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**THE THREE FORCES OF THE LONG TAIL**


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**MAKE IT, GET IT OUT THERE,  
AND HELP ME FIND IT**

**The theory of the Long Tail** can be boiled down to this: Our culture and economy are increasingly shifting away from a focus on a relatively small number of hits (mainstream products and markets) at the head of the demand curve, and moving toward a huge number of niches in the tail. In an era without the constraints of physical shelf space and other bottlenecks of distribution, narrowly targeted goods and services can be as economically attractive as mainstream fare.

But that's not enough. Demand must follow this new supply. Otherwise, the Tail will wither. Because the Tail is measured not just in available variety but in the people who gravitate toward it, the true shape of demand is revealed only when consumers are offered infinite choice. It is the aggregate sales, use, or other participation of all those people in the newly available niches that turns the massive expansion of choice into an economic and cultural force. The Long Tail starts with a million niches, but it isn't meaningful until those niches are populated with people who want them.

Collectively, all of this translates into six themes of the Long Tail age:

1. In virtually all markets, there are far more niche goods than hits. That ratio is growing exponentially larger as the tools of production become cheaper and more ubiquitous.
2. The costs of reaching those niches is now falling dramatically. Thanks to a combination of forces including digital distribution, powerful search technologies, and a critical mass of broadband penetration, online markets are resetting the economics of retail. Thus, in many markets, it is now possible to offer a massively expanded variety of products.
3. Simply offering more variety, however, does not shift demand by itself. Consumers must be given ways to find niches that suit their particular needs and interests. A range of tools and techniques—from recommendations to rankings—are effective at doing this. These “filters” can drive demand down the Tail.
4. Once there's massively expanded variety and the filters to sort through it, the demand curve flattens. There are still hits and niches, but the hits are relatively less popular and the niches relatively more so.
5. All those niches add up. Although none sell in huge numbers, there are so many niche products that collectively they can comprise a market rivaling the hits.
6. Once all of this is in place, the natural shape of demand is revealed, undistorted by distribution bottlenecks, scarcity of information, and limited choice of shelf space. What's more, that shape is far less hit-driven than we have been led to believe. Instead, it is as diverse as the population itself.

Bottom line: A Long Tail is just culture unfiltered by economic scarcity.

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**HOW LONG TAILS EMERGE**

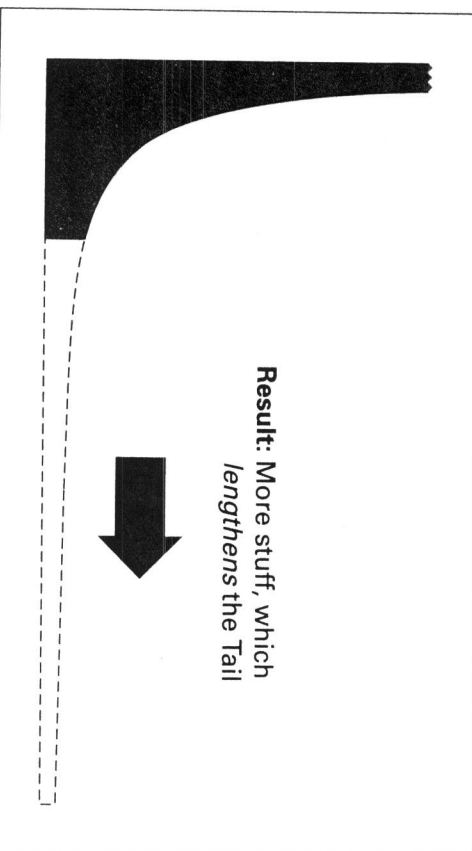

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None of the aforementioned happens without one big economic trigger: reducing the costs of reaching niches. What causes those costs to

fall)? Although the answer varies from market to market, the explanation usually involves one or more of three powerful forces coming into play.

### Force 1: Democratize the tools of production

**Result:** More stuff, which lengthens the Tail

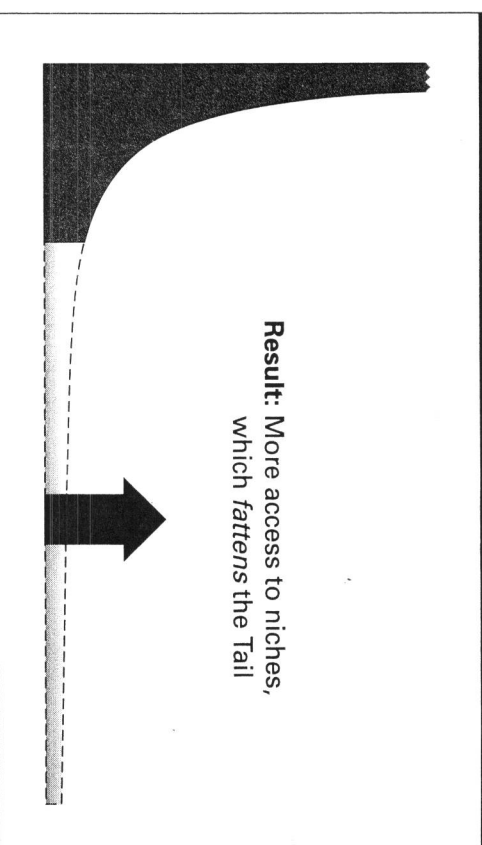


The first force is *democratizing the tools of production*. The best example of this is the personal computer, which has put everything from the printing press to the film and music studios in the hands of anyone. The power of the PC means that the ranks of “producers”—individuals who can now do what just a few years ago only professionals could do—have swelled a thousandfold. Millions of people now have the capacity to make a short film or album, or publish their thoughts to the world—and a surprisingly large number of them do. Talent is not universal, but it’s widely spread: Give enough people the capacity to create, and inevitably gems will emerge.

The result is that the available universe of content is now growing faster than ever. This is what extends the tail to the right, increasing the population of available goods manyfold. In music, for instance, the number of new albums released grew a phenomenal 36 percent in 2005, to 60,000 titles (up from 44,000 in 2004), largely due to the ease with which artists can now record and release their own music. At the same time, bands uploaded more than 300,000 free tracks to MySpace, extending the tail even further.

### Force 2: Democratize the tools of distribution

**Result:** More access to niches, which fattens the Tail



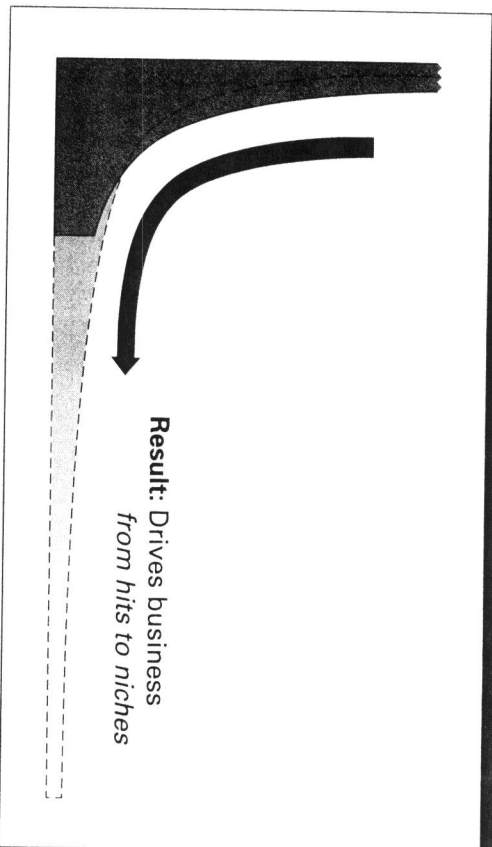
The second force is *cutting the costs of consumption by democratizing distribution*. The fact that anyone can make content is only meaningful if others can enjoy it. The PC made everyone a producer or publisher, but it was the Internet that made everyone a distributor.

At its most dramatic this is the economics of bits versus atoms, the difference between fractions of pennies to deliver content online and the dollars it takes to do it with trucks, warehouses, and shelves. Still, even for physical goods, the Internet has dramatically lowered the costs of reaching consumers. Over decades and billions of dollars, Wal-Mart set up the world’s most sophisticated supply chain to offer massive variety at low prices to tens of millions of customers around the world. Today anybody can reach a market every bit as big with a listing on eBay.

The Internet simply makes it cheaper to reach more people, effectively increasing the liquidity of the market in the Tail. That, in turn, translates to more consumption, effectively raising the sales line and increasing the area under the curve.

The third force is *connecting supply and demand*, introducing consumers to these new and newly available goods and driving demand down the Tail. This can take the form of anything from Google’s wisdom-of-crowds search to iTunes’ recommendations, *almo* with word-of-mouth from blogs to customer reviews. The ef-

**Force 3: Connect supply and demand**



fect of all this for consumers is to lower the “search costs” of finding niche content.

In economics, search costs refer to anything that gets in the way of finding what you want. Some of those costs are non-monetary, such as wasted time, hassle, wrong turns, and confusion. Other costs actually have a dollar figure, such as mistaken purchases or paying too much for something because you couldn't find a cheaper alternative. Anything that makes it easier to find what you want at the price you want lowers your search costs.

We'll go into this more later in the book, but other consumers are often the most useful guides because their incentives are best aligned with our own. Netflix and Google tap consumer wisdom collectively by watching what millions of them do and translating that into relevant search results or recommendations.

Consumers also act as guides individually when they post user reviews or blog about their likes and dislikes. Because it's now so easy to tap this grassroots information when you're looking for something new, you're more likely to find what you want faster than ever. That has the economic effect of encouraging you to search farther outside the world you already know, which drives demand down into the niches.

The other thing that happens when consumers talk amongst them-

selves is that they discover that, collectively, their tastes are far more diverse than the marketing plans being fired at them suggest. Their interests splinter into narrower and narrower communities of affinity, going deeper and deeper into their chosen subject matter, as is always the case when like minds gather. Encouraged by the company, virtual or not, they explore the unknown together, venturing farther from the beaten path.

The explosion of these technologies that connect consumers is what drives demand from the head to the tail. In other words, the third force further increases demand for the niches and flattens the curve, shifting its center of gravity to the right.

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Think of each of these three forces as representing a new set of opportunities in the emerging Long Tail marketplace. The democratized tools of production are leading to a huge increase in the numbers of producers. Hyperefficient digital economics are leading to new markets and marketplaces. And finally, the ability to tap the distributed intelligence of millions of consumers to match people with the stuff that suits them best is leading to the rise of all sorts of new recommendation and marketing methods, essentially serving as the new tastemakers.

In a nutshell, all of that looks like this:

Force	Business	Example
1. Democratize Production	Long Tail <i>toolmakers, producers</i>	Digital videocameras, desktop music and video editing software, blogging tools
2. Democratize Distribution	Long Tail <i>aggregators</i>	Amazon, eBay, iTunes, Netflix
3. Connect Supply and Demand	Long Tail <i>filters</i>	Google, blogs, Rhapsody recommendations, and best-seller lists

The next three chapters will explore these new business opportunities in detail.

## 5

## THE NEW PRODUCERS

NEVER UNDERESTIMATE THE POWER OF A MILLION  
AMATEURS WITH KEYS TO THE FACTORY

**On the night** of February 23, 1987, the underground Kamiokande II observatory in Japan detected twenty-four neutrinos in a burst lasting thirteen seconds. Although twenty-four neutrinos may not sound like a lot, the observatory usually detects only two or three an hour, and rarely in a pack. So this was something special. But what it actually meant would have to wait a few hours, for other observations to be reported.

Astrophysicists had long theorized that when a star explodes, most of its energy is released as neutrinos—low-mass, subatomic particles that fly through planets like bullets through tissue paper. Part of the theory is that in the early phase of this type of explosion, the only observable evidence is a shower of such particles; it then takes another few hours for the inferno to emerge as visible light. As a result, scientists predicted that when a star went supernova near us, we'd detect the neutrinos about three hours before we'd see the burst in the visible spectrum.

The way to test this correlation between neutrinos and visible light was to make both observations and measure the time difference be-

tween them. But the problem with the optical part of these paired observations was that you had to be looking in the right part of the sky. This wasn't much of a problem for the neutrino observatories. Because of its spherical layout, the detector hall of Kamiokande could record neutrinos penetrating the Earth regardless of which direction they came from. Yet to see the explosion in visible light, a telescope would have to be pointed at the exact right spot at the exact right time. And, needless to say, there was an awful lot of sky to watch.

There just weren't enough professional astronomers who could observe enough of the heavens to have much, if any, chance of spotting such an event. But there were thousands of amateur astronomers all too happy to do that job themselves. Armed with relatively inexpensive computer-guided telescopes with Dobsonian optics, which allow quite large apertures (twelve inches is not unusual) in telescopes less than five feet long, and sensitive CCD (charge-coupled device) sensors that can collect more light than the human eye, contemporary amateur astronomers can photograph the skies better than astronomers with house-sized telescopes could a century ago.

The first person to see Supernova 1987A was an observer somewhere between the amateurs and the pros. Ian Shelton, a Canadian grad-school dropout, was housekeeping an observatory in the Chilean Andes in exchange for time on its twenty-four-inch telescope when academic astronomers weren't using it. One of those free times was the windy night of February 23. That night Shelton decided to use the telescope to run a three-hour exposure on the Large Magellanic Cloud.

As it happened, exactly 168,000 years earlier and exactly 168,000 light-years away, a star had exploded on the edge of the Tarantula Nebula. From Earth and Shelton's view, however, the explosion looked like it was happening right then: a splash of light suddenly appearing in one corner of the Cloud where nothing of note had been before. Shelton stared at the photographic plates for twenty minutes before heading outside to see it with his own eyes. Sure enough, there it was: the first supernova to be witnessed by the naked eye since 1604.

The connection between Shelton and the Kamiokande II observatory is one of time. The neutrino observatory spotted its burst at 7:35

Universal time. Shelton observed the first bright light around 10:00 Universal time—a little less than three hours after the neutrino shower. So far, right on theory. However, could it have shown up even earlier, before Shelton was watching?

Fortunately, two other dedicated amateur astronomers were at work that night using smaller, nonprofessional telescopes. In New Zealand, Albert Jones, a veteran credited with more than half a million observations, had taken a good look at the Tarantula Nebula at 9:30 UT but had seen nothing unusual. Robert McNaught, another amateur, photographed the explosion at 10:30 UT in Australia, confirming Shelton's timing. So the light arrived somewhere between 9:30 and 10:00.

That is how one of the greatest astronomical discoveries of the twentieth century unfolded. A key theory explaining how the universe works was confirmed thanks to amateurs in New Zealand and Australia, a former amateur trying to turn professional in Chile, and professional physicists in the United States and Japan. When a scientific paper finally announced the discovery to the world, all of them shared authorship.

Demos, a British think tank, described this in a 2004 report as a key moment in the arrival of a "Pro-Am" era, a time when professionals and amateurs work side by side: "Astronomy used to be done in 'big science' research institutes. Now it is also done in Pro-Am collaborations. Many amateurs continued to work on their own and many professionals were still enscenced in their academic institutions. But global research networks sprang up, linking professionals and amateurs with shared interests in flare stars, comets and asteroids."

As Timothy Ferris points out in *Seeing in the Dark*, his history of modern amateur astronomy: "If one were to choose a date at which astronomy shifted from the old days of solitary professionals at their telescopes to a worldwide web linking professionals and amateurs . . . a good candidate would be the night of February 23, 1987." Demos concludes: "Astronomy is fast becoming a science driven by a vast open-source Pro-Am movement working alongside a much smaller body of professional astronomers and astrophysicists."

The enabling technologies of this Pro-Am movement in astronomy are Dobsonian optics, CCDs, and the arrival of the Internet as a mechanism for sharing information. These tools have swelled the ranks of the amateur astronomers and vastly increased their impact. Over the past two decades, astronomy has become one of the most democratized fields in science, in part because it's so clear what an important role the amateurs play.

NASA often calls on amateurs to watch for specific asteroids that might be headed for Earth, an observation task coordinated via an email message group called the Minor Planet Mailing List that's run by Richard Kowalski, a forty-two-year-old baggage handler at US Airways in Florida by day and an astronomer by night. Some of the eight hundred amateurs on the list record their observations for fun; others hope to be immortalized by having an important discovery named after them. What's notable is that none of them do it for money.

Astronomy has a natural place for volunteer manpower. Again, the problem with the sky is that you need to be looking at the right place at the right time to witness most interesting new phenomena, such as asteroids or stellar evolution. It's less a matter of how big or expensive the telescope, and more a matter of how many eyeballs are transfixed on the sky at any given moment. Amateurs multiply the manpower of astronomy many times—and not just by looking at the stars from their backyards.

SETI@home ("Search for Extraterrestrial Intelligence at home") is a project that harnesses the spare computing power of more than half a million home computers. After collecting hours and hours of white noise recorded from space, the project distributes its radio telescope data to the computers of volunteers. When they're not using their computers, a special screen-saver kicks in. While it displays cosmic imagery, it scans bits of each recording in the hopes of locating a signal that may have come from alien intelligence. By divvying up its data to these volunteer computers, the project is able to examine a far greater number of signals than it would otherwise; and all anyone has to do to participate is download some software.

Another project has open-sourced the analysis of Mars imagery.

NASA put up decades-old photos snapped by the Viking orbiters and asked Web visitors to click on all the craters they could see, classifying them as fresh, degraded, or “ghost.” Usually, this is a tedious job for scientists and grad students that can take months or years, but in just three months the “Mars Clickworkers” project got volunteers to identify more than 200,000 craters. Averaged over all the clicks, this amateur collective was almost as accurate as expert planetary geologists.

In “open-source” software, where anyone can contribute to a project, the mantra is “With enough eyes, all bugs are trivial.” Likewise for astronomy: With enough eyes, we’ll see the asteroid with our name on it—and early enough to do something about it.

Of course, there are limits to what Pro-Ams can achieve. They’re largely collecting data, not creating new theories of astrophysics. Sometimes, they are unable to analyze properly the data they collect. Nevertheless, their place in the field seems assured. As John Lankford, a historian of science, put it in *Sky & Telescope* magazine, the bible of U.S. amateur astronomers: “There will always remain a division of labor between professionals and amateurs. But it may be more difficult to tell the two groups apart in the future.”

### DEMOCRATIZING THE TOOLS OF PRODUCTION

What’s new about this is the way it’s done, not the concept itself. Indeed, Karl Marx was perhaps the original prophet of the Pro-Am economy. As Demos notes, “In *The German Ideology*, written between 1845 and 1847, Marx maintained that labor—forced, spontaneous and waged work—would be superseded by self-activity.” Eventually, he hoped, there would be a time when “material production leaves every person surplus time for other activities.” Marx evoked a communist society in which “. . . nobody has one exclusive sphere of activity but each can become accomplished in any branch he wishes. . . . to hunt in the morning, fish in the afternoon, rear cattle in the evening, criticize after dinner, just as I have a mind without ever becoming hunter, fisherman, shepherd or critic.”

To continue with Marx’s vocabulary, Pro-Ams are a creation of the

first force of the Long Tail, the democratization of the tools of production.

The same effect we see in astronomy is playing out in countless other fields. Just as the electric guitar and the garage democratized pop music forty years ago, desktop creation and production tools are democratizing the studio. Apple’s GarageBand, free with every Mac, greets a user with the suggestion to “Record your next big hit,” and provides the tools to do just that. Likewise, digital video cameras and desktop editing suites (free with every copy of Windows and every Mac) are putting the sort of tools into the hands of the average home moviemaker that were once reserved for professionals alone.

Then there’s the written word, always the leading edge of egalitarianism. Although it was the photocopier that first put lie to the aphorism that “the power of the press goes to those who own them,” it’s blogging that has really sparked the renaissance of the amateur publisher. Today, millions of people publish daily for an audience that is collectively larger than any single mainstream media outlet can claim. What sparked blogging was, again, democratized tools: the arrival of simple, cheap software and services that made publishing online so easy that anyone could do it.

So, too, for desktop photo editing and printing, video games that encourage players to create and share their own alternative levels, and print-on-demand book publishing. A few decades ago, there were two reasons why most of us weren’t making hit movies: (1) we didn’t have access to the necessary tools, and (2) we didn’t have the talent. Today, there’s only one excuse—and even that is not as solid as it was. Hollywood, for all its efficiencies, can’t find every potentially great filmmaker on the planet. Technology, cheap and ubiquitous, can do far better. Once upon a time, talent eventually made its way to the tools of production; now it’s the other way around.

The consequence of all this is that we’re starting to shift from being passive consumers to active producers. And we’re doing it for the love of it (the word “amateur” derives from the Latin *amator*, “lover,” from *amare*, “to love”). You can see it all around you—the extent to which amateur blogs are sharing attention with mainstream media, small-time bands are releasing music online without a record label, and fel-

low consumers dominate online reviewing. It's as if the default setting of production has shifted from "Earn the right to do it" to "What's stopping you?"

Author Doc Searls calls this a shift from consumerism to participative "producerism":

The "consumer economy" is a producer-controlled system in which consumers are nothing more than energy sources that metabolize "content" into cash. This is the absolutely corrupted result of the absolute power held by producers over consumers since producers won the Industrial Revolution.

Apple is giving consumers tools that make them producers. This practice radically transforms both the marketplace and the economy that thrives on it.

I can see it in my own young children, who are, as I write, into machinima—short computer-animated movies made with video-game software. Using the 3D rendering engines of games such as Halo 2 or the Sims for all the visuals, machinima directors need only write a script, control the characters, and voice the lines. Everything else—sets, camera, character, and vehicle models—is done by the game software. It's like having a mini-Pixar in every Xbox or PC.

The first reaction of the kids was to watch and enjoy the machinima movies as entertainment. Their second was to express curiosity as to how they're made. And their third was to ask if they could make one themselves. (The answer, of course, is *yes*.) What machinima lacks in Hollywood polish, it more than makes up for in creative inspiration. A generation is growing up watching people just like them produce impressive works of creativity. This can't help but make an impression.

It's one thing to see a movie or listen to music and to think "genius"—that some gifted person and exalted apparatus has put together this unique work of art we appreciate. However, once you know what's behind the curtain, you begin to realize that it could be *you*. It is when the tools of production are transparent that we are inspired to create. When people understand how great work is made, they're more likely to want to do it themselves.

Today, millions of ordinary people have the tools and the role models to become amateur producers. Some of them will also have talent and vision. Because the means of production have spread so widely and to so many people, the talented and visionary ones, even if they're just a small fraction of the total, are becoming a force to be reckoned with. Don't be surprised if some of the most creative and influential work in the next few decades comes from this Pro-Am class of inspired hobbyists, not from the traditional sources in the commercial world. The effect of this shift means that the Long Tail will be populated at a pace never before seen.

#### THE WIKIPEDIA PHENOMENON

In January 2001, a wealthy options trader named Jimmy Wales set out to build a massive online encyclopedia in an entirely new way—by tapping the collective wisdom of millions of amateur experts, semi-experts, and just regular folks who thought they knew something. 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. Wales started with a few dozen prewritten articles and a software application called a Wiki (named for the Hawaiian word meaning "quick" or "fast"), which allows anybody with Web access to go to a site and edit, delete, or add to what's there. The ambition: Nothing less than to construct a repository of knowledge to rival the ancient library of Alexandria.

This was, needless to say, controversial.

For one thing, this is not how encyclopedias are supposed to be made. From the beginning, compiling authoritative knowledge has been the job of scholars. It started with a few solo polymaths who dared to try the impossible. In ancient Greece, Aristotle single-handedly set out to record all the knowledge of his time. Four hundred years later, the Roman nobleman Pliny the Elder cranked out a thirty-seven-volume set of the day's knowledge. The Chinese scholar Tu Yu wrote an encyclopedia on his own in the ninth century. And in the 1700s, Diderot and a few of his pals (including Voltaire and Rousseau)

took twenty-nine years to create the *Encyclopédie, ou Dictionnaire Raisonné des Sciences, des Arts et des Métiers*.

Individual work gradually evolved into larger team efforts, especially after the arrival of the Industrial Revolution. In the late eighteenth century, several members of the Scottish Enlightenment started to apply the industrial principles of scientific management and the lessons of assembly lines to the creation of an encyclopedia such as the world had never before seen. The third edition of the *Encyclopædia Britannica*, published between 1788 and 1797, amounted to eighteen volumes plus a two-volume supplement, totaling over 16,000 pages. Groups of experts were recruited to write scholarly articles under the direction of a manager, organized by a detailed work chart.

Now Wales has introduced a third model: the open collective. Instead of one really smart guy or a number of handpicked smart guys, Wikipedia draws on tens of thousands of people of all sorts—ranging from real experts to interested bystanders—with a lot of volunteer curators adopting entries and keeping an eye on their progression. In Wales's encyclopedia calculus, 50,000 self-selected Wikipedians equal one Pliny the Elder.

As writer Daniel Pink puts it, "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. However, 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."

In 2001, that idea seemed preposterous. But by 2005, this non-profit venture had become the largest encyclopedia on the planet. Wikipedia offers more than 1 million articles in English—compared with *Britannica's* 80,000 and *Encarta's* 4,500—fashioned by more than 20,000 contributors. Tack on the editions in seventy-five other languages, including Esperanto and Kurdish, and the total Wikipedia article count tops 3.5 million.

All you need to contribute to Wikipedia is Internet access: Every entry has an "Edit This Page" button on it, available to all. Each of us

is an expert in something, and the beauty of Wikipedia is that there is practically no subject so narrow that it can't have an entry. This is in stark contrast to *Britannica*. If you open that great encyclopedia and find either no entry for what you're looking for or an entry that seems deficient, there's little you can do but shake your fist or write a letter to the editor (expecting no response). With Wikipedia, however, you fix it or create it yourself. This kind of shift from passive resentment to active participation makes the big difference. To remix the old joke about the weather, everybody complains about the encyclopedia, but now you *can* do something about it.

### THE PROBABILISTIC AGE

Much is made of the fact that Wikipedia's entries are "non-authoritative," which is a way of saying they're not invariably accurate. This is, of course, inevitable when anyone can write them. Unlike *Britannica*, where each entry is scrubbed, checked, and labored over by responsible professionals, each Wikipedia entry simply arrives, conjured from the vacuum by the miracle of the "Edit This Page" button.

In late 2005, John Seigenthaler Sr. wrote an op-ed in *USA Today* about his own Wikipedia entry; the entry started this way:

John Seigenthaler Sr. was the assistant to Attorney General Robert Kennedy in the early 1960's. For a brief time, he was thought to have been directly involved in the Kennedy assassinations of both John, and his brother, Bobby. Nothing was ever proven.

Aside from the part about him being Robert Kennedy's assistant in the 1960s, virtually everything else about the entry was false and slanderous. Seigenthaler called Wales and got him to delete the entry (although he could have easily done that himself), but after he wrote about the experience it led to a national debate over whether Wikipedia could be trusted, a question that continues today.

The answer is not a simple yes or no, because it is the nature of user-created content to be as messy and uncertain at the microscale,



which is the level at which we usually experience it, as it is amazingly successful at the big-picture macroscale. It just has to be understood for what it is.

Wikipedia, like Google and the collective wisdom of millions of blogs, operates on the alien logic of probabilistic statistics—a matter of likelihood rather than certainty. But our brains aren't wired to think in terms of statistics and probability. We want to know whether an encyclopedia entry is right or wrong. We want to know that there's a wise hand (ideally human) guiding Google's results. We want to trust what we read.

When professionals—editors, academics, journalists—are running the show, we at least know that it's someone's job to look out for such things as accuracy. But now we're depending more and more on systems where nobody's in charge: the intelligence is simply "emergent," which is to say that it appears to arise spontaneously from the number-crunching. These probabilistic systems aren't perfect, but they are statistically optimized to excel over time and large numbers. They're designed to "scale," or improve with size. And a little slop at the macroscale is the price of such efficiency at the macroscale.

But how can that be right when it feels so wrong?

There's the rub. This tradeoff is just hard for people to wrap their heads around. There's a reason why we're still debating Darwin. And why *The Wisdom of Crowds*, James Surowiecki's book on Adam Smith's invisible hand and how the many can be smarter than the few, is still surprising (and still needs to be read) more than two hundred years after the great Scotsman's death. Both market economics and evolution are probabilistic systems, which are simply counterintuitive to our mammalian brains. The fact that a few smart humans figured this out and used that insight to build the foundations of our modern economy, from the stock market to Google, is just evidence that our mental software (our collective knowledge) has evolved faster than our hardware (our neural wiring).

Probability-based systems are, to use writer Kevin Kelly's term, "out of control." His seminal book by that name looks at example after example, from democracy to bird-flocking, where order arises from what appears to be chaos, seemingly reversing entropy's arrow. The

book is more than a dozen years old, and decades from now we'll still find the insight surprising. But it's right.

Is Wikipedia "authoritative"? Well, no. But what really is? *Britannica* is reviewed by a smaller group of reviewers with higher academic degrees on average. There are, to be sure, fewer (if any) total clunkers or fabrications than in Wikipedia. But it's not infallible either; indeed a 2005 study by *Nature*, the scientific journal, reported that in forty-two entries on science topics there were an average of four errors per entry in Wikipedia and three in *Britannica*. And shortly after the report came out, the Wikipedia entries were corrected, while *Britannica* will have to wait for its next reprinting.

*Britannica's* biggest errors are of omission, not commission. It is shallow in some categories and out of date in many others. And then there are the millions of entries that it simply doesn't—and can't, given its editorial process—have. But Wikipedia *can* scale itself to include those and many more. And it is updated constantly.

The advantage of probabilistic systems is that they benefit from the wisdom of the crowd and as a result can scale nicely both in breadth and depth. But because they do this by sacrificing absolute certainty on the microscale, you need to take any single result with a grain of salt. Wikipedia should be the first source of information, not the last. It should be a site for information exploration, not the definitive source of facts.

The same is true for blogs, no single one of which is authoritative. Blogs are a Long Tail, and it is always a mistake to generalize about the quality or nature of content in the Long Tail—it is, by definition, variable and diverse. But collectively blogs are proving more than an equal to mainstream media. You just need to read more than one of them before making up your own mind.

Likewise for Google, which seems both omniscient and inscrutable. It makes connections that you or I might not, because they emerge naturally from math on a scale we can't comprehend. Google is arguably the first company to be born with the alien intelligence of the Web's "massive-scale" statistics hardwired into its DNA. That's why it's so successful, and so seemingly unstoppable.

Author Paul Graham puts it like this:

The Web naturally has a certain grain, and Google is aligned with it. That's why their success seems so effortless. They're sailing with the wind, instead of sitting becalmed praying for a business model, like the print media, or trying to tack upwind by suing their customers, like Microsoft and the record labels. Google doesn't try to force things to happen their way. They try to figure out what's going to happen, and arrange to be standing there when it does.

The Web is the ultimate marketplace of ideas, governed by the laws of big numbers. That grain Graham sees is the weave of statistical mechanics, the only logic that such really large systems understand. Perhaps someday we will, too.

### THE POWER OF PEER PRODUCTION

As a whole, Wikipedia is arguably the best encyclopedia in the world: bigger, more up-to-date, and in many cases deeper than even *Britannica*. But at the individual entry level, the quality varies. Along with articles of breathtaking scholarship and erudition, there are plenty of "stubs" (placeholder entries) and even autogenerated spam.

In the popular entries with many eyes watching, Wikipedia shows a remarkable resistance to vandalism and ideological battles. One study by IBM found that the mean repair time for damage in high-profile Wikipedia entries such as "Islam" is less than four minutes. This is not the work of the professional encyclopedia police. It is simply the emergent behavior of a Pro-Am swarm of self-appointed curators. Against all expectations, the system works brilliantly well. And as Wikipedia grows, this rapid self-repairing property will spread to more entries.

The point is not that every Wikipedia entry is probabilistic, but that the *entire encyclopedia* behaves probabilistically. Your odds of getting a substantive, up-to-date, and accurate entry for any given subject are excellent on Wikipedia, even if every individual entry isn't excellent.

To put it another way, the quality range in *Britannica* goes from, say, 5 to 9, with an average of 7. Wikipedia goes from 0 to 10, with an

average of, say, 5. But given that Wikipedia has ten times as many entries as *Britannica*, your chances of finding a reasonable entry on the topic you're looking for are actually higher on Wikipedia.

What makes Wikipedia really extraordinary is that it improves over time, organically healing itself as if its huge and growing army of tilters were an immune system, ever vigilant and quick to respond to anything that threatens the organism. And like a biological system, it evolves, selecting for traits that help it stay one step ahead of the predators and pathogens in its ecosystem.

The traditional process of creating an encyclopedia—professional editors, academic writers, and peer review—aims for perfection. It seldom gets there, but the pursuit of accuracy and clarity results in a work that is consistent and reliable, but also incredibly time-consuming and expensive to produce. Likewise for most other products of the professional publishing industry: One can expect that a book will, in fact, have printing on both sides of the pages where intended and will be more or less spelled correctly. There is a quality threshold, below which the work does not fall.

With probabilistic systems, though, there is only a statistical level of quality, which is to say: Some things will be great, some things will be mediocre, and some things will be absolutely crappy. That's just the nature of the beast. The mistake of many of the critics is to expect otherwise. Wikipedia is simply a different animal from *Britannica*. It's a living community rather than a static reference work.

The true miracle of Wikipedia is that this open system of amateur user contributions and edits doesn't simply collapse into anarchy. Instead, it has somehow self-organized the most comprehensive encyclopedia in history. Reversing entropy's arrow, Jimmy Wales's catalytic moment—putting up a few initial entries and a mechanism for others to add to them—has actually created order from chaos.

The result is a very different kind of encyclopedia, one completely unbounded by space and production constraints. It offers all the expected entries of any world-class reference work and then hundreds of thousands of unexpected ones, ranging from articles that go into textbook-like depth in fields such as quantum mechanics to biograph-

ical entries on comic book characters. Or, to put it another way, it's got all the hits plus a huge number of niches.

The classic model of the encyclopedia is a curated list of received cultural literacy. There is the basic canon, which must be recognized by authorities. Then, there are other entries of diminishing length until you get to that line at which the priests of *Britannica* decide "This is not worthy." There, the classic encyclopedia ends. Wikipedia, on the other hand, just *keeps going*.

In a sense, you can think of Wikipedia as equivalent to Rhapsody, the music site. There are the popular top 1,000, which can be found in any encyclopedia: Julius Caesar, World War II, Statistics, etc. These are like the hit songs. With these, Wikipedia is competing with professionals at their best, who produce well-written, authoritative entries that deploy facts with the easy comfort that comes with great scholarship. The main advantage of the user-created Wikipedia model for these entries is its ability to be up-to-date, have unlimited length and visual aids (such as photos and charts), include copious links to support material elsewhere, and perhaps, better represent alternate views and controversies.

In the middle of the curve, from the 1,000th entry to where *Britannica* ends at 80,000, are the narrower subjects: Caesarian Section, Okinawa, Regression Analysis, etc. Here, the Wikipedia model begins to pull ahead of its professional competition. Unlimited space means that the Wikipedia entries tend to be longer and more comprehensive. While the average length of a *Britannica* entry is 678 words, more than 200,000 Wikipedia entries (more than two entire *Britannicas*) are longer than that. Meanwhile, the external links and updated information emerge as a key advantage as Wikipedia becomes a launching place for further research.

Then there is the Tail, from 80,000 to 1 million. These are the entries that Wikipedia has that no other encyclopedia even attempts to include. Its articles on these subjects—Caesar Cipher, Canned Spam, Spearman's Rank Correlation Coefficient—range from among the best in Wikipedia (those written by passionate experts) to the worst (self-promotion, score-setting, and pranks). While many critics focus on the worst entries, the really important thing about Wikipedia's Tail is that

there is nothing else like it *anywhere*. From hard-core science to up-to-the-minute politics, Wikipedia goes where no other encyclopedia—whether constrained by paper or DVD limitations—can. *Britannica* doesn't have an entry about the Long Tail phenomenon (yet), but Wikipedia's entry is not only well written and thorough, it's also 1,500 words long (and none of it was written by me!).

Wikipedia authors tend to be enthusiastically involved, liberated, and motivated by the opportunity to improve public understanding of some subject they know and love, a population that has, in five short years, grown a thousandfold with an invasion of empowered amateurs using the simple, newly democratized tools of encyclopedia production: a Web browser and an Internet connection.

This is the world of "peer production," the extraordinary Internet-enabled phenomenon of mass volunteerism and amateurism. We are at the dawn of an age where most producers in any domain are unpaid, and the main difference between them and their professional counterparts is simply the (shrinking) gap in the resources available to them to extend the ambition of their work. When the tools of production are available to everyone, everyone becomes a producer.

### THE REPUTATION ECONOMY

Why do they do it? Why does anyone create something of value (from an encyclopedia entry to an astronomical observation) without a business plan or even the prospect of a paycheck? The question is a key one to understanding the Long Tail, partly because so much of what populates the curve does not start with commercial aim. More important, this question matters because it represents yet another example of where our presumptions about markets must be rethought. The motives to create are not the same in the head as they are in the tail. One economic model doesn't fit all. You can think of the Long Tail starting as a traditional monetary economy at the head and ending in a non-monetary economy in the tail. In between the two, it's a mixture of both.

Up at the head, where products benefit from the powerful, but ex-

pensive, channels of mass-market distribution, business considerations rule. It's the domain of professionals, and as much as they might love what they do, it's a job, too. The costs of production and distribution are too high to let economics take a backseat to creativity. Money drives the process.

Down in the tail, where distribution and production costs are low (thanks to the democratizing power of digital technologies), business considerations are often secondary. Instead, people create for a variety of other reasons—expression, fun, experimentation, and so on. The reason one might call it an economy at all is that there is a coin of the realm that can be every bit as motivating as money: *reputation*. Measured by the amount of attention a product attracts, reputation can be converted into other things of value: jobs, tenure, audiences, and lucrative offers of all sorts.

Tim Wu, a Columbia University law professor, calls this the “exposure culture.” Using blogs as an example, he writes,

The exposure culture reflects the philosophy of the Web, in which getting noticed is everything. Web authors link to each other, quote liberally, and sometimes annotate entire articles. E-mailing links to favorite articles and jokes has become as much a part of American work culture as the water cooler. The big sin in exposure culture is not copying, but instead, failure to properly attribute authorship. And at the center of this exposure culture is the almighty search engine. If your site is easy to find on Google, you don't sue—you celebrate.

Once you think of the curve as being populated with creators who have different incentives, it's easy to extend that to their intellectual property interests as well. Disney and Metallica may be doing all they can to embrace and extend copyright, but there are plenty of other (maybe even more) artists and producers who see free peer-to-peer (“P2P”) distribution as low-cost marketing. Musicians can turn that into an audience for their live shows, indie filmmakers treat it as a viral resume, and academics treat free downloads of their papers as a way to increase their impact and audience.

Each of these perspectives changes how the creators feel about copyright. At the top of the curve, the studios, major labels, and publishers defend their copyright fiercely. In the middle, the domain of independent labels and academic presses, it's a gray area. Farther down the tail, more firmly in the noncommercial zone, an increasing number of content creators are choosing explicitly to give up some of their copyright protections. Since 2002, a nonprofit organization called Creative Commons has been issuing licenses of the same name to allow for a flexible use of certain copyrighted works for the sake of the greater value (for the content creators) of free distribution, remixing, and other peer-to-peer propagation of their ideas, interests, and fame. (Indeed, I've done that with my own blog, for all of the reasons above.)

In short, some creators care about copyright and some don't. Yet the law doesn't distinguish between them—copyright is automatically granted and protected unless explicitly waived. As a result, the power of “free” is obscured by fears over piracy and is often viewed with suspicion, not least because it evokes unfortunate echoes of both communism and hippie sloganeering.

Regardless, it's something we're starting to reconsider as the power of the “gift economy” becomes clear—in everything from the blogosphere to open source. In one part of my professional life (the 600,000-circulation magazine I edit), I'm near the head of the curve, and in another (my 5,000-reader blog) I'm in the tail. My decisions on intellectual property are different in each. Someday soon, I hope, marketplace and regulation will more accurately reflect this reality.

#### SELF-PUBLISHING WITHOUT SHAME

We think of books through a commercial lens, assuming that most authors want to write a best-seller and get rich. But the reality is that the vast majority of authors not only won't become best-sellers, but also aren't even trying to write a hugely popular book. Each year, nearly 200,000 books are published in English. Fewer than 20,000 will make it into the average book superstore. Most won't sell.

In 2004, 950,000 books out of the 1.2 million tracked by Nielsen BookScan sold fewer than ninety-nine copies. Another 200,000 sold fewer than 1,000 copies. Only 25,000 sold more than 5,000 copies. The average book in America sells about 500 copies. In other words, about 98 percent of books are noncommercial, whether they were intended that way or not.

The quest for mass-market acceptance requires compromise—a willingness to pick topics of broad rather than narrow interest, and to write in conversational rather than academic style. Most writers can't do that and many others won't. Instead, the vast majority of authors choose to follow their passions and assume they won't make money. Many want no more than to be read by some group that matters to them—from their peers to like-minded souls.

Such profitless publishing can be lucrative all the same. The book becomes not the product of value but the *advertisement* for the product of value—the authors themselves. Many such noncommercial books are best seen as marketing vehicles meant to enhance the academic reputation of their authors, market their consultancy, earn them speaking fees, or just leave their mark on the world. Seen that way, self-publishing is not a way to make money; it's a way to distribute your message.

To get a glimpse of that world, consider Lulu.com, which is a new breed of DIY publisher. For less than two hundred dollars, Lulu can not only turn your book into a paperback or hardcover and give it an ISBN number, but also ensure that it gets listed with online retailers. Once it's listed, the book will be available to an audience of millions and potentially side by side with *Harry Potter*, if the winds of the recommendation engines blow that way. With Lulu, the copies are printed in batches as small as a few dozen and the inventory is replenished as needed via print-on-demand. It's an extraordinary improvement over the scorned "vanity" publishing model of just a few years ago. As a result, thousands of authors are now choosing this route.

Here are the top five self-published books on Lulu, as I write:

1. *Raw Foods for Busy People: Simple and Machine-Free Recipes for Every Day*

2. *The Hananese* ("The quintessential handbook for Havanese dog owners, breeders and fanciers.")

3. *Investigating Biology—A Laboratory Manual for BIO 100, 12th Edition*

4. *Maximum SAT*

5. *How to Start a Wedding Planning Business*

All of them have sold between 5,000 and 50,000 copies, which is not bad. Eighty percent of the profits from these sales go directly to the authors, compared to 15 percent for standard publishers. So much for the notion that self-publishing is just for losers.

Still, most authors don't use such self-publishing services to make money, nor do they expect to hit it big. The vast majority of Lulu's other few thousand customers choose to self-publish because they know that what they're writing isn't likely to sell enough to make the search for a commercial publisher worthwhile. That doesn't mean they don't have a potential audience; it's just that it's a small one.

A few years ago, most of these authors wouldn't have been published at all—and that would have been enough to discourage many of them from writing a book in the first place. But today, the economics of publishing have fallen so low that nearly everyone can do it. That means people can write books for whatever reason they want, and they don't need to depend on some publisher deciding if the book is worth taking to market.

The effect of this is being felt throughout the industry, right up to the giant booksellers. In 2005, Barnes & Noble sold 20 percent more unique titles than it had in 2004, something its CEO, Steve Riggio, attributes to three forces: (1) the efficiencies of print-on-demand, which keeps more books in print; (2) the increase in the number of smaller and independent publishers; and (3) self-publishing.

"Over the next few years, the traditional definition of what a 'published book' is will have less meaning," he says. "Individuals will increasingly use the Internet as a first stage to publish their work, whether they are books, short stories, works in progress, or articles on their area of expertise. The best of this work will turn into physical books. I tend to be sanguine about the book industry's prospects be-

cause a whole new and efficient means of first-step publishing is emerging and rapidly becoming more sophisticated.”

One of the big differences between the head and the tail of producers is that the farther down you are in the tail, the more likely you are to have to keep your day job. And that’s okay. The distinction between “professional” producers and “amateurs” is blurring and may, in fact, ultimately become irrelevant. We make not just what we’re paid to make, but also what we *want* to make. And both can have value.

South Korea’s “citizen journalism” phenomenon, created in 2000 by OhmyNews, is another example. At OhmyNews, about fifty professional reporters and editors screen, edit, and complement news articles written by more than 40,000 amateurs, from elementary school students to professors. These volunteers submit between 150 and 200 articles a day, which account for more than two-thirds of OhmyNews’s content. For this, they receive a pittance: If the article goes to the front page, which only a small fraction do, the author gets around \$20. Why do they do it? “They are writing articles to change the world, not to earn money,” says Oh Yeon Ho, the site’s founder.

From filmmakers to bloggers, producers of all sorts that start in the Tail with few expectations of commercial success can afford to take chances. They’re willing to take more risks, because they have less to lose. There’s no need for permission, a business plan, or even capital. The tools of creativity are now cheap, and talent is more widely distributed than we know. Seen this way, the Long Tail promises to become the crucible of creativity, a place where ideas form and grow before evolving into commercial form.

#### CASE STUDY: LONELY ISLAND

One size of incentive doesn’t fit all. People create things for all sorts of reasons, ranging from expression to reputation. What makes this important is that there is increasingly frictionless mobility in the Long Tail. In a seamless digital marketplace, from iTunes to the Web itself, content that starts at the bottom can easily move to the top if it

strikes a chord. Understanding the diverse incentives that can motivate the creators of such content becomes essential in finding and encouraging it.

Speaking at a conference in mid-2005, Barry Diller, the media mogul chairman of IAC/InterActiveCorp, acknowledged that peer production is interesting, but he scoffed at the idea that it is a force capable of rivaling Hollywood. “People with talent won’t be displaced by 18 million people producing stuff they think will have appeal,” he confidently predicted.

What are the odds that he’s right? Well, if you define “people with talent” only as those who have a proven ability to make mass-market blockbusters, Diller may have a point. But there’s more to creativity than Hollywood hits, and people who can strike a chord can come from anywhere, via any path.

Take Akiva Schaffer, Jorma Taccone, and Andy Samberg. Until recently, they fit nicely into the category of people Diller’s talent-identification machine had efficiently filtered out.

After college, the three high school buddies relocated to Hollywood together. They moved into a big house with low rent on Olympic Boulevard and dubbed it the Lonely Island. Then they tried to figure out how to break into the entertainment industry as a comedy troupe.

It isn’t easy for an individual comic to make it in TV—even as a writer—but it’s even harder for a preassembled team. Sure enough, the threesome quickly ran up against all the usual barriers in their hunt for work in Hollywood. However, rather than subject themselves to endless rejection, the three took their act—now named after their home—online. Borrowing some video gear, the Lonely Island crew started producing short-form comedy videos and songs. Schaffer’s kid brother Micah—a tech consultant and Internet agitpropster—threw together their Web site, [theloneylsland.com](http://theloneylsland.com), in 2001.

The Lonely Islanders started with white-boy rap music videos, presented with signature deadpan humor. One of the first videos was about things that are “ka-blamo!” (as in, “You kissed Shannen Doherty”) and things that aren’t (“I majored in pottery”). As is sometimes the case for such amusing ephemera, the video circulated widely on

the Internet. At one point, a Dutch DJ “mashed” it up (mixed it with other video footage), further boosting its popularity.

Soon more videos and fan mashups followed, something the group encouraged by releasing their videos under a Creative Commons license that freely permitted creative reuse. In just a few years, the Lonely Island was “Internet famous,” which is to say they were big with the demographic that has traded its TV time for online time, constantly surfing the contours of online subculture.

Capitalizing on their online celebrity, the Dudes—as they’re known to fans—scored better writing and performing gigs. Still, their main show continued to be online. The first episode of their “Internet prime time” series was called “The ‘Bu.” “Young, sexy people that live in Malibu call it The ‘Bu,” reads thelonelyisland.com, “because when you say the entire word, it takes time, and then you wouldn’t be young anymore.”

As the group’s cult following grew, word of their shorts got to *Saturday Night Live* star Tina Fey and the show’s creator, Lorne Michaels. In mid-2005, the threesome flew to Manhattan for auditions with the most famous team in comedy. In short order, all of the Dudes were hired.

In December 2005, the Lonely Island crew did another one of their white-boy rap sendups on SNL. Riffing on the *Chronicles of Narnia* film, the sketch was, as expected, twisted, wrong, and very, very funny. Now that the crew is on network TV, the skit went out as broadcast on a Saturday night, when it was watched by the usual (dwindling) audience, most of whom no doubt laughed and forgot about it.

But some people had recorded the show to their DVRs, and a few of them recognized a flash of brilliance in the *Narnia* skit. So they uploaded the video to the Internet. After it started to take off in the usual link frenzy, NBC heard the stampe and put the video on the official SNL site and even iTunes. Then, once again, the viral video effect kicked in—this time bigger than ever.

Jeff Jarvis, a media commentator, described the impact like this: “I haven’t heard anyone buzz about, recommend, or admit to watching SNL in, oh, a generation. But suddenly, I hear lots of buzz about the show. And it’s not because millions happened to start watching when

the show happened to actually be funny again. No, the buzz is born because folks started distributing the *Narnia* bit, which indeed is funny, on the Internet, and people are linking to it. NBC is learning the power of the network that no one owns.” And sure enough, links to the SNL site increased more than 200-fold in the two weeks after the video started circulating.

The Lonely Island tale has come full circle. Misfits rejected by the entertainment industry go online and get popular. Entertainment industry wakes up to this phenomenon in the hard-to-reach demographic of influential twenty-somethings and hires the misfits. The kids do the same thing on broadcast TV, but since that influential demographic doesn’t actually watch much TV, it isn’t until the skit goes *back online* (now amplified by the net-kids-make-it-big appeal) that the skit gets really popular. Thus SNL, previously scorned by the online generation, suddenly gets cool again by tapping into the authentic underground spirit blossoming online. Once upon a time, the show used to handpick its talent pool from obscure regional theaters and improv troupes. Now they also find it online.

So what’s the lesson in this story? Well, on one hand, the existing entertainment industry filters did recognize the appeal of the Lonely Island and found a way to tap it. In that sense, maybe the system works. Yet if three kids with a video camera doing goofy raps and putting them on their Web site isn’t “18 million people producing stuff they think will have appeal”—to borrow Diller’s scornful phrase—I really don’t know what is.

The truth is that the next generation of talent will probably come from the 18 million people doing their own thing—and these are the people who are most likely to save Hollywood and the rest of the entertainment industry from grinding formula. Maybe Diller is right. Maybe there are only a small number of people who can write *Friends*. But just think about how many people can produce quirkier fare, like the *Narnia* sketch, content that can resonate with an audience that has grown up online—the place where niches, not networks, rule. Think about how many of those potential talents now have a chance to find a real audience, thanks to the democratized distribution of the Internet.

It may still require the full might of the Hollywood machine to make a multiseason drama with high production qualities. But over that same time hundreds of grassroots videos can collectively capture a similar size audience. That comparison would seem like apples and oranges—lasting commercial brands versus transient amateur amusements—were it not for the fact that the two compete for the time of a generation of Web-savvy viewers. If they're watching one kind of video, they're not watching the other.

What Diller neglects to consider is that today there seems to be less demand for blockbusters than there is for focused or targeted content that *isn't* for everybody. As the audience continues to move away from Top 40 music and blockbusters, the demand is spreading to vast numbers of smaller artists who speak more authentically to their audience. So what if 99 percent of blogs will never attract an audience of more than a few dozen? The fraction of a percent that *do* emerge with broader reach still number in the thousands. And collectively, that 1 percent can draw as much traffic as many mainstream media. The typical "viral video" sensation is seen by several million people, something that can only be said for the most popular TV shows.

As with authors who self-publish their books via Lulu, the products themselves aren't usually making much if any money, but that's not the point. The point is simply that the product exists and it's taking audience share. It isn't a creation of the traditional commercial industry, but it competes with it. Today, the number of people who produce content is far more than the usual talent finders of the media can process—the wave of grassroots creativity would overwhelm the script-readers and tape-listeners of any studio and label. Because the tools of production have entirely democratized, the population of producers is expanding exponentially, and now there's little stopping those with the will and skill to create from doing just that.

### THE ARCHITECTURE OF PARTICIPATION

We've seen parts of this story before. In the late 1970s and early 1980s, the combination of the electric guitar, the arrival of cheap

multitrack recorders, and the fine example set by the Sex Pistols gave license to a generation of kids with no musical training, obvious talent, or permission from anyone to start bands and record music. When punk rock exploded onto the scene, it was a shocking epiphany for a generation of kids in the mosh pit. Watching someone your age play three chords badly, while jumping around on stage, one couldn't but think: "I could do *that*."

For a while, the assumption was that to be a musician, the right way of learning was to copy the masters. So you should start by playing covers, reading music, and maybe going to music school. This was the notion of paying your dues: Do the circuit, and play the standards, because that's what people want (no one wants to hear your crappy original compositions). Do it *right*.

But punk rock changed the game. Punk rock said: "Okay, you have your guitar, but you *don't* have to do it right. You can do it *wrong*! It doesn't matter one bit if you're a skilled musician; it just matters if you have something to say."

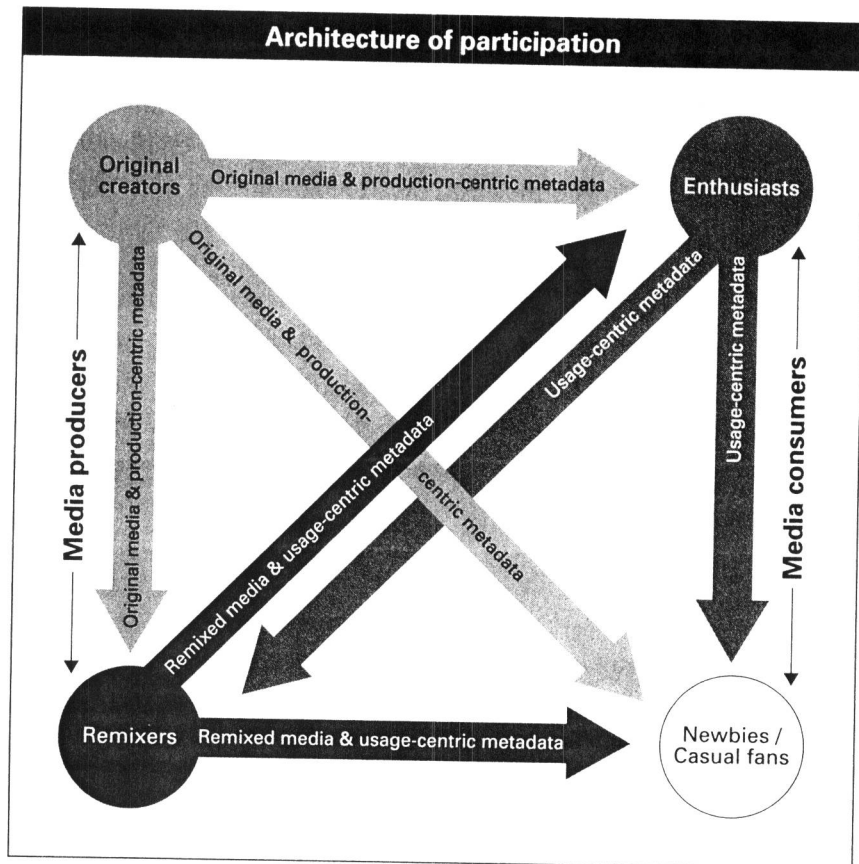
Through punk rock, we saw a premium on fresh voices, new sounds, vigor, and an antiestablishment sentiment that could have only come from outside the system. It was inspirational to see people out there with no more talent than you, having fun, being admired, doing something novel. To put it in economic terms, punk rock lowered the barriers of entry to creation.

The traditional line between producers and consumers has blurred. Consumers are also producers. Some create from scratch; others modify the works of others, literally or figuratively remixing it. In the blog world, we talk about "the former audience"—readers who have shifted from passive consumers to active producers, commenting and blogging right back at the mainstream media. Others contribute to the process nothing more than their Internet-amplified word of mouth, doing what was once the work of radio DJs, music magazine reviewers, and marketers.

The result is starting to look like what Tim O'Reilly, a book publisher and seer of the DIY age, calls the "The New Architecture of Participation."

A team at the University of California, Berkeley, illustrated this with a new map of creation, as follows.





As this figure shows, a once-monolithic industry structure where professionals *produced* and amateurs *consumed* is now a two-way marketplace, where anyone can be in any camp at any time. This is just a hint of the sort of profound change that the democratized tools of production and distribution can foster.