MAIN MENU ⌄   **MY STORIES: 25** ⌄   **FORUMS**   **SUBSCRIBE**   **JOBS**   **ARS CONSORTIUM**

GEAR & GADGETS / PRODUCT NEWS & REVIEWS

How we built a DIY book scanner with speeds of 150 pages per minute

A kit, online forums, and an Ikea-like manual made DIY scanning easier than expected.

by Jennifer Baek and Jake Brown-Steiner Feb 14, 2013 11:00am ART

135

Bookshelves today are simply not as appealing as they used to be, and there's no shortage of people looking to digitize their own book collections. Fortunately, we now have easy and relatively inexpensive ways to digitize those books. You don't have to slave away at your copier or scanner, either—we're talking about building a book scanner of your very own.

We're *not* talking about the numerous book scanning services that have popped up in the last few years, offering book digitization at the cost of only a few cents per page. Nor are we talking about chopping off the binding of your book and feeding the pages into a copier or scanner, or purchasing a commercial book scanner for upwards of $10,000 (that just isn't going to happen for most). No, we're talking toolbelts, paint cans, bike brakes, and digital cameras—doing it yourself.

For two law students interested in the legal and policy discussions surrounding copyright and technology, deciding to build a DIY Book Scanner was never *just* a project to digitize our own textbooks (however practical that might be). Instead, it gave us the opportunity to experience these issues first hand. Plus, we wanted to see what it would take to build one.

Unfortunately, we lacked engineering backgrounds. Fortunately... well, we have the Internet. We discovered the DIY Book Scanner Kit and the booming community of people building their own book scanners. At $475 instead of several thousand dollars, it felt like striking gold... if we could make it work.

Daniel Reetz, founder of DIYBookScanner.org, had been making kits available for those looking to build their own device. Finding a need for a scanner himself, Reetz built his first book scanner from the trash he found from dumpster diving. He created an Instructable to share his experiences and discovered a diverse group of individuals who also had the need for a book scanner. The group ranged from a man from Indonesia hoping to preserve books from flood damage to a group of engineers looking for a new and interesting project to spark their interests. The DIY Book Scanner had modest beginnings, but over a period of two years it evolved into a movement of individuals using readily available resources to create solutions.

Thanks to Reetz, the community of fellow DIY-ers, the generous funding from the Institute of Information Law and Policy at our New York Law School, and help from our mentor (and Ars contributor) Professor James Grimmelmann, we ordered a kit and got to work. Just how hard could it be?

Chapter one: Getting started

The DIY Book Scanner Kit came in a 23" x 27" x 7" cardboard box and weighed about 40 pounds. Inside, we found a neatly organized pile of wooden parts and hardware.

Jennifer Baek and Jake Brown-Steiner

Jennifer Baek and Jake Brown-Steiner

The kit includes laser-cut, US-grown Baltic birch parts as well as nuts, bolts, washers, screws, ball bearings, an LED light, tension cords, bicycle brakes, cables, and, to our surprise, absolutely *no instructions*.

Sure, the description on the website stated, "First and foremost, this is a beta. It's not a consumer product like you might buy in a store. It requires that you Do Some Things Yourself!… If you're not a builder or tinkerer yet, this is a good place to start... Getting to a complete, working scanner will require some **perseverance** on your part."

But still, no instructions? Having assembled only cheap Swedish furniture before, we were consumers who expected some guidance. The Web description of the DIY Book Scanner Kit did throw us a lifeline, though. "The good thing is that there is a large community of people, including me (Daniel Reetz), who will help you at www.diybookscanner.org/forum," it said. So when the package came, we headed back to the website and found a large community of people who posted about their experiences building the device. These writeups became key reference guides. We also downloaded a copy of some online assembly instructions, which were oddly reminiscent of the IKEA variety:
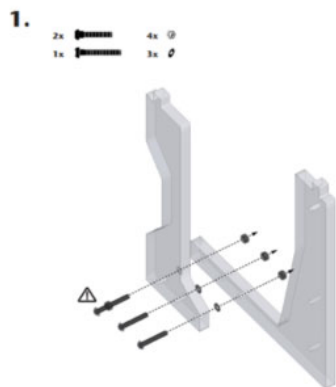
⚠ The distance between the nut and the
bolt head should be about an inch.

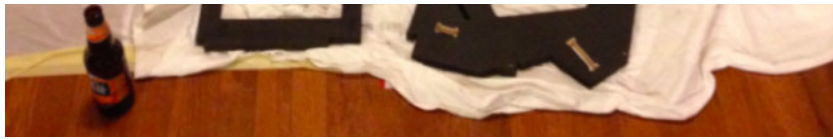Jennifer Baek and Jake Brown-Steiner

The step-by-step instructions are 43 pages worth of computer renderings covering each part in the kit. Instead of text, arrows point out where parts go. Fortunately, the drawings were easy to follow. When problems arose it quickly became second nature to consult the community (which we did without hesitation).

We started by painting each of the wooden pieces with matte black latex paint. Since we couldn't paint at the law school, we hauled the kit out to Brooklyn (fitting for DIY Book Scanner maintenance) before getting down and dirty with the brushes.

Jennifer Baek and Jake Brown-Steiner
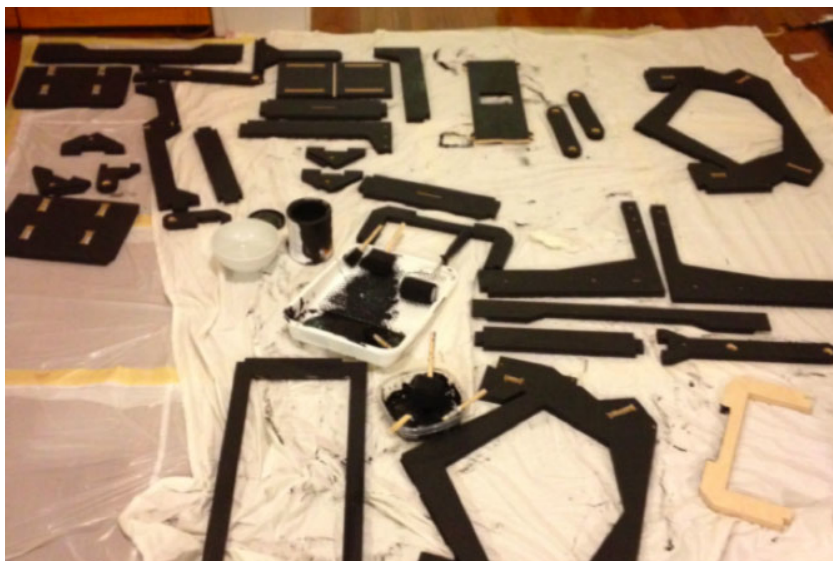
Jennifer Baek and Jake Brown-Steiner

The wood absorbed the paint like a sponge and dried in a manner of minutes. We finished painting in a few hours, after which we packed up the kit and took it back to its home in the Collaboratorium (an office in the Institute of Information Law and Policy where awesome things tend to happen).
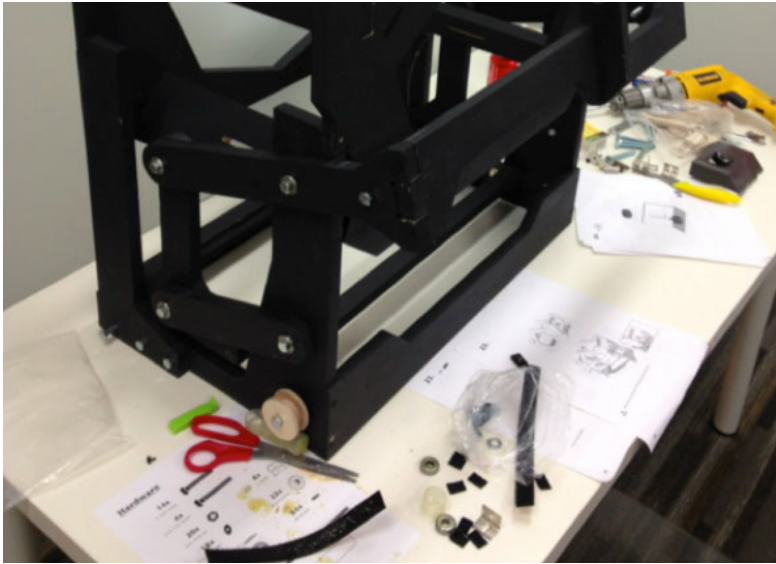

Jennifer Baek and Jake Brown-Steiner

There, we received an e-mail from Professor Grimmelmann about the release of Robin Sloan's new novel, *Mr. Penumbra's 24-Hour Bookstore*. Robin had found out about the book scanner we were building and wanted us to bring it to the Center for Fiction for a segment of his live 24-hour webcast in three days. The talk would take place in the run-up to his book release party. The odds of completing our project by then were not good, but we decided to try. (How could we pass up *that* opportunity?)

On the first day, we began assembling pieces, often bickering about how deep we needed to drill pilot holes. Self-doubt struck when screws broke off or bits of wood started to split. (*Tip*: Make sure you drill the pilot holes deep enough to house a screwhead *and* far enough from the edge of the wood to prevent splitting). Parts got stuck or didn't fit together, forcing us to make five separate trips to the local hardware store for extra supplies. (*Tip*: Only paint the surface of the parts; don't paint the slots where the wooden pieces fit together. Also make sure you have lots of sandpaper and a file handy, as you will need to sand down slots to make sure the pieces fit together well.)

By the end of day one, we were ready to assemble all of the wooden parts. On day two, we worked on getting what we called the "camera trigger mechanism" to work. The "camera trigger mechanism" consists of a dual-cable bicycle brake lever, two cables, and pieces of wood that were laser-cut to produce something with an uncanny resemblance to the human index finger. To assemble the mechanism, we flipped to the next page of the instructions and discovered that they stopped short.

The instructions were incomplete.

Jennifer Baek and Jake Brown-Steiner

PAGE: 1 2   NEXT →

READER COMMENTS   135

← OLDER STORY   NEWER STORY →

YOU MAY ALSO LIKE ◢

SITE LINKS

About Us
Advertise with us
Contact Us
Reprints

SUBSCRIPTIONS

Subscribe to Ars

MORE READING

RSS Feeds
Newsletters

CONDE NAST SITES

Reddit
Wired
Vanity Fair
Style
Details

| Visit our sister sites | ▲ ▼ |

| Subscribe to a magazine | ▲ ▼ |

VIEW MOBILE SITE

CONDÉ NAST