



THE SKIS THAT MIKE BUILT

WHAT COULD BE MORE SATISFYING TO A LIFELONG SKIER THAN HANDCRAFTING HIS OWN BOARDS? A COUPLE OF FLESH WOUNDS, A FEW NOXIOUS FUMES, AND SOME SERIOUS MARITAL STRIFE LATER, YOU START TO GET AN ANSWER.

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» Ski edges, wood shavings, deadly glues and laminates: **all part of the Zen buzz of building your own boards,** in which the process, not the final product, might be the most enduring reward.



Not long after moving to Colorado,

I purchased a pair of all-mountain skis from a local shop. Initially naïve to the meteorological quirks of the region, I soon discovered that it's no place for a one-ski-quiver. The wild temperature swings and big dumps that bookend long droughts demanded a more versatile portfolio. I'm a firm believer in trying before buying. Doing so with skis, however, only propelled me into a black hole of demo indecision.

Titanium sandwiches, pulse pads, multidirectional composites, sintered bases, triaxial braiding, double monocoques—ski peddlers love to spew technobabble. To grasp how design variables affect a ski's performance, I needed a hands-on education. As a kid, whenever I got a new toy, I'd have it disassembled into its component parts within an hour. (I wasn't nearly as deft at reassembling.) It's impractical to reverse engineer skis like childhood toys, so I decided to take the opposite tack: I was going to build my own boards—from scratch.

I did my due diligence, Googled the heck out of the topic, researched materials, and talked to a long list of professional ski builders and hobbyists. I thought I was ready to rock. I was wrong. What was supposed to be a part-time hobby morphed into three full weeks of earsplitting mayhem—grinding, sawing, drilling, routing, hammering, sanding. When I wasn't cloistered in our garage, I was dashing to the hardware store (where I became “That Guy Making Skis” to the clerks) or visiting lumberyards and sheet-metal suppliers. Bad timing. My wife had just given birth to our first child, and let's just say she wasn't thrilled with my disappearing-dad trick.

I first heard about the ski-builder subculture in Boulder, Colorado, where I live.

Its devout members, a headstrong clan of do-it-yourselfers, insist that a handmade ride is, in every respect, superior to the mass-produced boards stamped out in China and hawked by the major manufacturers. I found a website dedicated to the cause, Skibuilders.com, where users with names like Dr. Delam and thefreshpimp-offbigair posted their tips and queries to a bustling online forum. There were photos too, where, like proud parents, builders uploaded snapshots of their newly spawned, hand-hewn masterpieces.

John Hadley, a high school woodshop and science teacher in White Salmon, Washington, has built several pairs, including a set for his wife, a patroller at Mt. Hood Meadows. “Humans are being dumbed down by our material world,” he told me. “We farm out most of the tasks of life, while fewer and fewer people know how to work tools and craft.” Richard Barnes, who lives in the U.K., said he wanted to build something “that invests qualities from a different era. Perhaps this is a romantic notion, and that to survive everything should be built down to a profit margin, but I find it hard to see the world in this way.”

For Steve Desmond, a ski builder from Easthampton, Massachusetts, it basically came down to answering the question of how such a simple thing as a wooden ski got so complex. “I wanted to know why a top-of-the-line ski that still contains a wood core costs \$1,200 or more. What was I really getting, and could I do the same? The answer was yes.”

I wasn't convinced, but I wanted to join the club. Unfortunately, my woodworking résumé was pathetic. The highlight: a plywood kitchen cutting board I'd hacked out for my mom in eighth-grade shop class. I didn't have a clue how to handle fiberglass or epoxy. Sure, I'd repaired my own skis with P-tex sticks, drizzling melted blobs into core shots (and onto the living-room rug). Trimming unwieldy six-foot sheets of glass to within a millimeter of accuracy using a router—a tool I would encounter, like so many others on this journey, as a virgin—would be another matter entirely.

For reassurance, I consulted with Kam Leang, who co-founded Skibuilders.com and is a mechanical-engineering professor at the University of Reno. “I have a three-

car garage that's been converted into a ski factory,” he told me. “I build about 20 pairs of skis a year and pretty much give them away to friends.” My own dearth of tools and experience didn't concern Leang, who promised to hold my hand through the process. “Give me a ring whenever you get stuck,” he said, offering his cell number. This, I'm quite sure, he later regretted.

Over the next few weeks I'd pester him with frequent hour-long phone calls and almost daily e-mails. To help me fashion a pair of wood cores with uniform thickness, Leang explained how to make a profile jig to fit my router. He also told me it wasn't necessary to extend the cores into the tips and tails because the curvature makes these areas prone to delaminating. “Just chop off the cores right where the tip and tail start.” Another insight: “Don't shape the core to the ski; let it generously overhang and trim later.” When building my base molds, “start the rise 140 millimeters from the tip and 50 millimeters from the tail.” He advised

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aluminum sheeting to cap the molds. “This will give them a nice surface and prevent any excess epoxy from sticking.” Leang had the patience of Mother Teresa and the mad skills of Bob Vila.

Before doing anything, however, the professor suggested I read the detailed Skibuilders how-to section, a terrific overview of just how far I was in over my head. It spelled out the process in 45 or so steps (I stopped counting). Next, I downloaded a 15-minute demo video. Scene one was a warning: “Building skis is dangerous...and in some cases, you can even die.”

Excuse me? I hadn't signed up for the dying part. It turned out that one of the last steps to ski building involved a pressurized

contraption known as a ski press. Using compressed air, it smushed a sandwich of epoxy-soaked materials into a curved mold, adding the camber and forming the tips and tails. A blueprint for the press on Skibuilders showed a coffin-size device held together with nuts and bolts and steel trusses. An air compressor coupled to a fire hose generated a force equivalent to the gravitational pull of a thousand suns (approximately). Should the fastening hardware fail, a fusillade of shrapnel would explode in all directions.

I left this detail out to my wife, who wasn't likely to endorse a potential metal storm 12 feet from where our newborn took his afternoon naps. Instead, I enlisted Levi Hyland, a fellow ski builder who lived nearby. Hyland, an architect, had recently been laid off. With newfound time to tinker, he'd rented a small garage and stocked it with big, expensive tools, among them a drill press, a band saw, and a planer for shaping wood cores. "As a skier, I wanted to

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see what was possible, so I put about \$1,000 into setting everything up." This included his *pièce de résistance*, a ski press he'd built with his father. It was a bit of a shoddy job, with loose fittings, a leaky compressor, and a wobbly base. But he'd already pressed his first pair, so I knew it worked and that he'd lived to tell about it.

In the meantime, I ordered two-part epoxy resin from a boating supply outlet. The Skibuilders online store sold me triaxial-braided fiberglass, sandblasted metal edges, 200-micrometer rubber foil (for vibration damping), and three kinds of 4001-grade P-tex—black for the base, transparent for the topsheet, and white for the tip and tail spacers. For the wood cores,

I followed Leang's advice to go with solid maple. This, he claimed, would give me a stiff ski that excelled in powder and crud, could carve up corduroy, and shredded ice like Brian Boitano—an all-mountain ride with off-piste chops.

Structurally, the core is the soul of the ski. It defines how it will perform. To cut costs, commercial ski manufacturers often incorporate lighter woods, like fir and aspen, or cheap composites and then add a layer of metal to compensate for inferior materials. I wanted lightweight skis with no metal. So for top-shelf maple, I took a field trip to the Frank Paxton Lumber Company in Denver. The 100-year-old outfit specializes in hard-to-find exotic woods and premium lumber. With the help of two cheerful salesmen, who told me I wasn't the first ski builder to come in search of cores, we sifted through stacks of milled maple. For ultimate durability, the ideal specimens would have no knots, no splits, and their cuts had to be oriented longitudinally, with matching parallel grain patterns. After a 40-minute search, I scored two flawless six-foot planks.

I'd have to make a laminate to give the core uniform flex and boost its strength. This entailed slicing the maple planks lengthwise into one-inch-wide strips. My neighbor Robert Wooten, an engineer and gung-ho DIYer, owned a table saw. He offered to "rip" the maple and was stoked when I gave him the leftovers for a tip. That evening I joined together two of the 14 maple strips. They had to be glued and clamped individually and allowed to cure overnight. Do the math: I ate up two weeks just waiting for the damn cores to dry.

The base mold was next, built with a dense particleboard called MDF. It's nasty shit, made with urea and formaldehyde. At the lumberyard, a forklift driver warned me that sawing or sanding it would emit a plume of poisonous dust. I vowed not to inhale—and added it to the (expanding) don't-tell-my-wife list.

Back home, donning my finest hazmat gear—some old ski goggles and a surgical face mask left over from my bird-flu stash—I used a template to cut the MDF into 10 identical ribs. They were arced in the center to give my skis exactly 10 milli-

meters of camber. I glued the ribs together, then capped them with a thin sheet of galvanized aluminum, which the lady at the metal shop convinced me was superior to ordinary aluminum for reasons I still cannot explain. My base mold complete, I took a step back, raised my toxic-dust-encrusted goggles, and smiled. This thing might actually work.

Wooten lent me his finest router (German-made) to cut my bases from the P-tex. I'd never operated one, so he gave me a two-minute safety spiel. The razor-sharp bit, which spun at 25,000 RPM, could sever a digit in a millisecond. I sliced my thumb while trying to install it but avoided full amputation. To the finished base layer, I bonded the metal edges with dabs of super-glue (a temporary fastener until I could epoxy them in layup), and for the first time I had what resembled an actual ski. The shape: 136/105/127 at 176 centimeters. Now I was ready for the press.

I arranged the layers in order from the bottom up: P-tex base with edges attached, rubber damping strips, fiberglass, maple core, and more fiberglass. For the graphics, I popped into Jo-Ann fabrics and nabbed a swatch that would do nicely: a flaming hot-rod print. "That's quite the attention getter," a blue-haired saleswoman noted. "It's for my daughter," I lied. "I'm making her a prom dress." My low-rider couture would be visible directly beneath the transparent P-tex topsheet.

Before I could slather on epoxy, each layer had to be scrubbed with isopropyl alcohol. Any residual grease, dirt, or oil would taint the adhesive and could result in a high-speed delam on the hill. With Hyland's help, we carefully set the assembled layers in the press. He fired up the air compressor and, wearing a motorcycle helmet, crouched behind a door-size slab of inch-thick plywood. "It's my shrapnel shield," he explained. I went outside.

After an overnight cure, we pried open the press. I'd still need to trim off excess material with a jigsaw, bevel the sidewalls, and hire a local tuner to hone the edges and grind the bases, but the essential structural elements—the camber, tips, tails, edges, and sidecut—looked gorgeous.

Of course, I was biased, which is why it



do it yourself

1. Borrow tools from friends and neighbors. This project requires a lot of specialty tools that you'll only use once. You'll need a high-quality router and a template router bit to cut out the base layer. You'll want a router with serious vibration damping. If the router jumps, even for a millisecond, your skis are ruined.
2. Don't skimp on the epoxy. This is what holds the all the layers together. Go with the good stuff. It's spendy but essential.
3. You know that rule "Measure twice, cut once"? Well, for crafting skis, it should be "Measure six times, cut once."
4. Don't skimp on the wood either. The core is everything. Find premium timber that has *no knots whatsoever*. I must have sorted through 150 slabs at the lumberyard to find the perfect ones for my core.
5. Don't try this alone. Buddy up with someone who has made at least one pair of skis. Bribe him if necessary.
6. Keep a clean shop. Continually—obsessively—vacuum up dust, and keep your wood core clean. Any grease or particles that get into the epoxy or onto your core can create a weak point that can cause a delamination on the hill.
7. Invest in a decent P95 respirator. There's no point in making great skis if you fry your lungs in the process. —M.B.

seemed prudent to visit Folsom Custom Skis for a once-over by the pros. Based in Boulder, this two-man operation designs and handcrafts skis using many of the same methods I'd employed, only with far more refined equipment and heaps more experience, skill, and talent. The founder, Jordan Grano, who is self-taught, invested more than \$10,000 in materials and equipment (I plunked down \$600) and spent nearly a year building his first pair in his shed in 2005. It now takes him just 12 hours to craft a set. Grano, who has since left Folsom, greeted me at the heavy steel door to the shop. Also present was Mike McCabe, who now runs the company, and is its master builder. I reluctantly handed Grano my skis. He was silent for five long minutes while he slid his palms slowly over the topsheets, bowed the bases, examined the edges, and squinted one-eyed along the sidewalls to assess the camber. McCabe did the same. "Not bad, not bad at all," McCabe offered, while Grano nodded in agreement. Were they just being polite? Grano continued, "We get a lot of people in here making their own skis. These are definitely much better than most of the ones we see."

When A-Basin got a couple inches from a late-spring squall, I seized the opportunity. The conditions were not optimal: two inches of oatmeal puke on boilerplate. Take it slow, I told myself—a few greens and a couple cruisers on the blues—certain my novice craftsmanship would, quite literally, come unglued. Instead, my skis danced over the slop, carving nimble, tight turns

without a hint of a hook, and they sucked up chatter like a thirsty sponge.

I decided to tackle a slope with a little bite. Halfway down, I froze. If my homebuilts imploded, I'd fall like a pachinko ball into a stump-and-screed iron maiden. Hell: I threw my weight forward, executed a half-dozen hop turns through a skinny chute, and slashed-and-burned the last hundred yards, grinding to a stop on a mound of frozen ice turds. I popped out and did a cursory inspection. Amazingly, the edges hadn't budged; the tips and tails held together; and the laminates appeared snug, with no cracks.

Midway through this project, my hands scarred with flesh wounds, I'd gotten angry. I'd scoffed at the homebuilders as eccentric fools indulging in a pointless fetish. I'd felt certain my effort would either die in utero or culminate in a one-off pair destined to shatter on their inaugural voyage. In fact, neither happened. My skis performed astonishingly well. Their only shortcoming was an inability to absorb sudden jolts from chunks of harder crud, an issue that tended to throw me off balance. I later learned from Leang that this was probably because I hewed my cores a tad too thick.

Was it worth 30-plus hours of intense labor and neglecting my newborn son for nearly a month? Ask my wife, who hadn't been keen on the endeavor from the outset. But she had a sudden change of heart when I returned from A-Basin uninjured, skis intact, and announced that the next pair would be for her. ♦

» *Tools of ignorance? The author toiling in his new natural habitat, the garage woodshop.*