How-To Web Pages

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How-to pages help anyone break it, fix it, or make it.

The most common meanings of the term hacker refer to those who illegally break into computers and networks or, when used in a positive sense, those who creatively attempt to correct security flaws. Broadly speaking, however, hacking is not restricted to security or even computer technology: It involves taking things apart, tinkering, making something new, being imaginative.

A wide range of resources support do-it-yourself technology—from print publications such as *Make* magazine (www.makezine.com) to Web sites like Instructables (www.instructables.com), from dorkbot meetings (www.dorkbot.org) to the yearly Maker Faire (http://makerfaire.com) in San Mateo, California. In addition to these formal outlets and venues, an increasing number of hobbyists are using the Web to share their innovative knowledge in the form of how-to pages.

HOW-TO PAGES

The how-to has become a common online format for procedural knowledge sharing, similar to the FAQ or personal homepage, and how-to pages can be found for almost every activity. Whether you're modifying software, installing a water heater, or just packing a suitcase, you can likely find detailed instructions or suggestions on the Web for how to do it or do it better.

How-to pages have been around since the Internet's early days, but the emergence of open, flexible Web 2.0 technologies, greater network bandwidth, and increased multimedia capabilities have made it easier for hobbyists to explain complex tasks, particularly those that require manipulating physical objects. Nowadays, it's not uncommon for a how-to to include links to videos hosted on YouTube, podcasts, 3D models created in Google SketchUp, circuit diagrams, schematics, and lots of photos.

Many how-to projects involve modifications to existing products. For example, Figure 1 is from a page describing how to take a Guitar Hero video game controller apart and reassemble it inside a full-size electric guitar—a complex process that took the authors 75 hours (http://toolmonger.com/2006/12/05/how-to-build-your-own-custom-full-sized-wireless-guitar-hero-controller). To take another example, not long after videogame enthusiasts found that the Xbox 360 became hot when used for a long time, how-to pages for adding a water-cooling system began popping up in forums and on Web sites.

Other how-to projects, like the MintyMP3 player (www.ladyada.net/make/minty) shown in Figure 2, are built from scratch using off-the-shelf component parts and mimic the functionality of an existing, often expensive, commercial product. Such creations may require highly specialized skills. For example, several hobbyists have constructed their own versions of the Segway scooter with off-the-shelf parts and open source software code.

Some how-to pages, like that for the Guitar Hero hack, relate the chronological story of the author's experience, complete with descriptions and illustrations of mistakes, frustrations, and workarounds. Others, like that for the MintyMPe player, are written like recipes and simply list the necessary tools and provide straightforward, step-by-step instructions.

HOW-TO NETWORK

Many Web sites have attempted to consolidate how-to knowledge into standardized repositories—Howtopedia (www.howtopedia.org), wikiHow (www.wikihow.com), and HowtoForge (www.howtoforge.com), just to name a few. However, individuals continue to publish and distribute them as well. No company or professional society structures how-to contributions, yet how-to content on personal Web sites and blogs is growing rapidly.

We interviewed several how-to authors and discovered that what at first appears to be an independent activity is actually a very social one. While hobbyists largely accomplish a project's physical work alone, they rely on others for help, news about what's going on in their community, and recognition.

Obtaining help

Hobbyists in need of help use search engines to locate how-to pages of colleagues interested in the same problem and may communicate with them via e-mail. Many also participate in online forums and newsgroups as well as in face-to-face communities; these ongoing, established contacts are

valuable resources when hobbyists face particularly difficult challenges.

Maintaining awareness

Hobbyists also rely on RSS feeds from blogs and other hobbyists' Web sites to stay aware of what others are doing, get inspiration for new ideas, and gather information for future projects.

Editors of blogs such as Hack a Day (www.hackaday.com) and Hacked Gadgets (http://hackedgadgets.com) highlight specific projects by commenting on them and linking to the author's Web site. These blog editors fulfill an important role in the how-to network by acting as gatekeepers to a much larger collection of projects a hobbyist might not otherwise encounter.

Getting recognition

A blog that links to a how-to broadcasts the creator's contribution and thereby enhances his or her reputation. Hobbyists admire the hacks posted to these blogs and want to be similarly acknowledged and admired by their peers. As in any community, having other members comment on and cite your work is a key form of validation.

Hobbyists receive comments on their work via blogs as well as through their own Web sites. Several we interviewed hosted comments or other communication tools directly on their site to encourage feedback. Hobbyists frequently respond to questions about their how-to projects via e-mail as well.

How-to pages constitute unique online collections of practical instructions, personal stories, and multimedia illustrations. Though independent creations, they are linked together through the Web to form large repositories of useful information. Emerging Web 2.0 technologies are making it easier than ever for those who share a passion to communicate and collaborate.

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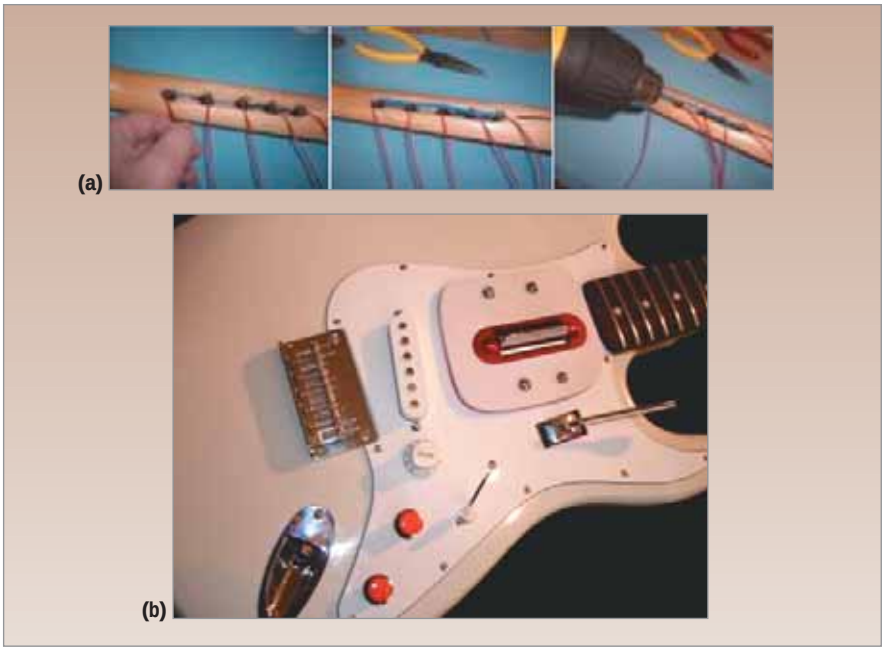

Figure 1. Taking a Guitar Hero video game controller apart and reassembling it inside a full-size electric guitar (a) Running wire to the buttons in the guitar neck. (b) The finished Guitar Hero controller.

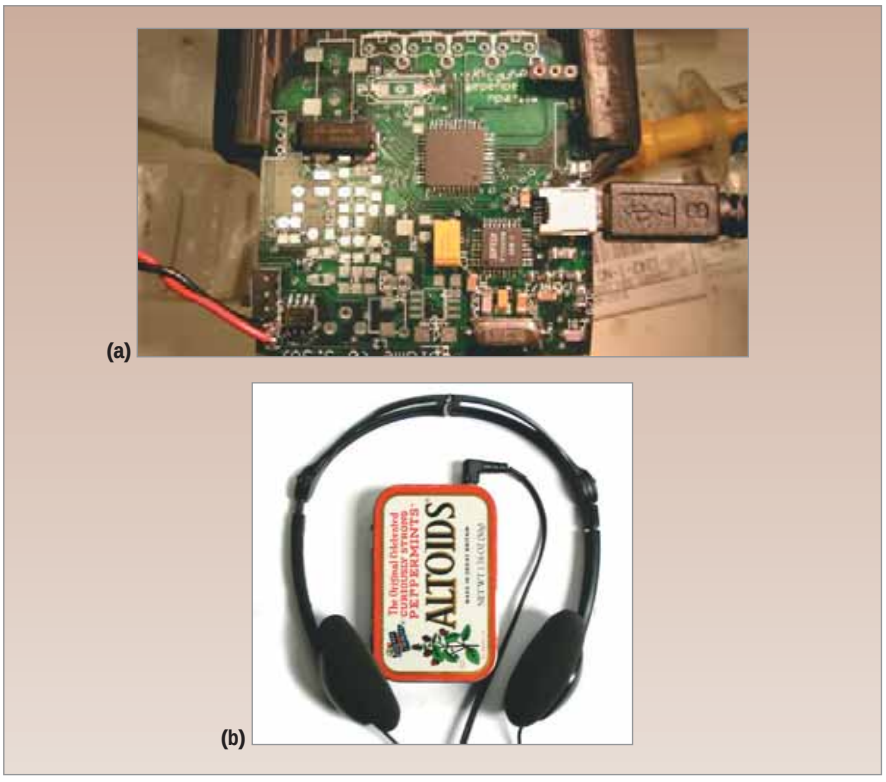

Figure 2. Assembling a MintyMP3 player. (a) Flashing the firmware. (b) The finished player.

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