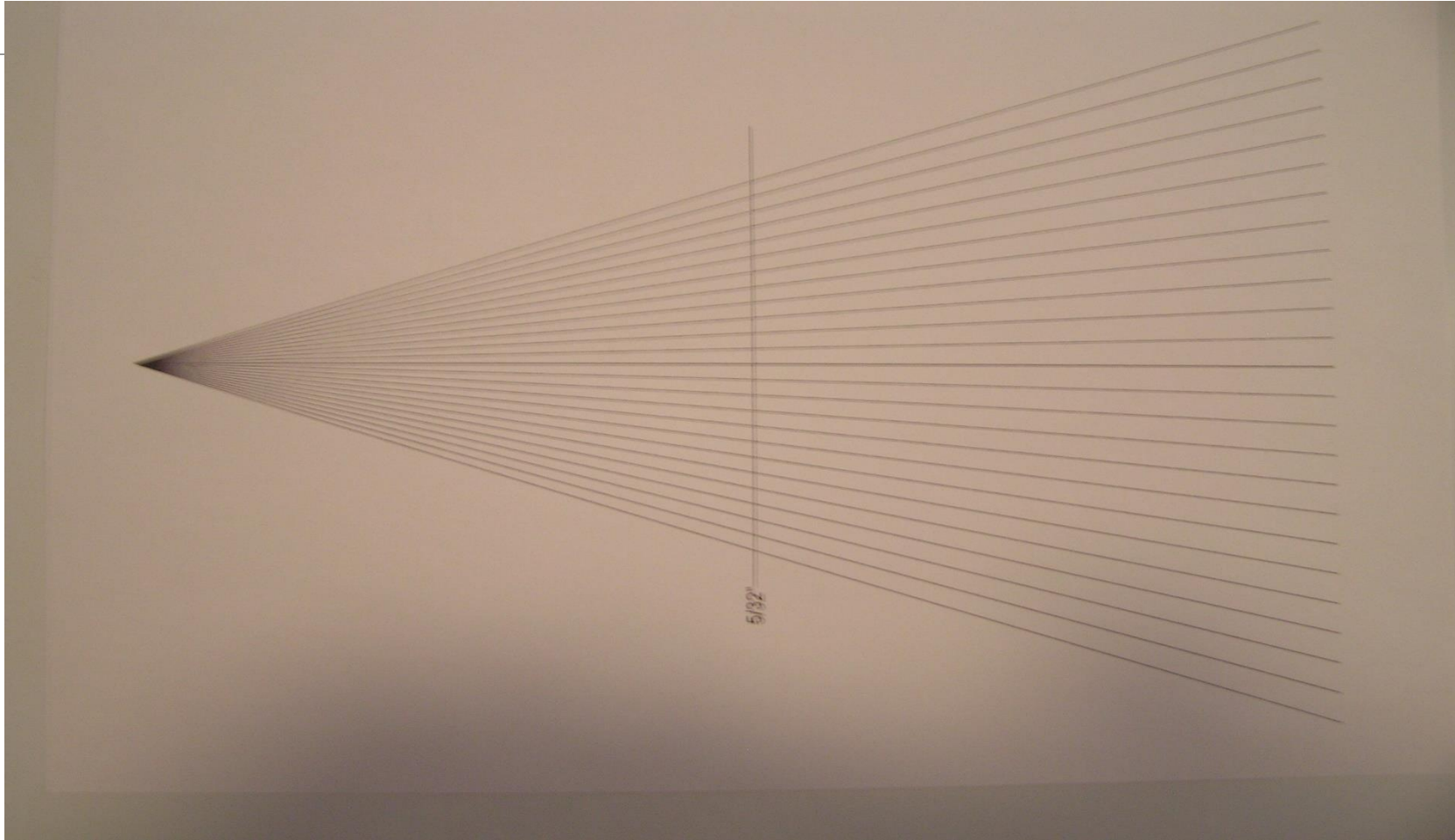
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The Planking Graph (An **ancillary** tool, not exclusively for scratch builds)

- Think of this tool as a graphical means of capturing hull surface “runs”, perpendicular to the keel or waterline in a relatively precise manner that can then be converted to discrete plank width
- Robert’s methodology does not utilize this graphic too, rather divider/proportional dividers
- The MSW planking graph
 - Setup for 24 planks
 - Practical working range of use 1/16” to 5/16” plank widths
 - Some models may require regenerating or symmetrical extension of the planking graph,
 - Somewhat problematical on very small models or scales smaller than 1:96 (1/8)
 - Excellent mechanism for recording plank widths at discrete station locations plotted directly on graph or transferred to a table

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The Planking Graph (General Use Modified– Defining the Bands)



Planking Ship Model Hulls - Part 1

Advantages of The MSW Planking Graph

- Saves Time in marking
- Median plank width calculation is a “fall out” of the use of the tool
- Can eliminate the round up/round down in other tutorials
- Facilitates the practice of lining off the hull
- Can reduce accumulated error
- Eliminates (cost of) proportional dividers
- Careful application yields correct results

Planking Ship Model Hulls - Part 1

The Planking Graph (General Usage – Notes and Cautions)

- Most hull planking begins with wales as the first planking added. This defines the lower hull which can be lined off into bands
- A caution on kits. Your median plank width has most likely been determined for you in the design of the kit. Nonetheless the graphing tool is still valuable
- If you alter the steps or the kit design intent you may run into planking material problems.
 - As an example you decide to scale the width of the garboard to period practice
 - Alternately you decide to scale stern most planks in the deadwood area to minimize steelers
- Having said that, don't dismiss it for kit builds

Planking Ship Model Hulls - Part 1

The Planking Graph (General Usage – Defining the Median Plank)

- Cut note card stock in strips long enough to span the greatest station on the hull from wale bottom to the keel (rabbet or garboard top). This is near mid ship not the aft most area
- Repeat for port and starboard sides of the hull (error creep may have caused a difference)
- Place each strip on the planking graph perpendicular to the center “ray”
- Find the point on the graph where this note card stock, when placed perpendicular, precisely spans all rays
- This automatically defines the **median plank** width in whole planks
 - If you are locked into a material size slide the cut strip to the location on the graph with this width
- Mark that location on the center ray of the graph and draw the perpendicular across all rays
- Identify the perpendicular and the corresponding strip with the hull station name/number

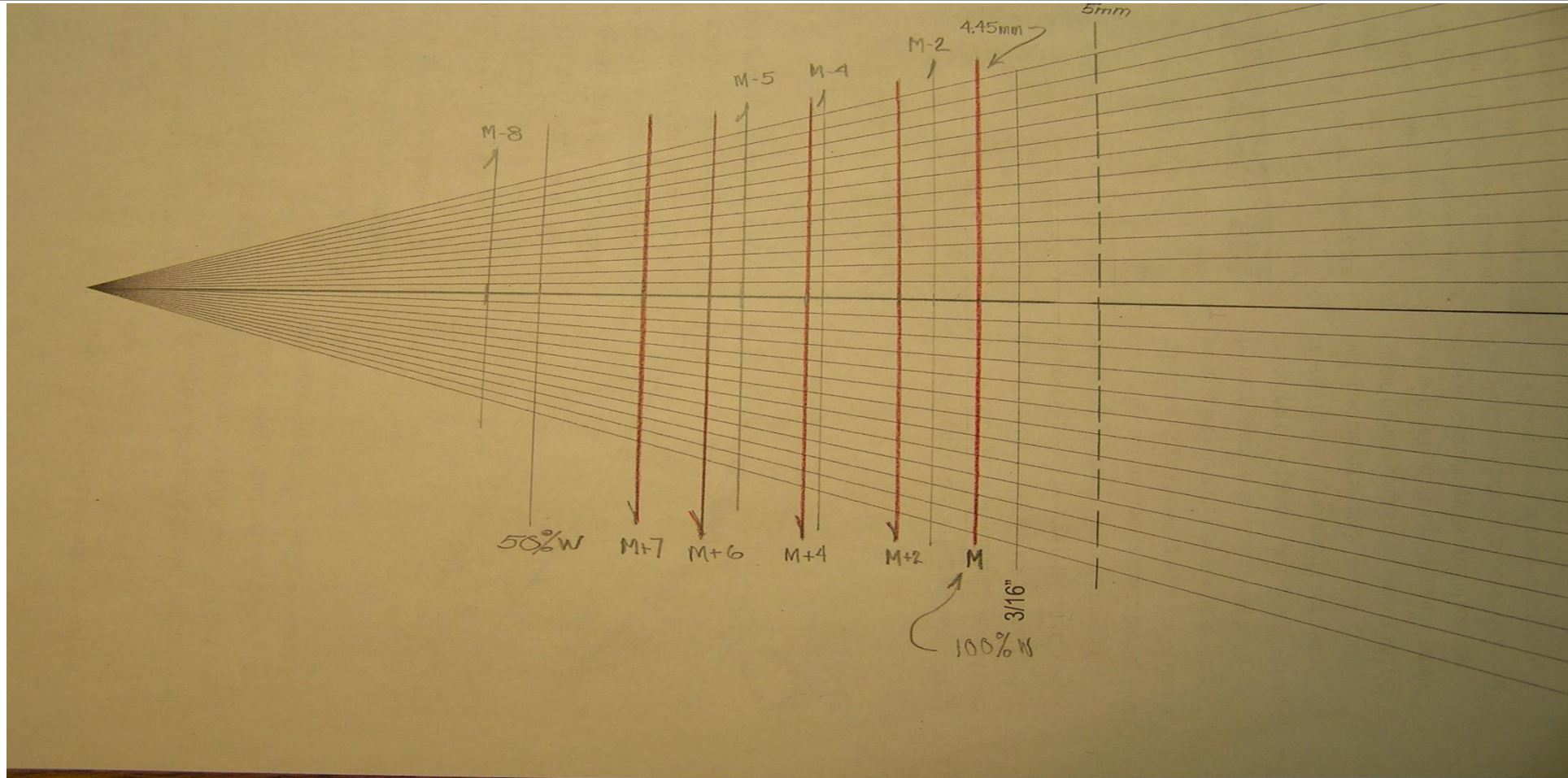
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The Planking Graph (General Use Modified– Defining the Bands)

- Reposition and check the strip span on the graph
- Determine how many bands will be developed for the hull from the graph at the median station
 - For example: the planking graph shown has 24 planks. This is equally divisible by 4 yielding 6 planks per band and probably works for most models
- Mark a “tick” with a sharp pencil at every band demarcation on the median strip
- Repeat the strip creation and band marking for each predetermined station on the hull; identify each strip by name
- Transfer the modified “tick” marked strip locations to the appropriate station on the hull. You should have 4 “tick” marks on every designated station
- *We will return to these general steps when working the stern in the dead wood area*

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The Planking Graph (General Use Modified— Defining the Bands)



Planking Ship Model Hulls - Part 1

The Planking Graph (General Usage – Installing the band delineators)

- Add the batten strips at the band demarcations (personal preferences below)
 - Below the demarcation if planking from the keel upward
 - Below the demarcation when planking from wales downward
 - Anterschel uses thread glued to the station at the band demarcations
- Site the batten flow along the hull and adjust for irregularity
 - Strive for equally spaced bands
 - Ensure that bands port and starboard meet at bow and stern

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The Planking Graph (Suggested Modification To Use – Spiling Planks)

- At each perpendicular drawn (on the planking graph) measure the distance between rays, with a divider, to determine the plank width. Record or transfer this to a table (optional) or to the plank at the correct station position
- Do not measure off the hull with dividers as you are measuring a cord not the surface length of the arc
- Prior to marking the plank place registration marks on the plank corresponding to the hull stations
- Infill by band, checking and correcting within a band
- Consider a full length plank for the shaping process which may be cut to scale length prior to application
- You are likely to require plank width correction along the way (see last slide for a professional modelers approach)

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The Planking Graph (Modified Usage)

- Reminders on kit planking and the planking graph
 - Don't discard this approach for kits
 - "Median" plank width is usually predetermined for you
 - Draw that reference on the planking graph
 - This may lead to partial plank conditions
 - You can make it work by:
 - Letting the garboard strake work for you as it is typically wider than the median plank
 - Moving the cut strip until it spans all rays
 - Caution on steelers and drop planks; less is more correct

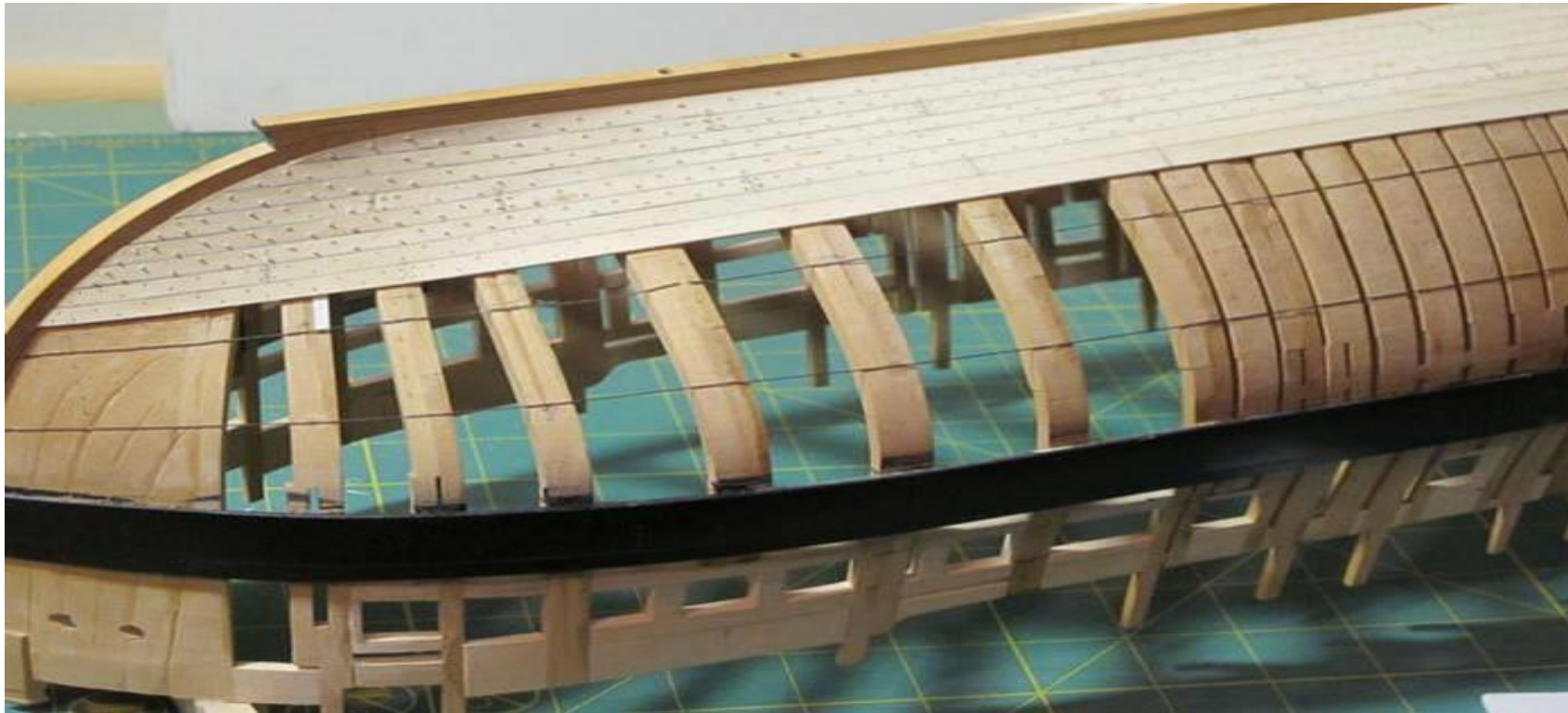
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The Planking Graph (Professional methodology differences)

- David Anterschel uses thread, lightly glued to the stations to define bands.
- He cuts patterns for each plank as it abuts to the former plank to gain an exact profile of the interface (example the pattern of the bottom of the wales)
- He uses partial planks in a strake so this becomes easier to do
 - Partial planks that do not end on a bulkhead are supported on the inside with a backer
- He returns to the planking graph to determine plank width corrections when necessary
- He cuts plank width slightly oversized ($1/32$) and fairs the whole strake with sanding boards
- In effect he is fitting and correcting as he proceeds within a band
- Passaro patterns for fit and cuts planks, in the bow area, with a pre contoured shape

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The Planking Graph ([Anterschel differences on this method](#))



Planking Ship Model Hulls - Part 1

The Planking Graph (Modified Usage – The last Band; at the keel)

- Planking from the wales downward or keel upwards
 - Stopping at the third band (wales downward) or use the band 3 demarcation/batten (keel upwards) as in the prior example
- From the mid section frame where the median plank width was determined
 - Repeat cut strip measurements for plank width aft in band 4
 - Remember you are still working with a band 4 of 6 planks
 - Note that the planks may gradually diminish and then grow wider.
 - Record the values and divide over the six planks, station by station
 - Use the Anterschel patterning from plank to plank as you proceed to achieve good fit and smooth runs
 - Your last plank may be unique and need a pattern fitting, think ahead

Planking Ship Model Hulls - Part 1

Part 1 Summary

- Tools, materials, properties related to planking
- Determining median plank width
- Determining planking bands
- Lining off a hull
- Plank spiling
- Using the MSW planking graph

Part 2 Summary

- A review of method from Part 1, answering questions if any
- More on plank spiling with lots of pictorials
- Plank bending techniques
- Installing the garboard plank
- Installing drop planks
- Installing steelers (stealers)
- Planking metrics