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# The Big Book Of Maker Skills (Popular Science): Tools & Techniques For Building Great Tech Projects



## Synopsis

Makers, get ready. This is your ultimate, must-have, tip-packed guide for taking your DIY projects to the next level—from basic wood- and metalworking skills to plugged-in fun with power tools, from cutting-edge electronics play to 3-D printing wizardry. Join Chris Hackett, Popular Science intrepid DIY columnist and star of the Science Channel's *Stuck with Hackett*, on a rummage through the toolbox of yore—and a foray into the technologies of the future.

**HAND TOOLS** A classic is a classic for a reason. Learn to build your own metal forge, screen-print whatever you want, swing a hammer better than your ancestors, and repurpose what Hackett calls "obtainium" but what others might call trash into your own mad-scientist creations.

**POWER TOOLS** Discover the supreme joy that is angle-grinding, rig your own welding machine out of a junked car battery or three, and meet and master a whole host of electronic gadgets—LEDs, piezo buzzers, solar panels, and more.

**ROBOTS & BEYOND** When it comes to making, there's a whole new skillset in town. Get started with CNC milling, laser-cutting, programming microcontrollers, and 3D printing in a chapter that's all about building what's next.

**MUCH MORE** Setting up a hackerspace, drones and space exploration tools, circuitry basics, sourcing and crowdsourcing and biotechnology—just to name a few more. You name it; it's probably in this book.

## Book Information

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## Customer Reviews

This is a book that basically provides a quick overview over all sorts of numerous "Maker" skills. The Maker movement basically united all the disparate handcrafts and DIY skills and trades and so forth

out there under one umbrella. So you can find everything from sewing to ceramics to robotics at a Maker faire or show. This book covers numerous of these skills, although it misses a couple of core segments IMO. Some say that the book goes into too little depth on the subjects it covers to teach anything, but I think that is the point. It just gives you the major basics. EACH one of these subjects could require a book (or ten) on its own. For example, welding. This book has a section on welding. But to really cover welding, well there are whole textbooks out there on the subject, and you can probably get a book on EACH of the different types of welding for example. The book also covers computer programming. You want depth on that? Well there are numerous different programming languages and whole textbooks on programming with them and really advanced programming requires understanding of computer science, and so forth. The book gives some coverage of the very basics of electronics. Well heavens, I don't even know where to start on that one, there are some very big fat books on that subject. The book "Art of Electronics" alone is about a 1,000 pages (the new 3rd edition is scheduled to be released in April in case anyone is looking to purchase it). But for even a person with a lot of "maker" knowledge, if you will, this book covers some subjects that they may have missed or not thought of. For example, you may know tools, but do you know your fasteners? Dowels, nails, rivets, screws, bolts, nuts, washers, eyebolts, and screw eyes? This book provides a good overview of lots of individual skillsets from which one can then pursue more advanced study. At the beginning of this review, I said that the book missed a couple of core segments. These are mechanisms and gears, and manual machine tools (which I am really surprised about). I also think it missed a few slightly more minor subjects, such as batteries and casting and foundry work (although it does mention about how to make a foundry). If you have any hopes of being able to make any kind of mechanical mechanisms, or understand the basics of mechanical mechanisms, you need to know the basics of mechanisms and gears. The book gives a one page overview of the six simple machines and has a two-page section on the uses you can get out of a power drill that someone else might consider junk (such as getting a planetary gearbox out of it), but otherwise that is it. Nothing about the different types of gears, the different ways that they combine, etc...two good books on the basics of these are a recent book called "Making Things Move" by Dustyn Roberts and "The How and Why of Mechanical Movements," a book that is out-of-print now (it's from the 1960s), but you can get used copies on [amazon](#) and ebay. There is another book by Make magazine titled Machines and Mechanisms that was supposed to come out in late 2014, then was scheduled for February 2015, now it is scheduled for February 2016 (I assume that the author is having some delays). But if the quality of most other Make books, it should be good. Regarding manual machine tools, well heavens, I mean these are what began the Industrial

Revolution. And the author of this book, Chris Hackett, even has said that if society ever fell apart for whatever reason, he'd love to be one to help restart industry. Which is great, but if the power grid goes down nationally and we're back to the 19th century technology-wise, you aren't going to be restarting industry with any fancy CNC machines or 3D printers (which the book does cover). To do any kind of such machining, you're going to be using manual lathes, milling machines, grinding machines, etc...which leads into one of the two less core skillsets I mentioned, casting and foundry work. Believe it or not, if you just have metal and wood (and sand), you can make your own machine tools and whole machine shop completely from scrap. You need some casting and foundry work skills, but it basically consists of using wood (and some woodworking skills) to make patterns, using the pattern to produce molds via say sandcasting (the molds are made in sand), and then you pour molten metal into the sand mold to produce the casting (the part), and from these parts, you then construct the lathe, and from the lathe you can gradually construct everything else. The late great David Gingery covered all this in a series of books called "Build Your Own Metalworking Shop from Scrap." You can get a single leather-bound book (or it seems leather-bound anyway) that contains all seven of these books, it is very nice and for sale on . Machining and casting/foundry work are skillsets unto themselves with lots of books on them. Another reason to know manual machine tools is that it aids in being able to be good with CNC machines. So I am very surprised that this book does not include anything on manual machine tools. Regarding batteries, this is also a less-core skillset, but one that I'd imagine would be very handy should you ever need to make use of say automobile batteries for some type of SHTF situation or fancy project you have in mind. Otherwise, the book covers everything from basic hand tools to robots, welding to electronics, fasteners to computer programming, and is a very good overview of the basics of each of these. But before attempting anything that could be dangerous, such as welding or using power saws, get further instruction (such as a good book strictly devoted to the subject and/or maybe some formal lessons), and make sure to use safety equipment.

A not half bad book. Some of the Maker Skills will work. Some might get you killed. User discretion is advised. This thing covers a lot of what one would need to set up a small industrial factory in one's back yard. Some of it requires - distance - and, space - for proper operation. A few of the processes have the potential to go seriously wrong. The only thing guaranteeing that you don't take out your house is a distantly detached garage. Many of the other recommendations are far less consequential. Know "your" limitations. Follow your gut, use your sense of comfort level. It is very McGyver-ish. Most everything will work - as described. It does have very practical advice. Double

down on your homeowners before you attempt the more pyrotechnic projects.

This was a good book for me. I've dabbled in electronics, electrical, woodworking, and more, a typical handyman and DIYer, and I have several books on home maintenance, so I was familiar with many of the skills covered by this book. So while the skills covered by this book have some overlap with those, overall it supplements them very nicely. I found this book covered far more skills I didn't know, than I knew. My first thought upon looking through the book was 'this is what I needed back in school for my science projects.' In particular the skills in this book on working with metal (forming and welding) and plastic will be valuable to me. I was also impressed with the coverage of the tools required for the skills covered. I also like the clarity of the articles and pictures. I'm impressed with it enough, that I'm going to get a copy of this for my adult son.

It is a little miss leading. It says "maker skills", but doesn't actually teach you anything. It does give you some ideas for trying new things, but if you already have good shop skills this book isn't for you. I did notice 2 or 3 typos when they book was labeling tools. It labeled a "cold chisel" but showed a picture of a wood chisel. BIG DIFFERENCE. This book is aimed more at people just finding their way around the workshop, and by no means gives any actionable information to people without access to at least a woodworking shop.

Don't get me wrong- this isn't a bad book. It's just that it isn't a good book for someone with experience. Geared for beginners, it does deliver a wealth of information for those who are just entering the world of 'making'. If you already have a basic knowledge of hand tools, etc., it won't be much use to you.

Honestly I bought this thinking it was going to be a how to for random designs, but it ended up being an explanation type book on various tools and how to use them. Very handy to have around when a project requires a tool you are unfamiliar with.

I did not know how many things could be made....a bit of a handy guys book, combined with OH NO! Zombies! Lets make a...!!! To WHOOPS! Now I need to fix that...and I have nothing to fix it with--oh but wait! Pop Mech meets Survival Handbook meets Old man Mcgyver.

This is a cool book to read and look through. Almost a "coffee table" (or maybe workbench is more apropos) type book as it has a lot of nice photos that are well taken. My kids also like looking through the book, which is cool. It can be read in short bites as each section can be read as a stand alone section. It has some good ideas, but I found it more inspirational as opposed to instructable (don't think this is a real word, but you get the drift...).

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