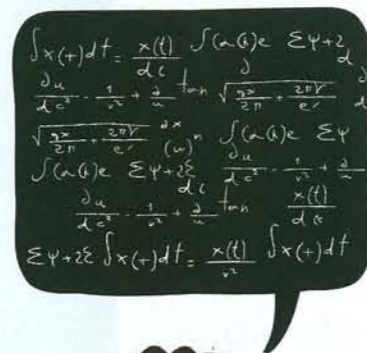


An Introduction to Contractors

Architect-author, Dan Maginn of El Dorado Inc., in Kansas City, Missouri, gives us the inside track on one of his favorite subjects: contractors. Learn what makes them tick, how to work with them, and how to keep all your fingers.



Story by Dan Maginn
Illustrations by Blanca Gómez

Impress your contractor, architect, or hell, just your spouse, with these fascinating facts.

❶ "Turnscrews," the original screwdrivers, had elliptically shaped handles so they would not roll off workers' benches. Modern screwdrivers have faceted handles.

Contractors fascinate me. They always have.

They are fundamentally different from other people. They have their own language of sorts and their own curious customs and mannerisms, like Klingons, or French people. They have cool belts and cool stuff (multi-tools, wee little anodized flashlights, and other things that would be handy to have) fastened to their cool belts. They look different, and they smell different. They smell like work getting done.¹ In this perhaps, contractors are not so much like French people.

Contractors think in numbers: in feet and inches. They are problem solvers. If you could have visual access to the chalkboards of their minds you'd see complex diagrams and critical path

¹ Like WD-40 and sawdust and Lectric Shave. My race—the architects—smells like hotel shampoo and that ozoney smell that wafts up when you fiddle around with the back of your computer.

schedules projecting far into the future.² They know stuff I want to know, like what a molly bolt is. I catch myself trying to impress them: Within minutes on a job site, I'm squinting and spitting and walking through mud puddles with a purposeful swagger, saying things like "At'll do 'er."³

Contractors are good with tools. They know how to store a power cord without getting it all Jackson Pollocky. They know how to use winches.⁴ And when they use their power cords and their tools and their winches, they wear fancy hats with stickers on them.

Contractors aren't afraid of pain. They are thoroughly unimpressed with the finger-smashing potential of powder-actuated fasteners and nail guns and 16-pound sledgehammers

² Currently on my mental chalkboard is a list of my favorite Popsicle flavors and a crude sketch of a scene in the opening credits of *Deadwood*, when you can see the side part of a boob for two seconds.

wielded by guys named Kenny. In this, they are like Klingons. And also like Robert Duvall, strolling on the beach in *Apocalypse Now*. They are a tough people—the progeny of similarly tough people who built things for a living, who in turn were the offspring of other toughies far into the past, back to the days of guilds and beyond, when we all had Sonny Bono hair.

You should consider becoming fascinated by contractors. Houses and buildings and bridges don't just magically appear. They are painstakingly crafted from chunks of formerly lifeless material by this clan of work-smelling problem solvers who can read floor plans and who can build what they read. Without them, we wouldn't have places, and that would suck.

³ Perhaps I need to see a doctor about this.
⁴ If I attempted to use a winch, it would not go well. Within ten minutes, you'd be able to hear the faint weerrrooooo of an ambulance in the distance.



❷ Before craft guilds developed in the Middle Ages, critical construction techniques were often lost when history took sharp turns. (Concrete, for instance:

Perfected by the Romans, the recipe was lost for 1,000 years after they departed the scene.) More industrialized construction has made information more available.

Words You Should Know

Bid: How much the contractor will charge to build the house. Different than "estimate." ("Bid" is to "estimate" as "getting wife flowers" is to "maybe thinking about getting wife flowers.")

C of O: Stands for Certificate of Occupancy and is required by many municipalities. After the inspections are complete and the permit fees paid, the city gives you one. If you move in without it, you are basically a terrorist.

Change Order: An official authorization that you owe the contractor more than you originally did. Change orders are usually associated with surprises, some good (upgraded appliances!), some sucky (abandoned septic tank!).

Construction Documents: The detailed plans and specifications, developed and stamped by an architect. These are referenced in the contract.

Contract: A document with plenty of fine print that describes the financial and legal specifics of a project. If you're using a contractor, you need one of these. ("Having a contract" is to "not having a contract" as "family planning" is to "beer bong.")

Kenny: If the contractor or the [something] guy is male, there is a 25 percent chance his name is Kenny.

Punch List: A painstaking, end-of-the-project, room-by-room accounting of all the stuff that's not right.

[Something] Guy: A contractor may subcontract out work to specialists—the concrete guy, the painter guy, etc. Note: The term is gender nonspecific, e.g., "That drywall guy is hot. Too bad she's married."

Stink Eye: The pre-judo-chop look you give the contractor when he slaps you with an unfair change order. ▶

Why Is Jane Smiling?

So you've brought home an ebullient new contractor to turn your wreck into the Ritz. How to do it? Read on.

Jane just built a new house. She is smiling because she did it right.

She started the process by hiring an architect, Franz, who developed a complete set of construction documents for her. She then found three contractors who were interested in building her house. She asked them about important issues like craftsmanship, bidding, and project management. One of them, Kenny,* had a pointy nose and slicked-back hair. During his interview, he gave Franz the stink eye.*

Jane told the contractors that she would hire the one with the lowest

and best bid. After three weeks, the bids came in; Kenny's was the lowest—but not the best. His job sites were in disarray, and he seemed to have some communication issues. (Plus, he looked like a wood rat.) The next lowest bid was from a quality-minded contractor named Jolene, who had good references and who did not look like a wood rat.

Jane signed a contract* with Jolene. It outlined the roles and responsibilities of all the parties involved. It required that the group meet twice a month to work through all of the issues that tend to develop when abstract ideas on paper are translated into bricks and mortar. As construction progressed, Jolene kept notes and passed them on to Jane and Franz after the meetings. These were helpful, as they recorded all the critical things that needed to happen before the next meeting, in order to stay on schedule.

During construction, the foundation guy* hit an abandoned sewer line and had to remove it. Because this scope

of work wasn't in the construction documents, Franz prepared a change order.* Jane remained calm, because she had included a small contingency fund in her budget. Jolene remained calm, because she was getting paid for the increased scope. Franz remained calm because he was naturally calm. Nobody got sued.

Just before construction was substantially complete, Franz walked through and recorded a punch list* of items that didn't reflect the quality requirements outlined in the construction documents. Jolene promptly fixed all the items. At the same time, she called in the city inspectors, who saw that the house was built to code and issued a C of O.*

Finally, Jane moved into her well-crafted, code-compliant, sustainably designed, correctly sized house. She loves it.

This is why Jane is smiling. ▶

* See Words You Should Know, on the previous page.



● The term "masterpiece" derives from the final step on a worker's path from apprentice to master craftsman, back in the day. Call it an artisan's doctoral thesis.

● Bricks are a highly poetic building material: a product of a specific place and people. Traditionally made from clay-laden earth, they are shaped so that a single

human hand can place one easily while the other hand prepared its mortar bed. If any bigger, two hands would be required, and the whole rhythm would be thrown off.

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Why Is Joe Frowning?

So you've brought home a bumbling new contractor who'll turn your Ritz into a wreck. How to avoid it? Read on.

Joe just built a new house. He is frowning because he did it wrong.

He started the process by purchasing a house plan book at a garage sale, quickly finding a design that looked "doable." He made a copy of the design and gave it to his nephew Kenny,* who looks like a wood rat. Kenny assured Joe he could build a house—he had worked construction before and knew how to swing a hammer.

Joe didn't get a firm bid from Kenny, who suggested instead that they just "go for it." He performed some mental

calculations and jotted how much he thought it would cost to build the house on the back of a Lucky Charms box. He gave this to Joe one evening, along with a \$5,000 invoice for "miscellaneous up-fronts." When Joe asked about a contract,* Kenny gave him the stink eye.*

Construction didn't go well. There was a small fire. There was gunplay. There was an infestation of flying bugs that looked like shrimp. All of these distractions resulted in change orders.* In addition to dealing with these unexpected costs, Kenny underestimated subcontractor bids by a long shot. He invoiced Joe sporadically, based on when he found himself burdened with what he referred to as "cash flows."

One day, an inspector came by and shut the job site down. (Kenny's plan to "go for it" meant working without a building permit.) On his own, Joe found an architect to slap together a set of construction documents* and to stamp the design. These delays

proved too much for Kenny, whose cash flows forced him to sell his tools to the framing guy.* And then one day Kenny was gone, leaving Joe's job site looking like the nest of an enormous man-eating bird.

After another delay, Joe found a second contractor to finish what Kenny had started. His name was Mark. (Or perhaps it was Doc—it was hard to understand what he was saying.) Mark/Doc finished the house as well as he could, given the circumstances. When Joe asked about a punch list,* Mark/Doc misunderstood, thinking that Joe was picking a fight. He drove off, terrified, and was never heard from again.

Joe finagled a C of O* from a sympathetic inspector and moved into his oddly proportioned, hurriedly crafted, shrimp-infested, south-leaning house. He hates it.

This is why Joe is frowning. ▶

* See Words You Should Know, page 101.



© With the invention of gypsum-and-wool-felt Sackett Board (introduced in 1894 and perfected by 1901), the interior drywall industry was born. Adios, plaster.

© A two-by-four is actually 1.5 inches by 3.5 inches after drying and sanding. In theory, you lose a quarter inch off all sides during this process. Although this most

likely infuriated your grandpa, it makes sense: You only need 1.5 inches for a screw to hold, and it's exhausting to say "one-and-a-half-by-three-and-a-half" all the time.

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In the Nick of Time

Though contractors are unusually deft with tools, accidents do happen. SawStop puts an end to that.

Even the most safety-minded professional occasionally makes a mistake. Mistakes with a hammer can result in smashed fingers, but barring some sort of singularly weird miscue, at least the digits are still physically attached to the host body. Mistakes on a table saw are far less forgiving. I have four contractor friends—missing a total of 7.25 fingers—who can attest to this.

SawStop is a company that recognized this problem. They have developed a series of construction saws whose blades cleverly stop when they come in contact with human skin. And

I don't mean stop like "whoa, wait a minute, let's think about this" stop—I mean STOP stop.

How quickly does the blade stop? Well, it takes a fifth of a second to even say the word "stop." This doesn't sound like much, but a fifth of a second in the presence of a wildly rotating saw blade translates into your pinky flying across the room, end over end, like a tiny football. A SawStop blade stops in five milliseconds, which is way shorter than a fifth of a second.

How do SawStops do it? Something about electrical currents and a chunk of aluminum that shoots kamikaze-style into the whirring blade, sacrificing itself so that your fingers can live another day. The company's website has a great little testimonial photo gallery of some of the folks who have already been saved—holding their fingers out, proudly displaying the exact same grain-of-rice-sized nick. Sure, the brake cartridge costs \$69 to replace, but that seems like a bargain compared to a lost finger.



⑦ The six-foot-thick walls of Chicago's 1891 Monadnock Building mark the pinnacle of masonry weirdness. High-rise construction quickly became more efficient.

⑧ Prefab is by no means a new phenomenon in house construction. Sears sold over 70,000 ready-to-assemble (sort of) houses between 1908 and 1940. The Great

Show-Me Statements

Show Me a Job Site

Well-run job sites resemble an episode of *The New Yankee Workshop*. Poorly run job sites resemble the first half hour of *Saving Private Ryan*. You want something closer to the former. Once you've made your contractor shortlist, set up a couple job-site tours. Check out the orderliness of the site and how well crafted the work is—take along your architect if you'd like a professional opinion. Look for a centrally located table with an updated copy of the construction documents bolted down on it like the Magna Carta. Look for tidy sawdust piles in the corner, awaiting proper disposal. Look for beer cans in the sawdust piles.

Show Me an AIA Contract

See if the contractors are okay with using an American Institute of Architects contract. For residential projects, I recommend A105 "Standard Form of Agreement Between Owner and Contractor" in conjunction with A205 "General Conditions of the Contract." (They are meant to go together.) You can get these fair-minded and highly understandable documents from your architect or local AIA chapter. They have enough detail to be meaningful, but not so much that you immediately fall asleep and drool on them.

Show Me a Schedule

Many construction projects start strong and then stall out. Sometimes appearances are deceiving, and nonobvious work is indeed happening behind the scenes. Sometimes appearances reflect the truth, however, and the contractor has sneakily moved on to another job for a spell, knowing he has you financially locked up and helpless. A schedule should anchor regular owner-architect-contractor meetings and will help you track your project's progress. If she hems and haws and makes excuses when you request one, give her the stink eye and walk away.

Depression resulted in a large number of payment defaults, which hurt business and eventually forced Sears to stop production.

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Building Tomorrow

What will the future hold for contractors and builders? We asked three industry leaders for their prognostications.



Move On

Richard Wetzel is assistant vice president of business development for JE Dunn Construction. As a licensed architect, he is interested in integrating design and construction to create buildings that are more sustainable and better built.

"From a materials and methods standpoint, we're still building variations of the pyramids, for the most part. Three thousand years later, and we're still stacking bricks—especially in the United States. In the future, we need to make our systems work for us more. We need to take advantage of our building's skin to generate power and to adapt to different conditions in real time. And we need to automate more. I don't think we'll ever have construction robots, but we can definitely take advantage of automation on a factory scale, with large components being constructed in controlled environments and then plugged together on-site. I'm not saying that we'll build buildings the way Boeing builds airplanes, but there will definitely be some similarities, especially with larger projects. Design and construction will need to be a much more integrated operation in the future."

Slow Down

John Brown is a principal with Housebrand and founder of the slow-home movement. He has dedicated his career to helping others understand the power of a relaxed pace in the house design and construction process, similar to that embraced by the slow-food movement.

"I believe that home construction in the future will recognize the value of a slower pace. A quickly designed and constructed house saves time up front, but does it really reflect who you are? Not always. In my mind, an incremental process makes more sense for many of my clients, especially those unfamiliar with the design process. I recommend that they proceed at their own pace—room by room if necessary. I tell them to bring different materials into their houses, and to live with them for a while. If they're building new, I tell them to leave a couple rooms raw, then finish them out one by one after they've had a chance to experience the space. It's about the journey as much as the end product. Home design and construction should be pleasurable: You plan, you work, you react, you live. It's an adaptive process. Embrace the fact that things change."

Look Up

Kelly Humphries is a spokesperson for NASA at the Johnson Space Center in Houston, Texas. Trained in public relations, he's nevertheless at home amidst all the engineers. If you've ever tuned into the NASA channel, you've probably heard his voice.

"We can learn a lot about how to build in the future by looking at how we are building now at the International Space Station. All the issues we deal with down here exist in an amplified state in space. We've figured out ways to be truly sustainable. We generate our own power. We recycle everything—even the astronaut's own urine and perspiration are processed into potable water. The conditions we design for are beyond harsh, and the site where we build is very hard to get to. We prefabricate our components and ship them up, and we build them with such precise tolerances that they lock perfectly together into place. We have to exceed efficiency up there, and so much of what we do ends up being applicable down here." ■

⊕ The construction of the Golden Gate Bridge sparked a few safety innovations. The modern hard hat was developed for the project, and the installation of safety

netting on the bridge saved the lives of 19 men during construction, who became known as the "Half-Way-to-Hell Club."



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CURTAIN CALL
A window treatment that's both functional and stylish, the new Power Play armchair and ottoman by Frank Gehry for Knoll is made from strips of woven maple. It complements the woven fabric seats of a Jens Risom lounge chair, also for Knoll. Colorful woolly rugs soften the expanse of polished concrete. knoll.com

SURGICAL SET FACTORY
The new Power Play armchair and ottoman by Frank Gehry for Knoll is made from strips of woven maple. It complements the woven fabric seats of a Jens Risom lounge chair, also for Knoll. Colorful woolly rugs soften the expanse of polished concrete. knoll.com

TOUCHY SUBJECT
Playful textures from an eclectic assortment of furniture add a tactile quality to architect David Baker's streamlined living room. A Power Play armchair and ottoman by Frank Gehry for Knoll is made from strips of woven maple. It complements the woven fabric seats of a Jens Risom lounge chair, also for Knoll. Colorful woolly rugs soften the expanse of polished concrete. knoll.com

SHOUJI BIZ
Baker studied how shoji screens, made by the Japanese company DeWain Design & Fabrication, to separate spaces. He adapted the concept to create a functional partition that's both decorative and useful. knoll.com

SPOKE UP
Carabiners and block-and-tackle systems are used to hoist bicycles to the ceiling, transforming the bikes into sculptural forms and keeping them out of the way. When he's ready for a ride, Baker climbs a ladder, unhooks a rope, and lowers the bike to the floor.

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