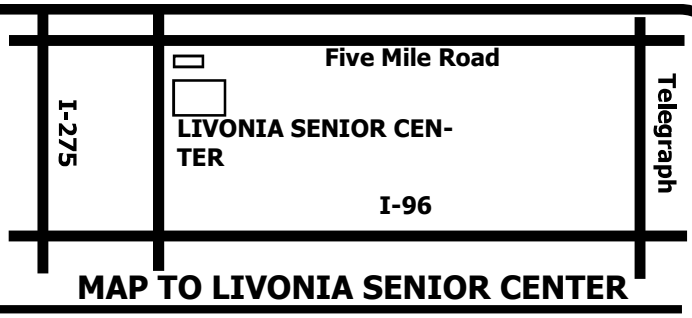
MICHIGAN WOODWORKER

michiganwoodworkersguild.com

Michigan Woodworkers' Guild (est. 1981) February 2020 Vol. 41 No. 2

SUNDAY, FEBRUARY 9

Several members will show the **design and layout of their shops**..



MAP TO LIVONIA SENIOR CENTER

The Guild luncheon will be at George's Senate Coney Island on the **27TH** at 1:16 pm (see map on page 7)

MWG THEATER WILL FEATURE Measuring Furniture for Reproduction" by **PHIL LOWE**. Starts at 1:00. How to take measurements of an existing piece, create a set of plans, and then reproduce the piece in your workshop.

RAGNAR BERGETHON DEMONSTRATING VARIOUS TYPES OF JOINTS

CALENDAR OF EVENTS

Our annual **JIGS AND TOOLS** meeting will be at the **Livonia Senior Center** on **March 8**. Several members will discuss the pros and cons of Jigs/tools that they have made or purchased.

The **March** luncheon will be at George's Cony Island on the **26th** at 1:16 pm

The **April 19** meeting will be our annual **Showcase of Woodworking Skills** at the **ROYAL OAK SENIOR CENTER.** Members interested in participating should contact **Ed Stuckey.**

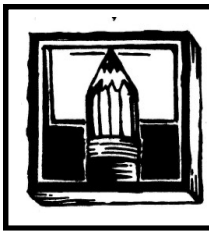
The **April** luncheon will be at George's Cony Island on the **23rd** at 1:16 pm

Members of the **Rockler Woodworking Store** staff will give demonstrations at our **May 17** meeting at the **LIVONIA SENIOR CENTER**. (Topics to be determined)

The **May** luncheon will be at George's Cony Island on the **28th** at 1:16 pm

A field trip to **MICHIGAN HARDWOODS** is scheduled for **SATURDAY, JUNE 13.** Details later.

The **June** luncheon will be at George's Cony Island on the **25th** at 1:16 pm



President's Corner

By Jerry Romito

The year has just started and we already have to report a disappointment. The special all-day presentation by Marc Adams which was scheduled for March had to be cancelled do to a conflict on Marc's schedule. We were not able to reschedule him for another date this year due to our room unavailability. We will, however, have a special all-day presentation on December 5 with a return by Tim Puro, who will speak on furniture refurbishing and repair and fixing woodworking mistakes. Details will follow later this year.

Some of you had been asking when they would hear about the dues payment, and by now you all know that the dues letters have been sent out. Membership for all members is now on a calendar year basis. During the transition process, Bill Gayde offered to assist Ed Thomas with membership, and is now temporary Membership Chairman. Ed has asked to resign that position, and we thank him for taking on that time-consuming chore for several years. Dave McCagg has volunteered to become Membership Chairman in the near future.

I would like to thank Ragnar Bergethon for his fine January presentation on Joinery. You can read Dale Ausherman's review of the presentation in this issue of the newsletter, and you can see the complete presentation in the photo albums on the website at www.michiganwoodworkersguild.com.

Our February 9, 2020, meeting at the Livonia Senior Center will feature 12 members presenting photos or their workshops and building activities. This is a chance to see what others do, and hopefully will give you some ideas that you may want to incorporate in your own shop. The following members will be presenting: Dan Holowicki, Dan Patterson, Keith Whitehouse, Bill Rigstad, Jim Ryan, Will Wilson, Larry Balash, Bill Vetter, Ragnar Bergethon, Bill Kapelanski, Vince Skolnik, and Jerry Romito.

Our March 8, 2020 meeting at Livonia will be our annual "Jigs and Tools" meeting. Slightly different from past years, members will present not only jigs that they have made for various purposes, but also purchased tools that they would like to talk about – either pro or con. Please contact me at gjromito@aol.com if you would like to be a presenter.

On the subject of meeting presentations, you might not be aware that the Board of Directors plans out the meetings for each year in the summer of the preceding year. That means that this summer we will be working on the 2021 calendar. With that in mind, I would like to encourage all members to submit ideas for topics and/or presenters that they might like to see at next year's meetings. You may have an interesting talent yourself that you would like to present. Please feel free to email any suggestions to me at gjromito@aol.com.

So I hope to see you on February 9. Please introduce yourself.

MEETING REVIEW

By Dale Ausherman

Ragnar Bergethon on Joinery

Any woodworking project which requires affixing two or more pieces of wood requires the use of joinery, the means of making such connections. At our first meeting of 2020 Ragnar Bergethon reviewed the most used joinery methods, the tools involved, and the key factors which drive a woodworker to use a particular joinery type. Ragnar's excellent presentation was aided by a set of well-designed PowerPoint slides, actual examples of all the joinery discussed, and several jigs used in conjunction with a router or table saw to make the key joints. Thanks to hard work on the part of Bill Rigstad, the slides and photos of the presentation can be found on the Guild website. Much of the text below derives from Ragnar's slides. (https://michiganwoodworkersguild.com/photo-gallery/)

Time and space did not allow Ragnar to demonstrate actual making of each joint type. Instead he reviewed the best practice dimensional design features of each, and practical tips for making each joint based on experience and available literature. Many photos and key tips of the construction process were included in the slides. He reminded us of the importance of the "four p's" when making joinery: preplanning, patience, practice, and precision. Ragnar put the same care into making the slides, so be sure to use them.

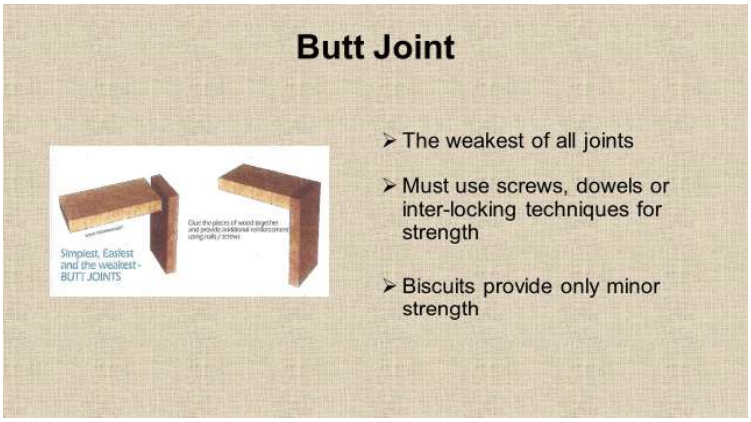
He first reviewed the primary groups of joinery, including glued joints, fastener joints (nails, screws, staples, corrugated & V inserts, and metal braces), and interlocking joints – joints whose very shape strengthen the bonding between wood pieces. For the latter, the glue just holds the joint pieces together whereas the joint strength derives from the adjoining shapes (mechanical strength) of the wood pieces. Most joints use a combination of the 3 joinery groups. A joinery method is chosen based on application, available equipment, experience of woodworker, speed in making, and joint personalization. Also, some joints are designed for ease of assembly/disassembly, or to accommodate temperature and humidity changes.

The design of joints is driven by the very nature of wood, primarily vascular tissues that act as tubes to carry nutrients from the ground to the tree and the leaves to the inner tree. The straw shaped tubes are open ended and can absorb glue, but provide little surface area for glue to adhere. Thus, butt joints are very weak even with glue. Joinery tries to maximize the long grain when gluing boards together and many common joints, i.e., mortise & tenon, dovetails, scarf and lap, rely on mechanical strength supplemented with various glues.

Ragnar focused on ten different joint types:

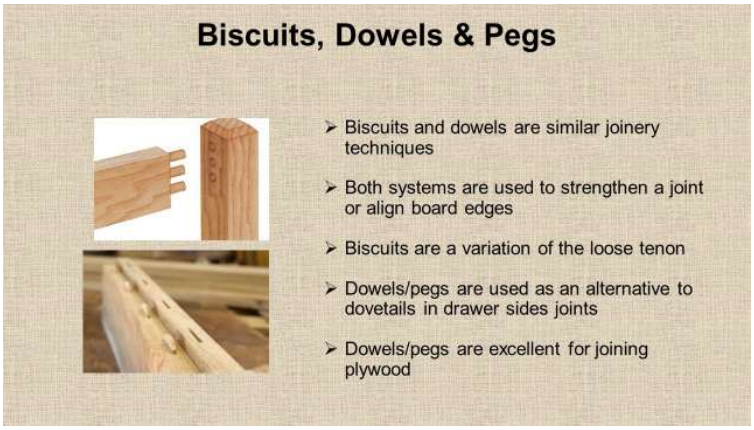
1. Butt joint
2. Dowel and pegged joints
3. Biscuit joint
4. Pocket hole screw joint (also called pocket screw joint)
5. Interlocking and dado joints
6. Lap and bridle joints
7. Splines and Key
8. Box joints
9. Mortise and tenon joints
10. Dovetail joints

While the easiest joint to make, the simple **butt joint** is very weak, as it is just end grain glued to long grain. To be useful the butt joint must be strengthened by use of dowels, pegs, biscuits, or the use of pocket hole screws, giving rise to joint types 2-4 above. Biscuits, pegs and dowels are similar joinery techniques used to strengthen a joint or align board edges. Dowels/



pegs are also used in rabbet joints as an alternative to dovetails in joining drawer sides to fronts. And dowels/pegs are excellent for joining plywood where inter-ply glue and voids can make cutting conventional joinery difficult.

While **biscuits** are similar to small mortise and floating tenons, they are very short and add little strength to a joint, but are good for aligning long pieces while gluing. Thus they are useful for joining planks to create large panels. They are also useful for small joints where strength is not a major factor such as in mitered



picture frames. Thus a biscuit plate joiner tool is a useful shop companion. Ragnar gives many specific biscuit tips and recommendations in the slides.

Dowels are often used to strengthen joints where end grain abuts long grain. Dowels are stronger than biscuits, but alignment and precision are more critical, as any angle of the dowel hole will cause twisting of the joint. Thus holes for dowel joinery are generally made on a drill press, or by use of a doweling jig. Dowels should have spiral or straight grooves to provide room for glue to escape as the dowel is inserted, but the grooves can be made with a file or knife. In his slides Ragnar gives design rules for peg layout, and describes drawboring for tight (possibly glueless) joints.

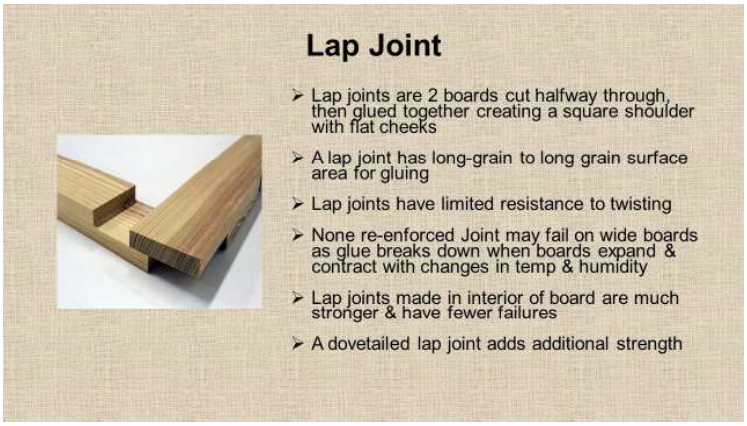
Wood pegs are often used to strengthen other types of joints, such as mortise and tenon joints at the corners of doors or other framed panels, and butt joints into rabbets such as for drawer sides. Ragnar points out that pegged joints can be both functional and decorative, with flush or proud pegs being design options.

Pocket-hole joinery has become very popular over the last 2-3 decades due to the advent of commercially available jigs, tools and accessories (https://www.kregtool.com/store/c1/joining-solutions/). But hand-made pocket screw joinery has been around a long time, with examples appearing in furniture over 300 years ago. Pocket-hole joinery involves drilling a hole at an angle — usually 15 degrees — into one work piece, and then joining it to a second work piece with a self-tapping screw. Best results are obtained by using a quality jig (Kreg), drill bit, and special self-tapping screws. But a homemade jig can be made by using a wooden block drilled to the correct angle and inserted with a metal sleeve. One uses coarse threaded screws in soft wood, and fine threaded screws in hard wood. (Coarse threaded screw in hard wood may cause the joint to split.) Ragnar recommends using a clamp at joint to maintain board aligned while inserting screws. Pocket holes should generally be placed in non-con-

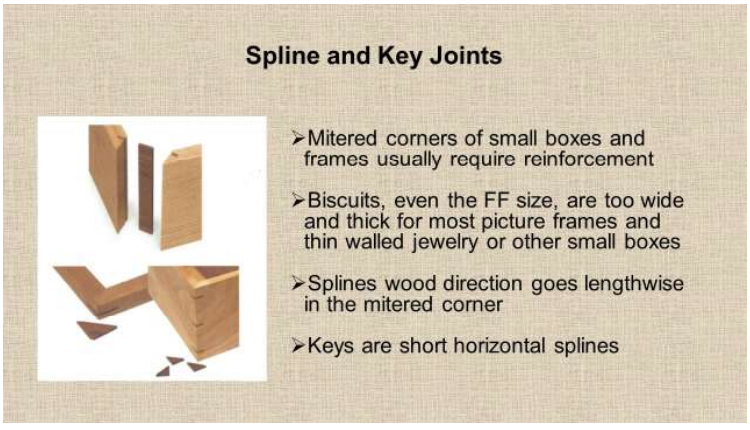
spicuous areas (back side of face frames), but wood plugs are available if such placement is not possible.

Interlocking joints made with dadoes, rabbets, grooves and tongues were then reviewed. These included simple rabbet, dado-and-rabbet, through dado, drawer lock, double dado, and sliding dovetail joints. There are also cool looking lock miter joints made with a special (often expensive) lock miter router bit. These joints take some care in aligning the bit, and work best with solid wood boards.

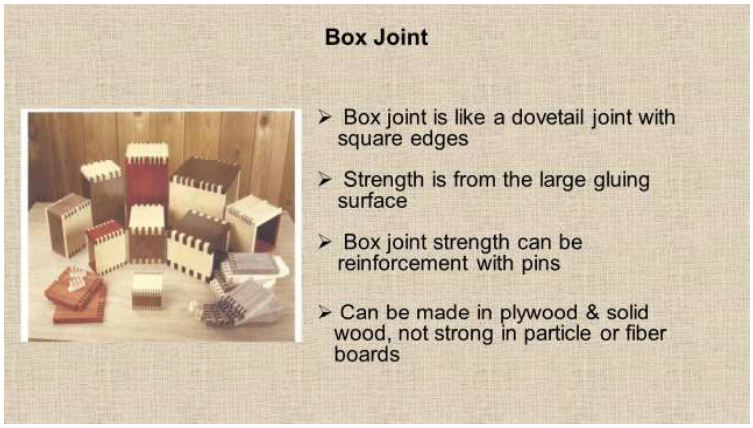
Lap and bridle joints are easy to make and reasonably strong if made in somewhat narrow boards to avoid cross-grain wood movement stress. Lap joints should generally be used in boards less than 3 in. in width. Lap joints are 2 boards cut halfway through, then glued together creating a square shoulder with flat cheeks. A dovetailed lap joint adds additional strength. A variation of the lap joint, the bridle joint, has the thickness divided into thirds, and is cut and assembled to look like an open-ended mortise and tenon joint. Pegs can be used to strengthen a bridle joint.



Mitered corners of small boxes and frames usually require reinforcement, because the joints are end-grain and have little glue strength for reasons mentioned earlier. And biscuits, even the smallest size, are too wide and thick for most picture frames and thin walled jewelry or other small boxes. Thus, inserted (generally 1/8 inch thick) **wood splines** are used for strength. To be strong the spline grain direction must be along the grain of the box or frame sides, i.e. grain to run lengthwise "around" the box/frame. An alternative, **keys**, are short horizontal splines inserted across the mitered corners of the box/frame. Ragnar's slides contain general specifics, tips, photos of methods for cutting the miter joint and spline inserts.

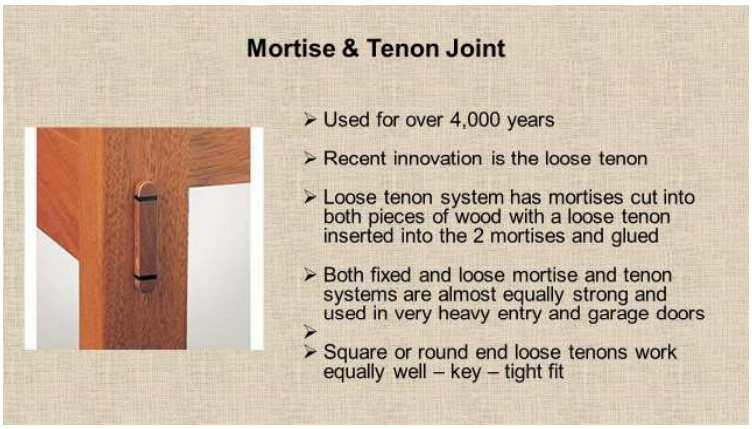


His slides also cover making of **box joints** (sometimes called finger joints), along with specific tips. In our October 2019 meeting on jigs and fixtures we were shown three different box joint jigs: Jerry Romito presented an INCRA box joint jig, along with a Freud box joint cutter set; Ken Wolf showed an advanced version of a shop made finger joint router jig, modelled after one offered earlier by Woodsmith; and Ragnar himself displayed a smaller and simpler shop made jig for making finger joints for smaller boxes. Thus we did not spend much time on this attractive joint in this meeting.

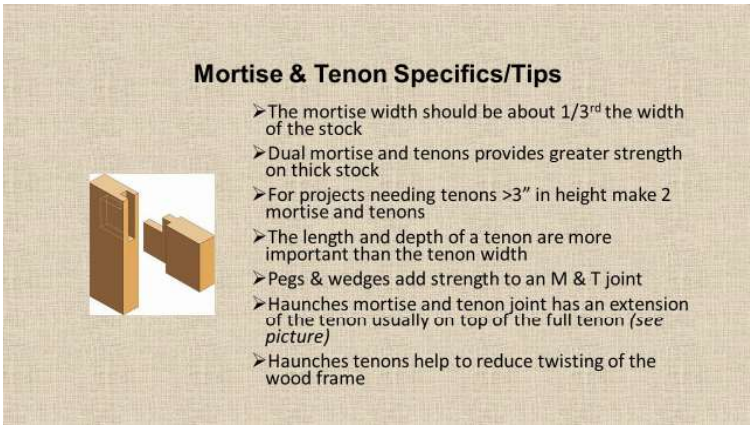


Ragnar next discussed the **mortise and tenon** (M&T) joint, probably the most used of all joints and in use for over 4,000 years. The joint can be cut totally with hand tools, as reviewed by Chris Gochnour in the Jan/Feb 2018 issue of Fine Woodworking Magazine, pg 24. Or more commonly these days the joint is made by cutting the square mortise with a mortising machine, and cutting the matching tenon via a tenoning jig on the table saw. Ragnar showed his shop made jig made for this purpose. The tenoning jig is also useful for the lap or bridle joints. (Ragnar advises against both the Rockler and Woodcraft Woodriver jigs as they are unreliable to adjust.) He also mentioned the recent innovation of the loose tenon, where a mortise is cut is both pieces using a plunge router and a mortising jig (resulting in round-edged mortise). The matching

loose tenon is either bought commercially in large numbers, or made by cutting a rectangular strip and

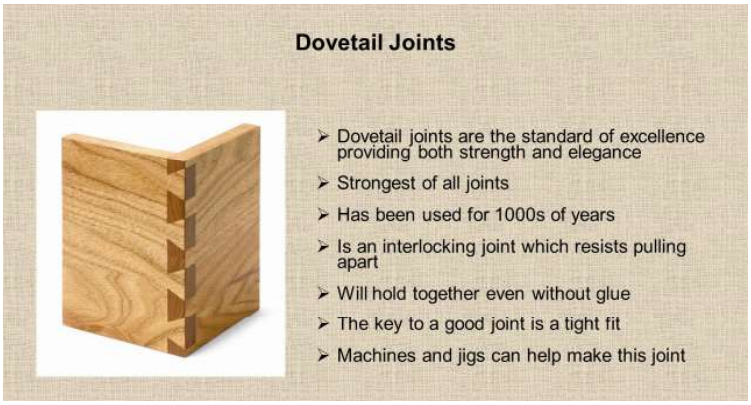


rounding the ends either by a round-over router bit, or whittling by hand. He also showed an expensive (about $1,200) Leigh FMT Pro Mortise and Tenon jig, which uses a ½ in. plunge router to make both the



tenon and matching mortise (https://www.leightools.com/fmt-pro-overview/). For M&T joints Ragnar again gives some specific design dimensions and tips, and also covers wedged tenons and hunched tenons.

He finished the presentation with a review of **dovetail** joints, which are the standard of excellence providing both strength and elegance. The key to a good joint is a tight fit. Often made totally by hand (quiet shop and no flying dust), machines and jigs can help make this joint. Ragnar provides several slides of specific design factors and construction tips. There are also a multitude of articles in woodworking magazines and online for how to make the joint, including hybrid methods of making by hand which include use of machines (table saws, bandsaws, and mortising machines) for some of the steps. Also several manufacturers sell jigs, such as the Leigh D4R Pro Dovetail Jig, to cut dovetails totally by machine using a plunge router (https://



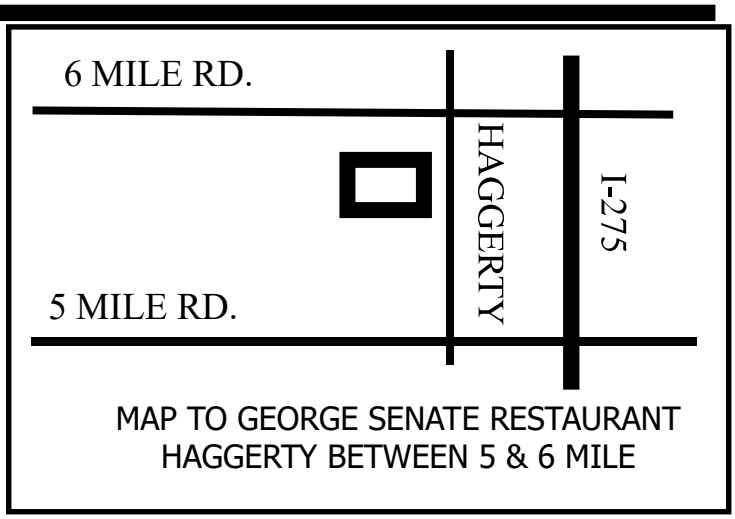
www.leightools.com/d4r-pro-overview/). Bill Rigstad has demonstrated such jigs in prior Guild meetings (see reference below). A good reference for hand cut dovetails is "Don't Fear the Hand-Cut Dovetail" by Christian Becksvoort in Fine Woodworking, Jan/Feb 2014 pg. 44. Ragnar also showed a method of easily laying out pleasingly spaced dovetails, documented by Chris Gochnour in Fine Woodworking, Mar/Apr 2007, pg. 30.

Please recall that we had an entire Guild meeting on Hand and Machine Cut Dovetails at TechShop in Allen Park, May 2017. The report from this meeting contains many additional instructions and references, and can be found on the Website in the June 2017 Newsletter. (It would be a good exercise for members to see if they can find a specific past Newsletter on the site!)

We must thank Ragnar for the tremendous amount of work to prepare and give such a thorough presentation. His reliance on "four p's" is clearly evident in the result.

For membership information contact Ed Thomas at: edwardthomas554@comcast.net.

For name tags, sign up with Ed Stuckey at a regular meeting.



MAP TO GEORGE SENATE RESTAURANT
HAGGERTY BETWEEN 5 & 6 MILE

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Michigan Woodworkers' Guild
41110 Fox Run Rd. #208
Novi, Michigan 48377

The Picture Gallery

YOU WANT JOINTS? WE GOT JOINTS!