

Rim Shots: Get a Grip!

Wells Shoemaker MD, December, 2023



This article features rim details which improve the utility and safety of platters and bowls, with particular emphasis upon users whose hands have served through a long and interesting life. We'll explore some of the biomechanical factors that affect design. I think it's possible to achieve striking visual effects and simultaneously serve the customized needs of users with a range of manual functions, size, and purposes.

Wells.



Tan oak platter from Roy's back yard. It's 16" diameter with an ergonomic rim design

No matter how much we turners debate about cutting versus scraping, oil vs varnish, thin vs thick, tenons vs mortises, M2 vs M42, CA vs epoxy, pragmatic vs artsy...one thing seems constant: We need to look over the rim to see inside a vessel.

Rims can be wide or narrow, incurved or outflared, smooth or barky, plain or dyed, inlaid or airbrushed, beaded or burned...and more. There are endless variations, as a peek into the AAW magazine...or our club Show and Tell table...will quickly illustrate. Eye-catching bowls and platters often feature exotic rim designs intended to dazzle judges, curators, and collectors. They're inspirational...but usually not designed to hold salad, reading glasses, hearing aids, or a dozen tangerines. However, the majority of wooden turnings are designed for pragmatic use at home...especially in the kitchen and dining room. Those vessels don't have to be "plain," but user-centric design does matter.

Biomechanical human factors influence the design of a pragmatic rim...and those change with the size, strength, and hand anatomy of the principal user!

It's all about those hands...especially the thumbs!

Sneak Preview of what's coming:



We use platters and bowls with the openings facing up.

It's possible to hold a bowl a lot of different ways, although we usually grip the rim somehow.

Since a platter is always flat while in use, and because of its size, we need to use two hands...one on either side. With either style vessel, it's helpful to add a subtle gripping contour to the rim design.

About those hands...

The human wrist and hand have 27 bones and 27 joints, 34 muscles, over 100 ligaments and tendons, plus blood vessels and nerves too numerous to count.¹ All of these marvels live under a layer of skin which endures near constant friction with an environment bristling with abrasive, hard, hot, cold, sharp, and prickly features.

The hands, with their small bones and small muscles, are principally instruments of precision and delicacy. They sew fabrics...and suture wounds. They polish jewels and repair cameras. Hands adjust bandsaw guides and guide acupuncture needles. They can forge an F chord on a guitar with 12 steel strings...and pluck a minute iron spicule from a machinist's cornea. Hands can focus a microscope, tune a Ham radio, open a can, and snap a shutter. They make beads and coves effortlessly...especially John's hands. They tighten chucks, type letters, draw faces, and paint landscapes. For some of us, the hands also enrich communication...a sign of civilized intelligence.

All of those anatomic features are vulnerable to trauma and wear...not to mention an encyclopedia of medical conditions. For people fortunate enough to live a long time, their hands usually have to adapt to changes in appearance and function. That's a relevant reality for a lot of seasoned turners, both in our design and our work!

¹ [Anatomy of the Hand & Wrist: Bones, Muscles & Ligaments \(clevelandclinic.org\)](http://clevelandclinic.org)
[Hand Anatomy Video | Medical Video Library \(ypo.education\)](http://ypo.education)

Turners are particularly “handsy” with our products. Speaking of seasoned turners and experienced hands...



Deft left hand of Roy Holmberg undercutting the rim of a shallow maple bowl with a tool he made in his forge on the West Side



Lithe hands of our 2023 President, master turner, creative carver, and constant teacher,

John Wells

Hands may define the domain, but the thumb rules the realm. The thumb is the most powerful digit on the hand, but that's only half the story. Its versatility in movement—in particular the ability to oppose to other fingers, grip, and squeeze—distinguishes humans from nearly all other animals on Earth. The prehensile thumb is the key to holding a platter or a bowl. The anatomy of the thumb is what makes the rim design important ...especially for elder thumbs.



The thenar eminence—that bulgy ball of muscles at the base of the thumb—gives the thumb strength and range...and humanity!

Several strong muscles on the forearm also provide serious power to the thumb.

Hands don't work alone. Above the wrists we find the larger bones and more powerful muscles that allow the hands to move oak logs, wield chainsaws, change truck tires, and mount goofy manzanita burls on a headstock. Experienced turners instinctively know the choreography of coordinating the delicate movements of the hand with the power of the arms! At some point, as our faculties age, we need to orchestrate those movements more consciously. It's sensible that we design and build our vessels with a similar mindfulness to those who will be using our products with ageing hands.

There is a connection between hands, the mind, and our rims...and it's all about people.

Easy to say, but people are complicated. There's a wonderful process for a wide range of development processes called **Human Centered Design**. I learned this discipline related to healthcare system improvement from the experts at Future Medical Systems.² First priority—find out what people want and need by asking them. (*Revolutionary, eh!*) While my design experience was focused upon the work of professional teams in complex settings, I also applied the tutorial for turning at home. I asked....



Sandie, my wife of 53 years, was once an avid weaver, spinner, and knitter. She's still an expert on the history and structure of textiles, as well as a sage judge of artistic forms in general, but arthritis and a series of surgeries have snuffed the "manual maker" element.

She's also an artist in the kitchen, and somehow, she has managed to make those hands perform despite the increasing difficulties.

Sandie's adaptations to her changing hand mechanics have taught me a lot about designing bowls and platters for daily use.

I'd like to share some "human centered design" ideas about turning rims for a reliable and comfortable grip.

Illustrations follow!

² [Home | FMS Designs Health \(futuremedicalsystems.com\)](http://Home | FMS Designs Health (futuremedicalsystems.com))

Our human hands grip bowls and platters differently...which is going to influence ergonomics of the rim, especially as the hands lose strength and mobility.



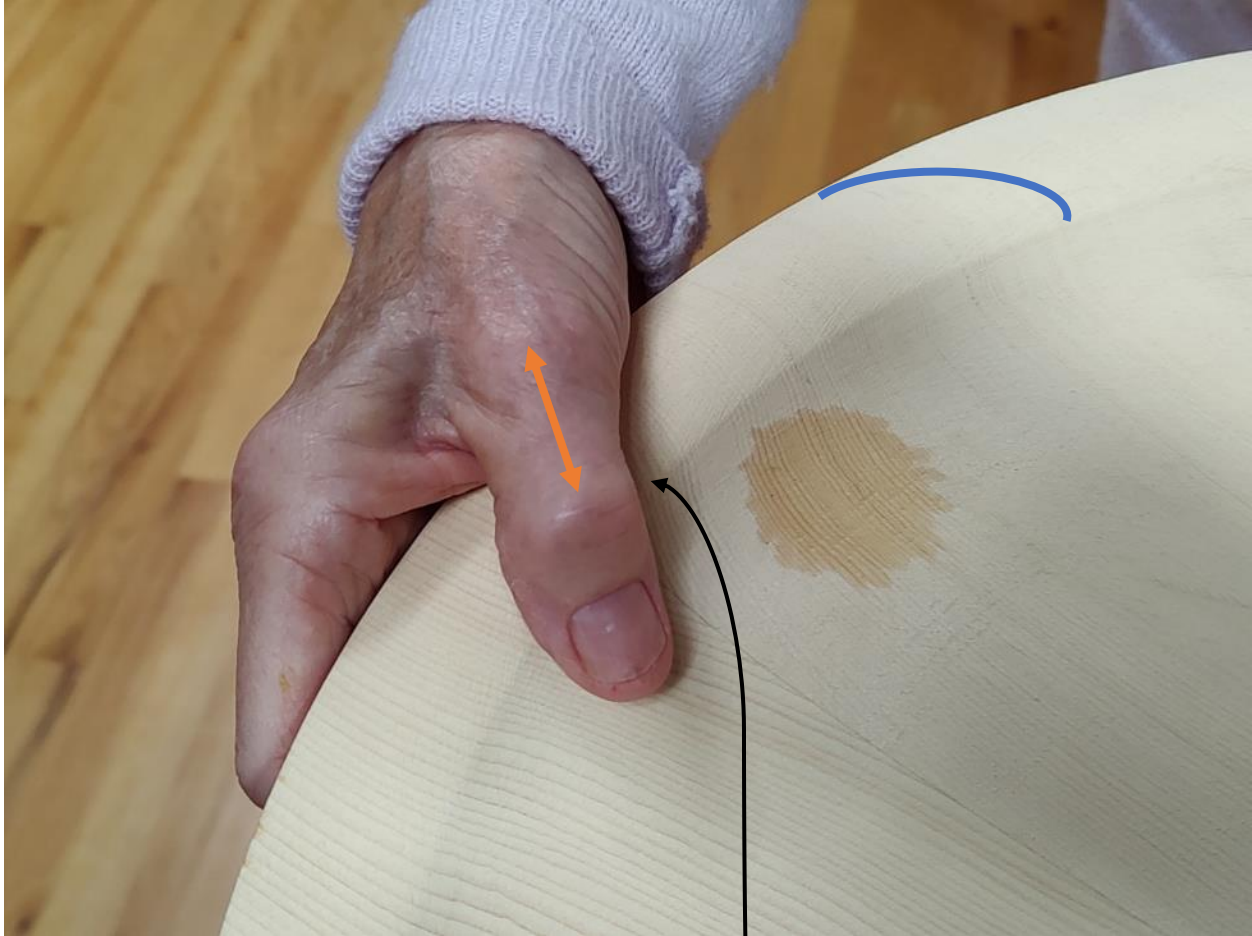
Left: Bowl grip from above. Wrists are cocked downwards. The thumb angles down and loops over rim, pinches rim against first knuckle of forefinger.



Right: Side view...fingers point downwards, following contour of the bowl towards the floor. (Troubled finger, that big one.)



Platter grip underside view. Wrists are neutral, not cocked, and fingers point towards each other almost horizontally, distributing the weight. The thumb angles down slightly to engage the rim. Next page for detail on that critical thumb!



View from above: Unfinished Alaskan Yellow Cedar platter.

Gratuitous raindrop...no extra charge

A subtle contour at the rim enables the thumb to “hook” around the contact point at the first knuckle...in a natural orientation. The strongest muscles of the hand operate the “squeezing” (flexion) function of the thumb, but if there is a mechanical structural fit at the knuckle, those muscles don’t need to work so hard.

The width of the rim corresponds to the length of the first phalanx of the thumb (orange arrow.) If the **rim is too wide**, the thumb can’t hook, especially if it’s stiff or sore. It’s not secure. That measurement varies with the size of the user’s hands!

If the **rim is too narrow**, an arthritic knuckle may not mechanically flex far enough to “lock in” to make a secure grip, forcing the whole hand to tighten up to compensate. It’s not user friendly! Hard to maintain...and troublesome when it fails!

The rim on this platter also has a mildly convex upper contour...corresponding to the concave, soft contact surface with the thumb. Fits like a glove! Sharp angles dig into tender, possibly sore tissues, so the outer edges of the rim are softened for comfort.

The platter is also rather light! Alaskan Yellow Cedar has been prized as a boat builder’s staple. Light and strong, quartersawn AYC hardly warps, and it flexes without fracturing. Turned about 5/16” (8 mm) thick, the platter is easy on the arms of the person wielding the platter. Not so easy with denser woods like oak, locust, & exotics!

Wide rims are pretty, but can sometimes be too much of a good thing.



These wide rims were designed wide for visual appeal—to show off the gaudy medullary rays of the live oak above or highlight the contrasting woods in the lamination below. However, the rims are too broad for the ergonomic functionality except for users with rather large hands. The platters are too large (18-22") (see next page!) and too heavy for regular use by a senior lady of normal stature.



Another critical ergonomic dimension is the distance between the two load bearing forearms.



This platter diameter is 15.5"...which corresponds to a natural distance between the forearms for an effective grip.

When the **diameter is just right**—all the strong muscles of the upper arms (deltoids, biceps, brachioradialis, and triceps) are balanced. The forearms are in a neutral and efficient (90 degree) angle to both the upper arms and linearly aligned with the wrists. The shoulder girdle and chest muscles (mostly the pecs) find themselves at optimum strength and comfort. The torso muscles (trapezii, lats, & serratus anterior) can rest.

The center of gravity of the object (especially if it's carrying a load) is fairly close to the tummy, so that strain on the vulnerable small muscles of the lower back is minimized. This posture also allows the carrier to stand erect, so the strong core muscles and the powerful muscles of the buttocks and thighs can operate efficiently.

Muscle efficiency is the reason that sustained, two-hand carries—lunch trays, picking lugs, firewood, beer coolers—generally have grips ranging between 14" and 20" apart. That's true for steering wheels, too, and that's also the prime comfort zone for platters.

Arms spread too wide—The muscles must strain with inefficient mechanical angles. Strength is impaired, and fatigue sets in early.

Arms clenched too close—It's easy to hold onto a small object, even a fairly heavy one, but clumsy to move and carry it, as the elbows are clamped against the torso.

That "sweet spot" dimension for width naturally changes for folks with taller stature.

More Platter Rim Shots with Comments

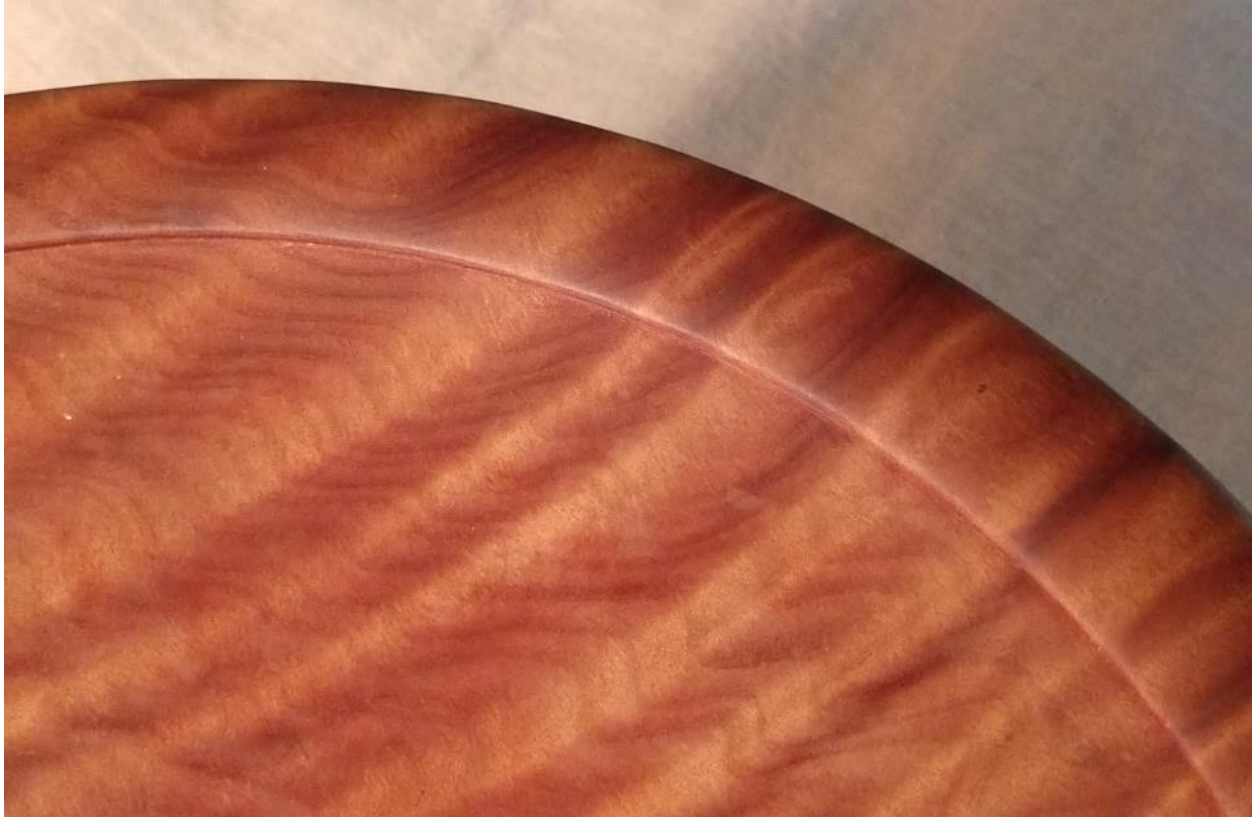


Narrow rim with steep undercut. Displays nice Sycamore ray fleck, but maybe too narrow for senior ergonomics! (*From the Mission Hill tree harvest, November, 2019!*)



Black Acacia

Ergonomic width and gentle convex curvature of the rim. The shallow undercut creates enticing shadow lines as well as an efficient thumb lock.



Quilted Tasmanian Myrtle

Rim detail on a 12" platter by Richard Raffan, purchased in Sydney long ago. Just enough contour—1/8" (3 mm)—for a secure grip, adding subtle flair by a legendary master.



Shallow, narrow rim. Visually OK, but not ergonomically secure with troubled hands. The salvaged Bubinga blank was only 1" thick...leaving insufficient material to make a more ergonomic rim. (It found a happy home anyway, but mostly as a stationary display platform.)



Cherry platter, 22" diameter, made on a big lathe in Provo. Too wide for regular use in our home, but definitely pretty! The rim was turned broad for visual appeal & catchy shadow line, but it's not ergo for the hands of a person less than 2 meters tall.



Quartersawn oak platter, 16" diameter. Elegant simplicity, but lacks rim contour for ideal grip. Pleasing visually, fine for juniors and admirers...but harder to handle with senior hands.

Platter rim grip strategies also help with bowls, but the mechanics are a little different. Since the hands typically grip a bowl with wrist angled downwards and fingers down along the side, pointing towards the floor rather toward each other, a rim gripping detail doesn't have to be as wide as the first phalanx of the thumb.



Undercut rim creates visual impact and more important...secure grip



Minimal rim detail: 1/8" protrusion...Just enough!
A bead on the inside is more ergo for the thumb than one turned on the outside.



Mildly incurved rim also creates better thumb mechanics...using the strong thumb opposition muscle. Weight is supported by the four fingers, without need for anatomic hook. See p 6

Not all visually appealing details are ergonomically helpful. *And that's OK*, depending upon who's going to use it and how!



Bill Hopkins made this elegant platter with a unique rim design. The tiny ridge, inset about 2 inches from the edge, not only catches light from the left side, but adds a crisp shadow line on the right. This design took exceptional technical skill and patience to turn...and it is impeccably finished, as usual for Bill.

From an ergonomic perspective, however, that sharp ridge makes it difficult to grasp in a standard fashion with a thumb above and fingers below. It probably won't be in daily use for users with Medicare cards, but it will certainly be eye candy for the fortunate party that purchased it!



My whimsical "Totality" eclipse platter has no pretense of ergo pragmatism!

Parting comment: Remember that one size does not fit all. Ergonomics change for users of different stature, anatomy, age...and, apparently, species!



Bonny Doon Chinquapin and Royalty

This rim application is not a “human centered” design, but don’t try to convince this user!

Author’s disclaimer: There are biomechanical aspects to matching a platter or bowl to an actual user. I’m a retired pediatrician and frustrated healthcare reformer...not an expert “biomechanic” like a physical medicine specialist, orthopedist, or occupational therapist. However, I’m a smaller-than-average guy who moves heavy things around alone...and a former swimming coach where subtle changes in upper body mechanics proved really important for performance. Working with children with physical challenges for decades, I learned how to make the most effective use of the tools and gifts they had. That also helped me to understand how important it is to customize our efforts for the comfort and goals of the user...not the interests of the “maker.” (Or the doctor.) Sandie, needless to say, has been a consistent and insistent instructor for my turnings.

Like it or not, I have joined the crowd of elders with declining capacity but strained perseverance and an eagerness to please. These experiences have helped to direct my turning, and I hope this discussion was useful to you! Blending pragmatism with artistry...that’s a beautiful quest.

WS, 12/25/2023

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