

*Daniel H. Pink*

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## The Book Stops Here

*Jimmy Wales wanted to build a free encyclopedia on the Internet. So he raised an army of amateurs and created the self-organizing, self-repairing, hyperaddictive library of the future called Wikipedia.*

Dixon, New Mexico, is a rural town with a few hundred residents and no traffic lights. At the end of a dirt road, in the shadow of a small mountain, sits a gray trailer. It is the home of Einar Kvaran. To understand the most audacious experiment of the postboom Internet, this is a good place to begin.

Kvaran is a tall and hale 56-year-old with a ruddy face, blue eyes, and blond hair that's turning white. He calls himself an "art historian without portfolio" but has no formal credentials in his area of proclaimed expertise. He's never published a scholarly article or taught a college course. Over three decades, he's been a Peace Corps volunteer, an autoworker, a union steward, a homeschooling mentor, and the drummer in a Michigan band called Kodai Road. Right now, he's unemployed. Which isn't to say he doesn't work. For about six hours each day, Kvaran reads and writes about

American sculpture and public art and publishes his articles for an audience of millions around the world.

Hundreds of books on sculptors, regional architecture, and art history are stacked floor to ceiling inside his trailer—along with 68 thick albums containing 20 years of photos he's taken on the American road. The outlet for his knowledge is at the other end of his dial-up Internet connection: the daring but controversial Web site known as Wikipedia.

Four years ago, a wealthy options trader named Jimmy Wales set out to build a massive online encyclopedia ambitious in purpose and unique in design. This encyclopedia would be freely available to anyone. And it would be created not by paid experts and editors but by whoever wanted to contribute. With software called Wiki—which allows anybody with Web access to go to a site and edit, delete, or add to what's there—Wales and his volunteer crew would construct a repository of knowledge to rival the ancient library of Alexandria.

In 2001, the idea seemed preposterous. In 2005, the non-profit venture is the largest encyclopedia on the planet. Wikipedia offers 500,000 articles in English—compared with *Britannica's* 80,000 and *Encarta's* 4,500—fashioned by more than 16,000 contributors. Tack on the editions in 75 other languages, including Esperanto and Kurdish, and the total Wikipedia article count tops 1.3 million.

Wikipedia's explosive growth is due to the contributions of Kvaran and others like him. Self-taught and self-motivated, Kvaran wrote his first article last summer—a short piece on American sculptor Corrado Parducci. Since then, Kvaran has written or contributed to two dozen other entries on American art, using his library and photographs as sources. He's added words and images to 30 other topics, too—the Lincoln Memorial; baseball player Carl Yastrzemski; photog-

rapher Tina Modotti; and Iceland's first prime minister, Hannes Hafstein, who happens to be Kvaran's great-grandfather. "I think of myself as a teacher," Kvaran says over tea at his kitchen table.

To many guardians of the knowledge cathedral—librarians, lexicographers, academics—that's precisely the problem. Who died and made this guy professor? No pedigreed scholars scrutinize his work. No research assistants check his facts. Should we trust an encyclopedia that allows anyone with a pulse and a mouse pad to opine about Jackson Pollock's place in postmodernism? What's more, the software that made Wikipedia so easy to build also makes it easy to manipulate and deface. A former editor at the venerable *Encyclopædia Britannica* recently likened the site to a public restroom: You never know who used it last.

So the modest trailer at the end of a dirt road in this pinprick of a town holds some cosmic questions. Is Wikipedia a heartening effort in digital humanitarianism—or a not-so-smart mob unleashing misinformation on the masses? Are well-intentioned amateurs any replacement for professionals? And is charging nothing for knowledge too high a price?

Recovery may take 12 steps, but becoming a junkie requires only 4. First comes chance—an unexpected encounter. Chance stirs curiosity. Curiosity leads to experimentation. And experimentation cascades into addiction.

For Danny Wool, chance arrived on a winter afternoon in 2002, after an argument about—of all things—Kryptonite. Googling the term from his Brooklyn home to settle the debate, he came upon the Wikipedia entry. He looked up a few more subjects and noticed that each one contained a mysterious hyperlink that said Edit. Curious but too nervous to do anything, he returned to Wikipedia a few more

times. Then one night he corrected an error in an article about Jewish holidays. *You can do that?!* It was his first inhalation of Wiki crack. He became one of Wikipedia's earliest registered users and wrote his first article—on Muckleshoot, a Washington State Indian tribe. Since then, he has made more than 16,000 contributions.

Bryan Derksen wrote the original Kryptonite article that Wool discovered. While surfing from his home in Edmonton, Derksen also stumbled upon Wikipedia and quickly traveled the path to addiction. He read a few entries on Greek mythology and found them inadequate. The Edit link beckoned him like a street pusher. He clicked it and typed in a few changes. *You can do that?!* "I just got hooked," he tells me. He's now made more edits than all but three Wikipedians—some 40,000 additions and revisions.

Number one on the list of contributors is Derek Ramsey, who has automated his addiction. A software engineer in Pennsylvania, Ramsey wrote a Java program called *rambot* that automatically updates Wikipedia articles on cities and counties. So far, the man and machine combination has contributed more than 100,000 edits.

String enough of these addicts together, add a few thousand casual users, and pretty soon you have a new way to do an old thing. Humankind has long sought to tame the jungle of knowledge and display it in a zoo of friendly facts. But while the urge to create encyclopedias has endured, the production model has evolved. Wikipedia is the latest stage.

In the beginning, encyclopedias relied on the One Smart Guy model. In ancient Greece, Aristotle put pen to papyrus and single-handedly tried to record all the knowledge of his time. Four hundred years later, the Roman nobleman Pliny the Elder cranked out a 37-volume set of the day's knowledge. The Chinese scholar Tu Yu wrote an encyclopedia in the ninth century. And in the 1700s, Diderot and a few pals

(including Voltaire and Rousseau) took 29 years to create the *Encyclopædie, ou Dictionnaire Raisonné des Sciences, des Arts et des Métiers*.

With the Industrial Revolution, the One Smart Guy approach gradually gave way to the One Best Way model, which borrowed the principles of scientific management and the lessons of assembly lines. *Encyclopædia Britannica* pioneered this approach in Scotland and honed it to perfection. Large groups of experts, each performing a task on a detailed work chart under the direction of a manager, produced encyclopedias of enormous breadth. Late in the 20th century, computers changed encyclopedias—and the Internet changed them more. Today, *Britannica* and *World Book* still sell some 130-pound, \$1,100, multivolume sets, but they earn most of their money from Internet subscriptions. Yet while the medium has shifted from atoms to bits, the production model—and therefore the product itself—has remained the same.

Now Wales has brought forth a third model—call it One for All. Instead of one really smart guy, Wikipedia draws on thousands of fairly smart guys and gals—because in the metamathematics of encyclopedias, 500 Kvarans equals one Pliny the Elder. Instead of clearly delineated lines of authority, Wikipedia depends on radical decentralization and self-organization—open source in its purest form. Most encyclopedias start to fossilize the moment they're printed on a page. But add Wiki software and some helping hands and you get something self-repairing and almost alive. A different production model creates a product that's fluid, fast, fixable, and free.

The One for All model has delivered solid results in a remarkably short time. Look up any topic you know something about—from the Battle of Fredericksburg to *Madame Bovary* to Planck's law of blackbody radiation—and you'll

probably find that the Wikipedia entry is, if not perfect, not bad. Sure, the Leonard Nimoy entry is longer than the one on Toni Morrison. But the Morrison article covers the basics of her life and literary works about as well as the *World Book* entry. And among the nearly half million articles are tens of thousands whose quality easily rivals that of *Britannica* or *Encarta*.

What makes the model work is not only the collective knowledge and effort of a far-flung labor force but also the willingness to abide by two core principles. The first: neutrality. All articles should be written without bias. Wikipedians are directed not to take a stand on controversial subjects like abortion or global warming but to fairly represent all sides. The second principle is good faith. All work should be approached with the assumption that the author is trying to help the project, not harm it.

Wikipedia represents a belief in the supremacy of reason and the goodness of others. In the Wikipedia ideal, people of goodwill sometimes disagree. But from the respectful clash of opposing viewpoints and the combined wisdom of the many, something resembling the truth will emerge. Most of the time.

If you looked up Jimmy Carter on Wikipedia one morning this winter, you would have discovered something you couldn't learn from *Britannica*. According to the photo that accompanied Carter's entry, America's 39th president was a scruffy, random, unshaven man with his left index finger shoved firmly up his nose.

Lurking in the underbrush of Wikipedia's idyllic forest of reason and good intentions are contributors less noble in purpose, whose numbers are multiplying. Wiki devotees have names for many of them. First, there are the trolls, minor troublemakers who breach the principle of good faith

with inane edits designed to rile serious users. More insidious are vandals, who try to wreck the site—inserting profanity and ethnic slurs, unleashing bots that put ads into entries, and pasting pictures of penises and other junior-high laugh getters. Considering how easy it is to make changes on Wikipedia, you'd imagine these ne'er-do-wells could potentially overwhelm the site. But they haven't—at least not yet—because defenses against them are built into the structure.

Anybody who is logged in can place an article on a “watch list.” Whenever somebody amends the entry, the watch list records the change. So when that anonymous vandal replaced a Jimmy Carter photo with a nose picker, all the Wikipedians with Jimmy Carter on their watch list knew about it. One of them merely reverted to the original portrait. At the same time, the user who rescued the former president from Boogerville noticed that the vandal had also posted the nose-pick photo on the “Rapping” entry—and he got rid of that image just four minutes after the photo appeared.

On controversial topics, the response can be especially swift. Wikipedia's article on Islam has been a persistent target of vandalism, but Wikipedia's defenders of Islam have always proved nimbler than the vandals. Take one fairly typical instance. At 11:20 one morning not too long ago, an anonymous user replaced the entire Islam entry with a single scatological word. At 11:22, a user named Solitude reverted the entry. At 11:25, the anonymous user struck again, this time replacing the article with the phrase “u stink!” By 11:26, another user, Ahoerstemeir, reverted that change—and the vandal disappeared. When MIT's Fernanda Viégas and IBM's Martin Wattenberg and Kushal Dave studied Wikipedia, they found that cases of mass deletions, a common form of vandalism, were corrected in a

median time of 2.8 minutes. When an obscenity accompanied the mass deletion, the median time dropped to 1.7 minutes.

It turns out that Wikipedia has an innate capacity to heal itself. As a result, woefully outnumbered vandals often give up and leave. (To paraphrase Linus Torvalds, given enough eyeballs, all thugs are callow.) What's more, making changes is so simple that who prevails often comes down to who cares more. And hardcore Wikipedians care. A lot.

Wool logs on to Wikipedia at 6 each morning and works two hours before leaving for his day job developing education programs for a museum. When he gets back home around 6:30 p.m., he hops back on Wikipedia for a few more hours. Derksen checks his watch list each morning before leaving for work at a small company that sells medical equipment on eBay. When he returns home, he'll spend a few hours just clicking on the Random Page link to see what needs to get done. It's tempting to urge people like Wool and Derksen to get a life. But imagine if they instead spent their free time walking through public parks, picking up garbage. We'd call them good citizens.

Still, even committed citizens sometimes aren't muscular enough to fend off determined bad guys. As Wikipedia has grown, Wales has been forced to impose some more centralized, policelike measures—to guard against “edit warriors,” “point-of-view warriors,” “revert warriors,” and all those who have difficulty playing well with others. “We try to be as open as we can,” Wales says, “but some of these people are just impossible.” During the last presidential election, Wikipedia had to lock both the George W. Bush and the John Kerry pages because of incessant vandalism and bickering. The Wikipedia front page, another target of attacks, is also protected.

If that suggests an emerging hierarchy in this bastion of

egalitarian knowledge gathering, so be it. The Wikipedia power pyramid looks like this: At the bottom are anonymous contributors, people who make a few edits and are identified only by their IP addresses. On the next level stand Wikipedia's myriad registered users around the globe, people such as Kvaran in New Mexico, who have chosen a screen name (he's Carptrash) and make edits under that byline. Some of the most dedicated users try to reach the next level—administrator. Wikipedia's 400 administrators, Derksen and Wool among them, can delete articles, protect pages, and block IP addresses. Above this group are bureaucrats, who can crown administrators. The most privileged bureaucrats are stewards. And above stewards are developers, 57 superelites who can make direct changes to the Wikipedia software and database. There's also an arbitration committee that hears disputes and can ban bad users.

At the very top, with powers that range far beyond those of any mere Wikipedian mortal, is Wales, known to everyone in Wiki world as Jimbo. He can do pretty much anything he wants—from locking pages to banning people to getting rid of developers. So vast are his powers that some began calling him “the benevolent dictator.” But Wales bristled at that tag. So his minions assigned him a different, though no less imposing, label. “Jimbo,” says Wikipedia administrator Mark Pellegrini, “is the God-King.”

The God-King drives a Hyundai. On a sunny Florida Monday, Wales is piloting his red Accent from his St. Petersburg home across the bay to downtown Tampa, where on the 11th floor of a shabby office building a company called Neutelligent manages a vast server farm. In one of the back rows, stacked on two racks, are the guts of Wikipedia—42 servers connected by a hairball of orange and blue cables. For the next two hours, Wales scoots to and fro, plugging

and unplugging cables while trading messages with a Wikipedia developer on Internet Relay Chat via a nearby keyboard.

Back in St. Pete, Wales oversees his empire from a pair of monitors in Wikipedia's headquarters—two cramped, windowless rooms that look like the offices of a failed tech startup. Computer equipment is strewn everywhere. An open copy of *Teach Yourself PHP, MySQL, and Apache* is splayed on the floor. It may be good to be God-King, but it's not glamorous.

Wales began his journey in Huntsville, Alabama. His father worked in a grocery store. His mother and grandmother operated a tiny private school called the House of Learning, which Wales and his three siblings attended. He graduated from Auburn University in 1989 with a degree in finance and ended up studying options pricing in an economics Ph.D. program at Indiana University. Bored with academic life, he left school in 1994 and went to Chicago, where he took to betting on interest rate and foreign currency fluctuations. In six years, he earned enough to support himself and his wife for the rest of their lives.

They moved to San Diego in 1998. The times being what they were, Wales started an Internet company called Bomis, a search engine and Web directory. He began hearing about the fledgling open source movement and wondered whether volunteers could create something besides software. So he recruited Larry Sanger, then an Ohio State University doctoral student in philosophy, whom he'd encountered on some listservs. He put Sanger on the Bomis payroll, and together they launched a free online encyclopedia called Nupedia. Why an encyclopedia? Wales says he simply wanted to see if it could be done.

With Sanger as editor in chief, Nupedia essentially replicated the One Best Way model. He assembled a roster

of academics to write articles. (Participants even had to fax in their degrees as proof of their expertise.) And he established a seven-stage process of editing, fact-checking, and peer review. “After 18 months and \$250,000,” Wales says, “we had 12 articles.”

Then an employee told Wales about Wiki software. On January 15, 2001, they launched a Wiki-fied version and within a month, they had 200 articles. In a year, they had 18,000. And on September 20, 2004, when the Hebrew edition added an article on Kazakhstan’s flag, Wikipedia had its one millionth article. Total investment: about \$500,000, most of it from Wales himself.

Sanger left the project in 2002. “In the Nupedia model, there was room for an editor in chief,” Wales says. “The Wiki model is too distributed for that.” Sanger, a scholar at heart, returned to academic life. His cofounder, meanwhile, became a minor geek rock star. Wales has been asked to advise the BBC, Nokia, and other large enterprises curious about Wikis. Technology conferences in the United States and Europe clamor for him. And while he’s committed to keeping his creation a “charitable project,” as he constantly calls it (wikipedia.com became wikipedia.org almost three years ago), the temptations are mounting.

Late last year, Wales and Angela Beesley, an astonishingly dedicated Wikipedian, launched a for-profit venture called WikiCities. The company will provide free hosting for “community-based” sites—RVers, poodle owners, genealogy buffs, and so on. The sites will operate on the same software that powers Wikipedia, and the content will be available under a free license. But WikiCities intends to make money by selling advertising. After all, if several thousand people can create an encyclopedia, a few hundred Usher devotees should be able to put together the ultimate fan site. And if legions of Usher fans are hanging out in one

place, some advertiser will pay to try to sell them concert tickets or music downloads.

It may feel like we've been down this road before—remember GeoCities and theglobe.com? But Wales says this is different because those earlier sites lacked any mechanism for true community. “It was just free home pages,” he says. WikiCities, he believes, will let people who share a passion also share a project. They'll be able to design and build projects together. So the founder of the Web's grand experiment in the democratic dissemination of information is also trying to resurrect GeoCities. While some may find the notion silly, many others just want a piece of Jimbo magic.

During our conversation over lunch, Wales's cell phone rings. It's a partner at Accel, the venture capital firm, calling to talk about WikiCities and any other Wiki-related investment ideas Wales might have. Wales says he's busy and asks the caller to phone back later. Then he smiles at me. “I'll let him cool his heels awhile.”

Wikipedia's articles on the British peerage system—clear-headed explanations of dukes, viscounts, and other titles of nobility—are largely the work of a user known as Lord Emsworth. A few of Emsworth's pieces on kings and queens of England have been honored as Wikipedia's Featured Article of the Day. It turns out that Lord Emsworth claims to be a 16-year-old living in South Brunswick, New Jersey. On Wikipedia, nobody has to know you're a sophomore.

And that has some distressed. Larry Sanger gave voice to these criticisms in a recent essay posted on kuro5hin.org titled “Why Wikipedia Must Jettison Its Anti-Elitism.” Although he acknowledges that “Wikipedia is very cool,” he argues that the site's production model suffers from two big problems.

The first is that “regardless of whether Wikipedia actually is more or less reliable than the average encyclopedia,” librarians, teachers, and academics don’t perceive it as credible because it has no formal review process. The second problem, according to Sanger, is that the site in general and Wales in particular are too “anti-elitist.” Established scholars might be willing to contribute to Wikipedia—but not if they have to deal with trolls and especially not if they’re considered no different from any schmo with an iMac.

Speaking from his home in Columbus, Ohio, where he teaches at Ohio State, Sanger stresses that Wikipedia is a fine and worthy endeavor. But he says that academics don’t take it seriously. “A lot of the articles look like they’re written by undergraduates.” He believes that “people who make knowing things their life’s work should be accorded a special place in the project.” But since Wikipedia’s resolute antielitism makes that unlikely, Sanger argues, something else will happen: Wikipedia will fork—that is, a group of academics will take Wikipedia’s content, which is available under a free license, and produce their own peer-reviewed reference work. “I wanted to send a wake-up call to the Wikipedia community to tell them that this fork is probably going to happen.”

Wales’ response essentially boils down to this: Fork you. “You want to organize that?” he sniffs. “Here are the servers.” Yet Wales acknowledges that in the next year, partly in response to these concerns, Wikipedia will likely offer a stable—that is, unchangeable—version alongside its One for All edition.

But both Sanger’s critique and Wales’ reaction miss a larger point: You can’t evaluate Wikipedia by traditional encyclopedia standards. A forked Wikipedia run by academics would be Nupedia 2.0. It would use the One Best Way production model, which inevitably would produce a

One Best Way product. That's not a better or worse Wikipedia any more than Instapundit.com is a better or worse *Washington Post*. They are different animals.

Encyclopedias aspire to be infallible. But Wikipedia requires that the perfect never be the enemy of the good. Citizen-editors don't need to make an entry flawless. They just need to make it better. As a result, even many Wikipedians believe the site is not as good as traditional encyclopedias. "On a scale of 1 to 10, I'd give Wikipedia a 7.8 in reliability," Kvaran told me in New Mexico. "I'd give *Britannica* an 8.8." But how much does that matter? *Britannica* has been around since before the American Revolution; Wikipedia just celebrated its fifth birthday. More important, *Britannica* costs \$70 a year; Wikipedia is free. The better criterion on which to measure Wikipedia is whether this very young, pretty good, ever improving, totally free site serves a need—just as the way to measure *Britannica* is whether the additional surety that comes from its production model is worth the cost.

There's another equally important difference between the two offerings. The One Best Way approach creates something finished. The One for All model creates something alive. When the Indian Ocean tsunami erupted late last year, Wikipedians produced several entries on the topic within hours. By contrast, World Book, whose CD-ROM allows owners to download regular updates, hadn't updated its tsunami or Indian Ocean entries a full month after the devastation occurred. That's the likely fate of Wikipedia's proposed stable, or snapshot, version. Fixing its contents in a book or on a CD or DVD is tantamount to embalming a living thing. The body may look great, but it's no longer breathing.

"You can create life in there," says Wikipedian Oliver Brown, a high school teacher in Aptos, California. "If you

don't know about something, you can start an article, and other people can come and feed it, nurture it." For example, two years ago, Danny Wool was curious about the American architectural sculptor Lee Lawrie, whose statue of Atlas sits nearby Rockefeller Center. Wool posted a stub—a few sentences on a topic—in the hopes that someone would add to it. That someone turned out to be Kvaran, who owned several books on Lawrie and who'd photographed his work not only at Rockefeller Center but also at the Capitol Building in Lincoln, Nebraska. Today, the Lawrie entry has grown from two sentences to several thorough paragraphs, a dozen photos, and a list of references. Brown himself posted a stub when he was wondering how many people were considered the father or mother of something. Today Wikipedia lists more than 230 people known as the father or mother of an idea, a movement, or an invention. And that number will likely be higher tomorrow. As the father of this new kind of encyclopedia puts it, "Wikipedia will never be finished."

In 1962, Charles Van Doren—who would go on to become a senior editor of *Britannica* but is more famous for his role in the 1950s quiz show scandal—wrote a think piece for the journal *the American Behavioral Scientist*. His essay, "The Idea of an Encyclopedia," is similar in spirit to the one Sanger wrote late last year: a warning to his community.

Van Doren warned not that encyclopedias of his day lacked credibility but that they lacked vitality. "The tone of American encyclopedias is often fiercely inhuman," he wrote. "It appears to be the wish of some contributors to write about living institutions as if they were pickled frogs, outstretched upon a dissecting board." An encyclopedia ought to be a "revolutionary document," he argued. And while Van Doren didn't call for a new production model, he

did say that “the ideal encyclopedia should be radical. It should stop being safe.”

What stood in the way of this new approach was precisely what encyclopedias prided themselves on. “Respectability seems safe,” he wrote. “But what will be respectable in 30 years seems avant-garde now. If an encyclopedia hopes to be respectable in 2000, it must appear daring in the year 1963.”

Jimbo and his minions—from Einar Kvaran in his New Mexico trailer to Lord Emsworth in his New Jersey bedroom—may seem daring today. But they’re about to become respectable.