

### **Among the audience**

The era of mass media is giving way to one of personal and participatory media, says Andreas Kluth. That will profoundly change both the media industry and society as a whole. THE next big thing in 1448 was a technology called "movable type", invented for commercial use by Johannes Gutenberg, a goldsmith from Mainz (although the Chinese had thought of it first). The clever idea was to cast individual letters (type) and then compose (move) these to make up printable pages. This promised to disrupt the mainstream media of the day--the work of monks who were manually transcribing texts or carving entire pages into wood blocks for printing. By 1455 Mr Gutenberg, having lined up venture capital from a rich compatriot, Johannes Fust, was churning out bibles and soon also papal indulgences (slips of paper that rich people bought to reduce their time in purgatory). The start-up had momentum, but its costs ran out of control and Mr Gutenberg defaulted. Mr Fust foreclosed, and a little bubble popped.

Even so, within decades movable type spread across Europe, turbo-charging an information age called the Renaissance. Martin Luther, irked by those indulgences, used printing presses to produce bibles and other texts in German. Others followed suit, and vernaculars rose as Latin declined, preparing Europe for nation-states. Religious and aristocratic elites first tried to stop, then control, then co-opt the new medium. In the centuries that followed, social and legal systems adjusted (with copyright laws, for instance) and books, newspapers and magazines began to circulate widely. The age of mass media had arrived. Two more technological breakthroughs--radio and television--brought it to its zenith, which it probably reached around 1958, when most adult Americans simultaneously turned on their television sets to watch "I Love Lucy".

#### **Second incarnation**

In 2001, five-and-a-half centuries after Mr Gutenberg's first bible, "Movable Type" was invented again. Ben and Mena Trott, high-school sweethearts who became husband and wife, had been laid off during the dotcom bust and found themselves in San Francisco with ample spare time. Ms Trott started blogging--ie, posting to her online journal, Dollarshort--about "stupid little anecdotes from my childhood". For reasons that elude her, Dollarshort became very popular, and the Trotts decided to build a better "blogging tool", which they called Movable Type. "Likening it to the printing press seemed like a natural thing because it was clearly revolutionary; it was not meant to be arrogant or grandiose," says Ms Trott to the approving nod of Mr Trott, who is extremely shy and rarely talks. Movable Type is now the software of choice for celebrity bloggers.

These two incarnations of movable type make convenient (and very approximate) historical book-ends. They bracket the era of mass media that is familiar to everybody today. The second Movable Type, however, also marks the beginning of a very gradual transition to a new era, which might be called the age of personal or participatory media. This culture is already familiar to teenagers and twenty-somethings, especially in rich countries. Most older people, if they are aware of the transition at all, find it puzzling.

Calling it the "internet era" is not helpful. By way of infrastructure, full-scale participatory media presume not so much the availability of the (decades-old) internet as of widespread, "always-on", broadband access to it. So far, this exists only in South Korea, Hong Kong and Japan, whereas America and other large media markets are several years behind. Indeed, even today's broadband infrastructure was built for the previous era, not the coming one.

Almost everywhere, download speeds (from the internet to the user) are many times faster than upload speeds (from user to network). This is because the corporate giants that built these pipes assumed that the internet would simply be another distribution pipe for themselves or their partners in the media industry. Even today, they can barely conceive of a scenario in which users might put as much into the network as they take out.

#### **The age of participation**

Exactly this, however, is starting to happen. Last November, the Pew Internet & American Life Project found that 57% of American teenagers create content for the internet--from text to pictures, music and video. In this new-media culture, says Paul Saffo, a director at the Institute for the Future in California, people no longer passively "consume" media (and thus advertising, its main revenue source) but actively participate in them, which usually means creating content, in whatever form and on whatever scale. This does not have to mean that "people write their own newspaper", says Jeremy Zawodny, a prominent blogger and software engineer at Yahoo!, an internet portal. "It could be as simple as rating the restaurants they went to or the movie they saw," or as sophisticated as shooting a home video.

This has profound implications for traditional business models in the media industry, which are based on aggregating large passive audiences and holding them captive during advertising interruptions. In the new-media era, audiences will occasionally be large, but often small, and usually tiny. Instead of a few large capital-rich media giants competing with one another for these audiences, it will be small firms and individuals competing or, more often, collaborating. Some will be making money from the content they create; others will

not and will not mind, because they have other motives. "People creating stuff to build their own reputations" are at one end of this spectrum, says Philip Evans at Boston Consulting Group, and one-man superbrands such as Steven Spielberg at the other.

As with the media revolution of 1448, the wider implications for society will become visible gradually over a period of decades. With participatory media, the boundaries between audiences and creators become blurred and often invisible. In the words of David Sifry, the founder of Technorati, a search engine for blogs, one-to-many "lectures" (ie, from media companies to their audiences) are transformed into "conversations" among "the people formerly known as the audience". This changes the tone of public discussions. The mainstream media, says David Weinberger, a blogger, author and fellow at Harvard University's Berkman Centre, "don't get how subversive it is to take institutions and turn them into conversations". That is because institutions are closed, assume a hierarchy and have trouble admitting fallibility, he says, whereas conversations are open-ended, assume equality and eagerly concede fallibility.

Today's media revolution, like others before it, is announcing itself with a new and strange vocabulary. In the early 20th century, Charles Prestwich Scott, the editor, publisher and owner of the Manchester Guardian (and thus part of his era's mainstream media), was aghast at the word "television", which to him was "half Greek, half Latin: no good can come of it." Mr Scott's equivalents today confront even stranger neologisms. Merriam-Webster, a publisher of dictionaries, had "blog" as its word of the year in 2004, and the New Oxford American Dictionary picked "podcast" in 2005. "Wikis", "vlogs", "metaverses" and "folksonomies" (all to be explained later in this survey) may be next.

Word count

"These words! The inability of the English language to express these new things is distressing," says Barry Diller, 64, who fits the description "media mogul". Over the decades, Mr Diller has run two big Hollywood film studios and launched America's fourth broadcast-television network, FOX Broadcasting. More recently, he has made a valiant effort to get his mind around the internet, with mixed results, and is now the boss of IAC/InterActiveCorp, a conglomerate with about 60 online brands. Mr Diller concedes that "all of the distribution methods get thrown up in the air, and how they land is, well, still up in the air." Yet Mr Diller is confident that participation can never be a proper basis for the media industry. "Self-publishing by someone of average talent is not very interesting," he says. "Talent is the new limited resource."

"What an ignoramus!" says Jerry Michalski, with some exasperation. He advises companies on the uses of new media tools. "Look around and there's tons of great stuff from rank amateurs," he says. "Diller is assuming that there's a finite amount of talent and that he can corner it. He's completely wrong." Not everything in the "blogosphere" is poetry, not every audio "podcast" is a symphony, not every video "vlog" would do well at Sundance, and not every entry on Wikipedia, the free and collaborative online encyclopedia, is 100% correct, concedes Mr Michalski. But exactly the same could be said about newspapers, radio, television and the Encyclopaedia Britannica.

What is new is that young people today, and most people in future, will be happy to decide for themselves what is credible or worthwhile and what is not. They will have plenty of help. Sometimes they will rely on human editors of their choosing; at other times they will rely on collective intelligence in the form of new filtering and collaboration technologies that are now being developed. "The old media model was: there is one source of truth. The new media model is: there are multiple sources of truth, and we will sort it out," says Joe Kraus, the founder of JotSpot, which makes software for wikis.

The obvious benefit of this media revolution will be what Mr Saffo of the Institute for the Future calls a "Cambrian explosion" of creativity: a flowering of expressive diversity on the scale of the eponymous proliferation of biological species 530m years ago. "We are entering an age of cultural richness and abundant choice that we've never seen before in history. Peer production is the most powerful industrial force of our time," says Chris Anderson, editor of Wired magazine and author of a forthcoming book called "The Long Tail", about which more later. (Mr Anderson used to work for The Economist.)

At the same time, adds Mr Saffo, "revolutions tend to suck for ordinary people." Indeed, many people in the traditional media are pessimistic about the rise of a participatory culture, either because they believe it threatens the business model that they have grown used to, or because they feel it threatens public discourse, civility and even democracy.

This survey will examine the main kinds of new media and their likely long-term effects both on media companies and on society at large. In so doing, it will be careful to heed a warning from Harvard's Mr Weinberger: "The mainstream media are in a good position to get things wrong." The observer, after all, is part of the observation--a product of institutional media values even if he tries to apply the new rules of conversation. This points to the very heart of the coming era of participatory media. It must be understood, says Mr Weinberger, "not as a publishing phenomenon but a social phenomenon". This is illustrated perfectly by blogging, the subject of the next article.

## It's the links, stupid

IF YOU want to have a fun debate, ask bloggers what a blog is," says Jeremy Zawodny at Yahoo! Only a few years ago, that debate would have been short. So few people blogged that most of them knew one another and could probably agree on a definition. Today a new blog is created every second of every day, according to Technorati, a search engine for blogs, and the "blogosphere" is doubling in size every five months (see chart 1). From teenagers to corporate executives, the new bloggers all have reasons of their own for engaging in this new pursuit.

What, then, is a blog? A "personal online journal" is the definition that most newspapers, including *The Economist*, offer when they need to be brief. That analogy is not wrong, but nor is it entirely right (conventional journals usually come in chronological order, whereas blogs are displayed in reverse chronological order, with the most recent entry on top). More importantly, this definition misses the main point about blogs. Traditionally, journals were private or even secret affairs, and were never linked to other journals. Peeking into the diary of one's big sister typically led to a skirmish. Blogs, by contrast, are social by nature, whether they are open to the public as a whole or only to a small select group.

The word "blog" appears to date back to 1997, when one of the few practitioners at the time, Jorn Barger, called his site a "weblog". In 1999, another user, Peter Merholz, playfully broke the word into "we blog", and somehow the new term--blog--stuck as both a verb and a noun. Technically, it means a web page to which its owner regularly adds new entries, or "posts", which tend to be (but need not be) short and often contain hyperlinks to other blogs or websites. Besides text and hypertext, posts can also contain pictures ("photoblogs") and video ("vlogs"). Each post is stored on its own distinct archive page, the so-called "permalink", where it can always be found. On average, Technorati tracks some 50,000 new posts an hour.

Among the other technical features of blogs, two highlight the quintessentially social nature of blogging. The first is a "blogroll", along the side of the blog page, which is a list of links to other blogs that the author recommends (not to be confused with the hyperlinks inside the posts). In practice, the blogroll is an attempt by the author to place his blog in a specific genre or group, and a reciprocal effort by a posse of bloggers to raise each other's visibility on the internet (because the number of incoming links pushes a blog higher in search-engine results). The other feature is "trackback", which notifies ("pings") a blog about each new incoming link from the outside--a sort of gossip-meter, in short.

Blogging is also about style. Dave Winer, a software engineer who pioneered several blogging technologies, and who keeps what by his own estimate is the longest-running blog of all (dating back to 1997), has argued that the essence of blogginess is "the unedited voice of a single person", preferably an amateur. Blogs, in other words, usually have a raw, unpolished authenticity and individuality. This definition would exclude quite a few of the blogs that firms, public-relations people or newspapers set up nowadays. If an editor vets, softens or otherwise messes about with the writing, Mr Winer would argue, it is no longer a blog.

This explains the initial appeal of blogging as an outlet for pure self-expression. As Glenn Reynolds of Instapundit, a well-known blog on American politics, put it when asked why he blogs: "It beats yelling at the television." But venting an opinion is usually only the start. "At first, I saw it as about publishing; now I see it more as a revolutionary way to communicate," says Mena Trott. The company she runs with her husband Ben, Six Apart, illustrates this with its three main products. Their flagship, Movable Type, with its obvious publishing connotations, is a popular software service for heavy-duty or celebrity bloggers, including Mr Reynolds. So is TypePad, a similar service with web-hosting thrown in. Blogs powered by these two products have an average of 600 readers, says Ms Trott, although a few are read by more people than are some newspapers.

But Six Apart's third product, LiveJournal, is a very different kind of blogging tool. Some 60% of LiveJournal users are under 21 and female, says Ms Trott. Many of the posts are about who snogged whom last night and what happened next, why I'm sad, how adults don't get it, and so forth. Other posts ask things like, "Anybody want to catch King Kong at 8:00?" and have the replies in the comment pane below within minutes. That is because many adolescents consider e-mail passé, and instead are using either instant messaging (IM) or blogging for their communications, says Ms Trott. Like blogging, e-mail was supposed to be "asynchronous", meaning that the people taking part do not have to be online simultaneously. But today's adolescents have never known e-mail without spam and see no point in long trails of "reply" and "cc" messages piling up in their in-boxes. As for synchronous communication, why adults would send e-mails back and forth instead of "IM-ing" is beyond them.

The Dunbar number

For these LiveJournal blogs, the average number of readers is seven, says Ms Trott. Such small audiences are common in participatory media. Indeed, they may conform to the biological norm, whereas mass-media audiences may have been an aberration. Robin Dunbar, an anthropologist at the University of Liverpool, has studied primates and discovered a surprisingly stable ratio between the relative size of the neocortex (thought to be responsible for the evolution of intelligence) and the size of groups formed by particular species. For humans, Mr Dunbar calculated, the upper limit is about 150. Many clans, tribes, fan clubs, start-ups and other groupings remain well below this limit, as do most blog networks.

The LiveJournal groups of readers are typical of the new-media era in another way. The bloggers (ie, creators) are one another's audience, so that distinctions between the two disappear. Creators and audiences congregate ad hoc in meandering conversations, a common space of shared imagination and interests. MySpace.com, a social-networking and blogging service that last year was bought by News Corporation, Rupert Murdoch's media conglomerate, reflects this quality in its name.

Conversations have a life of their own. They tend to move in unexpected directions and fluctuate unpredictably in volume. It is these unplanned conversational surges that tend to bring the blogosphere to the attention of the older and wider (non-blogging) public and the mainstream media. Germany, for instance, has been a relatively late adopter of blogging-- only 1% of blogs are in German, according to Technorati, compared with 41% in Japanese, 28% in English and 14% in Chinese.

But in January this year "the conversation" arrived in Germany with a vengeance. Jung von Matt, a German advertising firm, had come up with a campaign in the (old) media called "Du bist Deutschland" ("you are Germany"). The advertisements were intended "to fight grumpiness" about the country's sluggish economy, said Jean-Remy von Matt, the firm's Belgian boss.

But German bloggers found the idea kitschy, and subsequently dug up an obscure photograph from a Nazi convention in 1935 that showed Hitler's face next to the awkwardly similar slogan "Denn Du bist Deutschland" ("because you are Germany"). In the ensuing online conversation, Mr von Matt's campaign was ignominiously deflated. Outraged, he sent an internal e-mail to his colleagues in which he called blogs "the toilet walls of the internet" and wanted to know: "What on earth gives every computer-owner the right to express his opinion, unasked for?" When bloggers got hold of this e-mail, they answered his question with such clarity that Mr von Matt quickly and publicly apologised and retreated.

Inadvertently, Mr von Matt had put his finger on something big: that, at least in democratic societies, everybody does have the right to hold opinions, and that the urge to connect and converse with others is so basic that it might as well be added to life, liberty and the pursuit of happiness. "It's about democratisation, where people can participate by writing back," says Sabeer Bhatia, who in March launched a company called BlogEverywhere.com that lets people attach blogs to any web page with a single click. "Just as everybody has an e-mail account today, everybody will have a blog in five years," says Mr Bhatia, who helped to make e-mail ubiquitous by starting Hotmail, a web-based e-mail service now owned by Microsoft. This means, Mr Bhatia adds, that "journalism won't be a sermon any more, it will be a conversation."

## Compose Yourself

"WE CHANGED South Korean politics and the media market, but I'm too shy to say that," says Oh Yeon Ho before he can catch his own irony. But Mr Oh, the founder and boss of Ohmy News, a sort of online newspaper, has earned the right to boast, because Ohmy is the world's most successful example to date of "citizen journalism" in action.

Ohmy's website currently gets an average of 700,000 visitors and 2m page views a day, which puts it in the same league as a large newspaper. But Ohmy has no reporters on its staff at all. Instead, it relies on amateurs--"citizens", as Mr Oh prefers to call them--to contribute the articles, which are then edited by Mr Oh, a former magazine journalist, and a few colleagues. Mr Oh likes to think of Ohmy as a "playground" for South Korean hobbyists, where "adults" set certain rules and thus give the site credibility. The articles tend to be good, because "in South Korea we have good people power," says Mr Oh. "They are highly educated and eager to change society." Ohmy also has built-in feedback and rating systems so that the best articles rise to the top.

One of Ohmy's biggest innovations is economic. The site has a "tip-jar" system that invites readers to reward good work with small donations. All they have to do is click a little tip-jar button to have their mobile-phone or credit-card account debited. One particularly good article produced the equivalent of \$30,000 in just five days. Ohmy's own economics also appear to be working well. Even though Mr Oh originally intended the company to be not-for-profit--"my aim was not to earn money but to create a new kind of journalism," he says--he turned it into a for-profit firm in 2003. He will not divulge how much profit he makes, but the advertising and syndication revenues (from other internet sites that run Ohmy's articles) seem to keep him going nicely.

Ohmy's success has already had wide ramifications in South Korea's media industry. Although it has not killed off any South Korean newspapers or broadcasters, it has forced all of them to adjust by becoming more like Ohmy. Several newspaper sites, for instance, now have feedback and conversation panes at the bottom of online articles and are trying to interact more with readers. Mr Oh, who left his career in the mainstream media because he was sick of what he saw as their conservative bias, also reckons that Ohmy has helped to improve the balance. If the media scales used to be tilted 80% in favour of conservatives, he thinks, Ohmy has reduced that to 60%; he wants to make it 50%.

What works, and what doesn't

Does South Korea, a country of early adopters in many ways, foreshadow the future everywhere? "The reality is that you can't point to many successes; Ohmy News is the only one," says Dan Gillmor, a journalist who quit his job at the San Jose Mercury News, a newspaper widely read in Silicon Valley, in order to found Grassroots Media, an experiment in American citizen journalism. After a year or so of looking in vain for a good business model, Mr Gillmor has put the idea on ice.

But others are much more optimistic. Last year Al Gore, a former American vice-president, and Joel Hyatt, his friend and business partner, set up Current TV, a cable-television channel that encourages its viewers to contribute their own video stories. And they do. "Viewer-created content"--or "VC2", as Current TV calls it--now accounts for 30% of the channel's airtime, and rising. Mr Hyatt, the chief executive, thinks it will eventually be half or more. To help people get started, Current TV has extensive online tutorials on storytelling techniques, camera equipment and so forth. And to organise the content that comes in, its website allows users to vote on the quality of each video clip. It is, in many ways, a pure meritocracy.

When Current TV was launched, the traditional cable channels "didn't get it" and sneered, Mr Hyatt recalls with glee. "What people didn't understand is that there are tens of thousands of people out there who can create something great for a few minutes." For instance, a story by an American traveller who found himself in the Gaza Strip during Israel's pull-out was probably the best piece of video reporting on the subject that ran on television at the time. During Hurricane Katrina, some residents of New Orleans made excellent contributions by taking cameras onto their home-made boats and making videos of their own neighbourhoods.

Yahoo! provides an even bigger example of the cheerful mixing of professional and amateur content (as opposed to Ohmy's insistence on the purely amateur). For instance, a lot of the articles, photos, audio and video on Yahoo! News come from corporate partners such as Associated Press or CNN. A tiny bit comes from Yahoo! itself (specifically, from Kevin Sites, a one-man camera team who travels to exotic and dangerous war zones around the world). But more and more content comes from citizens--Yahoo!'s users--says Scott Moore, who runs Yahoo!'s news and finance pages. Indeed, Yahoo! explicitly allows users not only to contribute content but also to take part in its filtering and placement, he says. These new collaborative processes even have a name--"folksonomies"--to distinguish them from the top-down "taxonomies" that human editors traditionally create.

For example, during the terrorist attacks on London's Underground last year, quite a few people in the wrecked trains took haunting photos with their mobile phones. They then wirelessly uploaded these to Flickr, a photo-sharing site owned by Yahoo! Other users then "tagged" these photos by attaching labels such as "London Underground" or "bombings" to them so that they could be easily found. The same or other users then spontaneously rated the pictures. This in turn brought the best pictures to the attention of Yahoo!'s human editors, who displayed them prominently alongside "professional" content across Yahoo!'s news sites. All of this happened within minutes.

The citizen journalism brought out by events such as the London bombings, Katrina, Asia's tsunami and other recent events has sent a new joke into the blogosphere: that Andy Warhol's proverbial "15 minutes of fame" have now become "15 megs" (megabytes) of fame for everybody on earth. That may be true. But the area of citizen journalism that is currently growing fastest, according to Mr Moore, is the least glamorous end: the so-called "hyper-local" coverage of, say, high-school sports or petty neighbourhood crime, which is usually too small even for local newspapers. This is one reason, says Mr Moore, why "in almost every market in the US we're already the number two provider of local news, after the leading local newspaper, and that's without even putting a lot of focus into it."

For society as a whole, all this new talent--from bloggers, who are "journal-ists" in the classic sense, to citizen journalists--should amount to something overwhelmingly positive. "The more journalism the better; I don't care who does it," says Dan Gillmor. That is not, however, how professional journalists, ostensibly speaking on behalf of the public, usually choose to see it. Their mood is gloomy.

Hard pressed

"Among our newspapers as they now stand, little more can be said in their favour than that they do not require batteries to operate, you can swat flies with them, and they can still be used to wrap fish." Thus Joseph Epstein, a serial author, writing in the monthly magazine *Commentary*. Another author, Philip Meyer, makes his point in the title of his 2004 book, "The Vanishing Newspaper". The last reader will recycle the last newspaper in April 2040, Mr Meyer estimates. If so, one of the most visible products of Gutenberg's movable type would expire eight years short of the printing press's 600th anniversary.

By common consent, the newspaper industry is in a perfect storm. In America, circulation has been gradually but steadily falling since 1990, according to Editor & Publisher, a trade journal. The trend in other countries is much the same. Most young people nowadays do not read a daily newspaper at all. To make matters worse (and to devalue the argument that society must preserve newspapers as "trusted" sources of news), the industry has been through a string of scandals, the most ignominious being the New York Times's fiasco with Jayson Blair, one of its reporters who simply made up his stories. According to The State of the News Media, an annual American research project, the industry has laid off more than 3,500 newsroom professionals since 2000, about 7% of the total. In hard-hit Philadelphia, for instance, the number of reporters covering the metropolitan area is down to 220, half the 1980 figure.

Trends in advertising--and particularly classifieds, an inherently user-generated medium--are even bleaker. Whenever Craigslist.org, a do-it-yourself online bulletin board, enters a new city, local papers hear that proverbial sucking sound. EBay, the world's biggest auction site (which also owns a stake in Craigslist), already works like a global trading place. Last November, Google launched "Google Base", a free service that allows users to upload anything--including classifieds--free of charge. These are consummate trading and advertising machines "for which journalism would be a ridiculous distraction", says Mr Gillmor, who now works as an industry researcher. "That's hard to compete with if your main cost centre is journalism."

Two bitter ironies serve to deepen the gloom. The first is that advertisers have been even slower to adjust than the newspapers themselves. After an admittedly delayed start, the papers are now getting better at helping their readers to move to their online offerings, so their customers as a whole are not actually defecting. But advertisers do not value the two media in the same way. Lauren Rich Fine, a financial analyst of newspapers, estimates that for every advertising dollar that a newspaper gets for a print reader, it receives only 20-30 cents for his online equivalent. Even though online advertising is growing by 30% or more a year, this is from a tiny base. Pip Coburn, an investment strategist, estimates that even newspapers such as the New York Times, which are widely read online, get only 5-10% of their revenues from the web.

The second irony--a common one for sunset industries--is that decline, financially speaking, is very pleasant. Printing presses, the main capital outlay for newspapers, last for decades and are depreciating peacefully with little need for new cash. As newspapers get rid of the more atavistic elements in their print editions--such as the pages of (inherently out-of-date) share prices--they also save on ink and paper. Thus, despite all the frightening circulation numbers, Goldman Sachs, an investment bank, estimates that the average profit margin for America's 12 biggest newspaper publishers in 2004 was 21%, more than double the average

of the Fortune 500 companies. Some people are still making money, in other words, and are willing to invest. Last month McClatchy, a big American publisher, bought Knight Ridder, the country's second-biggest stable of newspapers, for \$4.5 billion.

Old media fight back

But increasingly, newspaper barons, not content to preside over slow decline, want to embrace the revolution. One of them is Rupert Murdoch, chairman of News Corporation, one of the largest newspaper publishers in the English-speaking world. Last year he told the American Society of Newspaper Editors that "as an industry, many of us have been remarkably, unaccountably, complacent". Young readers, Mr Murdoch said, "don't want to rely on a god-like figure from above to tell them what's important. And to carry the religion analogy a bit further, they certainly don't want news presented as gospel." So what do newspapers need to do online to adjust? Their websites, Mr Murdoch said, "have to become the place for conversation. The digital native doesn't send a letter to the editor any more. She goes online and starts a blog. We need to be the destination for those bloggers." Soon after this speech, Mr Murdoch bought MySpace, an online blogging and social-networking site wildly popular with young people.

Rhetorically, Mr Murdoch hit all the right notes. Implementing this soaring vision, however, is difficult in practice. Exactly how does an august publication turn itself into a "place for conversation", especially given that all sorts of lively conversations are already in progress in the blogosphere? Last year, the Los Angeles Times gave it a go. Michael Kinsley, its opinions-page editor at the time (as well as a former co-host of CNN's "Crossfire" show and a founder of Slate, an online magazine) turned his page into a "wikitorial" in which readers could edit articles (more on wikis in the next article). This did not work at all. Vandals converged on the wiki and wrecked it, until the newspaper shut it down and parted with Mr Kinsley. The Washington Post, too, experimented with a blog open to outsiders, and also shut it down after a spate of vandalism.

The worst conclusion that newspaper owners could draw from such setbacks is that interactivity does not work and should be avoided. "It's like saying, 'I hear there are assholes in New York, so I'm not going there'; yes, there are assholes, but you should still go there because we can figure out who the assholes are," says Jeff Jarvis, a former journalist and newspaper consultant who blogs at Buzzmachine.com. He suggests joining the online conversation in ways that are appropriately circumspect.

The first step, says Mr Jarvis, is to tear down any walls around the website. Nowadays "it's not content until it's linked," he says, and bloggers will not link to articles that require logins and subscriptions to be viewed. This has immediately obvious effects (see chart 2). The sites that bloggers link to most are the online New York Times, CNN, the Washington Post, Yahoo! News, USA Today and the BBC. These are free or mostly free sites and thus, in effect, part of "the" conversation, because they are already part of a great many conversations.

By the same logic, news sites should avoid the still surprisingly common internet sin called "link-rot". This refers to websites that publish an article under one web address (or URL, for "uniform resource locator"), but then change the URL when archiving the article. "If you break your links, you break your inventory," says Jerry Michalski, the media consultant, "and nobody links to rotting links."

Free access and permanent links are two specific examples of a new "story-centric" approach that Jupiter Research, an internet consultancy, advises newspaper companies to adopt for their web editions. Instead of assuming that readers will start on the front page, editors should expect them to enter at any point, probably having started out from Google's search page or a blog or an e-mail from a friend with a link. This makes a big difference. It means that every single page needs navigation aids to help readers along in their journey. For publishers, says Jupiter, it requires "deconstructing their websites--treating individual stories (and not the website) as their most important product."

The next step is to allow--indeed, encourage--reader participation on individual pages. This could start with a simple star-rating system of each article. Deeper engagement would include comment panes at the bottom of stories (like those below blog posts), or blog discussions between the journalists and invited guests. As with some group blogs today, contributors could be required to log in, either under their real name or a pseudonym. This leaves reputation trails and discourages vandalism. "Just as more blogs will look like newspapers, more newspapers will have blog-like aspects," says Paul Saffo at the Institute for the Future.

Admittedly, this kind of advice can sound like woolly new-age claptrap to newspaper publishers. They want to know whether there will still be a long-term business model for things like investigative reporting and fact-checking. Ironically, they are finding support among their internet rivals, who tend to be idealists. Craig Newmark, of Craigslist, says that "journalism needs to become a community service rather than a profit centre," and is working on making this happen. As The State of the News Media puts it, "the worry is not the wondrous addition of citizen media, but the decline of full-time, professional monitoring

of powerful institutions." That, after all, is what a free press in democracies is supposed to be for.

## The Wiki Principle

Are many minds better than a few?

WHEN people express scepticism about participatory media, they usually have people like Brian Chase in mind. Mr Chase is a 38-year-old from Nashville, Tennessee, who until recently worked in the middle-management layers of a courier firm called Rush Delivery and seemed destined to remain entirely unremarkable. For reasons known only to himself, however, Mr Chase last May decided to play a joke, "a joke that went horribly, horribly wrong", as he would later tell his local newspaper, the Tennessean.

His joke consisted of a hoax entry on Wikipedia.org, a free online encyclopedia that anybody--anybody at all--can edit, simply by clicking on a button that says "edit this page". Mr Chase posted a biographical article on John Seigenthaler, a distinguished journalist (and former editor of the Tennessean) who in 1961 did a stint as assistant to Robert Kennedy, America's attorney-general at the time. Mr Chase, however, fabricated an entirely different life for Mr Seigenthaler, one that had him living in the Soviet Union, founding a public-relations firm and, most perniciously, suggested that he was implicated in the assassinations of both John and Robert Kennedy.

Normally, such vandalism is corrected within minutes on Wikipedia because other people see it, remove it and improve the entry with their own genuine insight--that, in a nutshell, is the philosophy and power of collaborative intelligence. This particular item, however, fell through the cracks. For 132 days, the libellous lies went unnoticed and remained on the site.

Eventually, some volunteer sleuths traced the vandalism to Mr Chase, who finally came clean last December and apologised profusely to an impressively gracious Mr Seigenthaler. With that, the episode became a scholarly footnote in media history.

A telling one, however. Reflecting on the incident in USA Today, Mr Seigenthaler succinctly summarised the promise and peril of the latest media revolution: "And so we live in a universe of new media with phenomenal opportunities for worldwide communications and research--but populated by volunteer vandals with poison-pen intellects."

For the most part, it is much more worthwhile to dwell on the phenomenal opportunities than on the poison pens. Wikipedia's promise is nothing less than the liberation of human knowledge--both by incorporating all of it through the collaborative process, and by freely sharing it with everybody who has access to the internet. This is a radically popular idea. Wikipedia's English-language version doubled in size last year and now has over 1m articles. By this measure, it is almost 12 times larger than the print version of the Encyclopaedia Britannica. Taking in the other 200-odd languages in which it is published, Wikipedia has more than 3m articles. Over 100,000 people all over the world have contributed, with a total of almost 4m "edits" between them. Wikipedia already has more "visitors" than the online New York Times, CNN and other mainstream sites. It has become a vital research tool for huge numbers of people. And Wikipedia is only five years old.

This success has made Wikipedia the most famous example of a wider wiki phenomenon. Wikis are web pages that allow anybody who is allowed to log into them to change them. In Wikipedia's case, that happens to be anybody at all. The word "wiki" comes from the Hawaiian word for "quick", but also stands for "what I know is...". Wikis are thus the purest form of participatory creativity and intellectual sharing, and represent "a socialisation of expertise", as David Weinberger, who is currently writing a book on collaborative intelligence, puts it.

Among the new media, wikis are the perfect complement to blogs. Whereas blogs contain the unedited, opinionated voice of one person, wikis explicitly and literally allow groups of people to get on the proverbial "same page". This is the main reason for the failure of a Los Angeles Times experiment with wikitorials, described in the previous article. Wikis are good at summarising debates, but they are ill-suited for biased opinion.

Wikipedia's numbers actually make it an anomaly among wikis. Joe Kraus, the co-founder of JotSpot, a provider of wiki software, reckons that most of the millions of wikis already in existence are designed for small, well-defined groups of people. Team members in a company, for instance, might use wikis to collaborate on presentations or project calendars. Wikis are communities, and "communities require trust," says Mr Kraus. Trust comes most easily when the people involved know one another or are accountable for their contributions. Given that the optimal group size for humans may be less than 150 members (see the article on blogging earlier in this survey), most wikis might be expected to be small. Darwin or intelligent design?

At first sight, Wikipedia seems too large for its contributors to be able to trust each other easily. How, then, does it work? A common assumption, expressed most cuttingly by Robert McHenry, a former editor-in-chief of the Encyclopaedia Britannica, is that Wikipedians trust in "some unspecified quasi-Darwinian" process, whereby accuracy "evolves" as more and more "eyeballs" examine an item. "Does someone actually believe this?", wonders Mr McHenry. He obviously does not. To him, Wikipedia is a "faith-based encyclopedia", based on "the moist and modish notion of community and some vague notions about information wanting to be free".

In fact, it turns out that such quasi-Darwinian logic is "not the way we talk about ourselves within the community", says Jimmy Wales, who started the (not-for-profit) Wikimedia Foundation that operates Wikipedia, as well as lesser-known sites such as Wiktionary, Wikinews and Wikibooks. Instead, says Mr Wales, the process "is much more traditional than people realise". Fewer than 1% of all users do half the total edits. They add up to a few hundred committed volunteers like himself, says Mr Wales--"a real community of people who know each other" and value their reputations. Besides "democracy" on the site, he says, there is occasional "aristocracy" (when editors with superior reputations get more say than others) and even occasional "monarchy" ("that's my role") in cases such as the Seigenthaler biography, when quick intervention is needed.

To put this process to the test, the journal Nature recently commissioned a study to compare the accuracy of a sample of articles drawn from Wikipedia and the Encyclopaedia Britannica respectively. Nature's experts found 162 errors in Wikipedia's articles and 123 errors in Britannica's. Jorge Cauz, Britannica's president, immediately claimed victory because Wikipedia had "a third more errors".

We are all fallible

Privately, however, Britannica's editors were shocked to have to concede that their creation contained any errors at all. Total accuracy, after all, is the main selling point for the old media. So Dale Hoiberg, Britannica's current editor-in-chief, commissioned his own review of the study and found that "Nature did everything wrong that they could possibly have done wrong." Last month Nature issued a rebuttal. But if it did get it wrong, it is not clear why it would have erred more for Britannica than for Wikipedia. Mr Hoiberg puts a brave face on it, claiming that "our model, although not perfect, is the best."

For a lot of new-media watchers, the most interesting thing about the episode was something entirely different: that Britannica, somewhat representative of old media in general, instinctively regards Wikipedia as a threat, whereas Wikipedians are not the least bit tempted to reciprocate. "I'm a big fan of Britannica's work," says Mr Wales, adding that he is not motivated by "disrupting" anybody, and is glad that Brockhaus, the biggest encyclopedia in Germany (where Wikipedia is very popular), appears to be doing better than ever. But why not have a free alternative as well? And why not test the limits of what social collaboration can do? Mr Wales is the first to admit that "there are some inherent limitations," and says they are busy trying to discover what they are.

Contrast that with the joyful reaction of Wikipedia's detractors to Brian Chase, the dodgy biographer (whose article was literally one in a million). Somebody who reads Wikipedia is "rather in the position of a visitor to a public restroom," says Mr McHenry, Britannica's former editor. "It may be obviously dirty, so that he knows to exercise great care, or it may seem fairly clean, so that he may be lulled into a false sense of security. What he certainly does not know is who has used the facilities before him." One wonders whether people like Mr McHenry would prefer there to be no public lavatories at all.

## Heard on the Street

Podcasting will change radio, not kill it

BLOG and wiki were already dictionary words in 2004 when Adam Curry, a former show host on MTV, used his own celebrity and the underlying technologies of blogging to popularise yet another next big thing: "podcasting" (which provided him with a new nickname, "podfather").

The word itself is hip but not helpful. The "pod" comes from Apple's iPod, a fashionable portable music player—a stroke of marketing luck for Apple, which initially had nothing to do with podcasting. The "casting" comes from broadcasting, which means sending a radio signal to an entire population in a particular geographic area at a particular time. Confusingly, in some respects that is the opposite of podcasting. But none of this matters any more. As with blogs and wikis, people are discovering podcasting as something genuinely new.

It works as follows. A podcaster records something—anything from music to philosophical ramblings, professional news or snorting noises—into a computer with the aid of a microphone, then posts this audio file onto the internet. There, people can listen to it and, more importantly, subscribe to a "feed" from the same podcaster, so that all new audio files from that source are automatically pulled down as soon as they are published. Whenever listeners dock their iPods or other music players for charging, the feeds that have newly arrived on the computers are transferred to the portable devices. People can then listen in their car, while jogging, or wherever and whenever they please.

It is not quite true, therefore, that podcasting is to audio as blogging is to text. Podcasting is about "time-shifting" (listening offline to something at a time of one's own choosing, as opposed to a broadcaster's), whereas reading blogs requires a live internet connection and a screen. More subtly, podcasts are different from blogs and wikis in that they cannot link directly to other podcasts. This makes podcasting a less social, and probably less revolutionary, medium.

Nonetheless, its rise has been nothing short of astonishing. Mr Curry's own podcast, The Daily Source Code, has several million listeners. Apple's iTunes, the software application and online music store that makes iPods work, currently lists 20,000 free podcasts and is adding them at a fast clip, all before podcasting's second birthday. Podcasting is even expanding from audio to video, although this trend is as yet so new that several words ("vodcasting", "vidcasting", "vlogging") are still vying for the honour.

For listeners, the appeal is threefold. First, they become their own programmers, mixing the music and talk feeds that they enjoy. This liberates commuters, say, from commercial radio stations that, in America especially, seem only ever to get dumber and duller. Second, podcasts liberate listeners from advertising, and thus put an end to the tedious and dangerous toggling between the car radio's pre-set buttons at 100km an hour. (However, some podcasters are experimenting with putting advertisements into their podcasts.) Above all, the time-shifting that podcasts make possible liberates people from having to sit in their parked cars to hear the end of a good programme.

For creative types, professional or amateur, the appeal of podcasting is much the same as that of other participatory media: it dramatically lowers the costs of producing content. All they need is a microphone, a computer and an internet connection, and most people already have those.

Hammed radio

Does podcasting therefore spell the end of radio? "I don't really buy into that per se; what we're really seeing is a big mash-up of stuff," says Mr Curry, the podfather. Podcasting, terrestrial radio and another newcomer, paid-for (ie, mostly advertising-free) satellite radio, are all carving out their niches in people's crowded media lives. The limiting factor of podcasting, says Mr Curry, is that it is "inherently asynchronous" (ie, not live). "If they find Osama bin Laden, don't go running to your iPod," he adds. Breaking news, call-in shows (an old-fashioned form of participatory media) and other live programming will still work on terrestrial radio.

This might lull radio bosses into a false sense of security, however. "I'm not sure that the average consumer is going to want to hear, you know, Joe podcasting out of his garage," says Mark Mays, the chief executive of Clear Channel Communications, America's largest radio broadcaster with 1,200 commercial stations. Mr Mays claims that when people buy an iPod they will reduce their radio listening for a few months, but then increase it again to educate themselves about new music. "And where else to go for music than their local radio station?" asks Mr Mays.

If they are young, they will go anywhere but to their local radio station, says David Goldberger, the music boss at Yahoo! "The odds that you and I like the same five songs in a row are very low," he says. "If you hate Metallica, you're not going to sit through three minutes hoping that the fourth minute gets better." To young people today, song sequences are simply "playlists", which happen to be among the easiest things to share with friends

online, so this is what Yahoo! concentrates on doing. It lets people listen to music (for a small monthly subscription or pay-by-download) and then rate the song. Yahoo! then uses its knowledge of the online communities formed by its users to recommend the right kinds of songs "by connecting you with other people who like the same music", says Mr Goldberger. The effects on radio, while not lethal, will therefore be large. Radio broadcasters understand that they need to make commercial radio less disagreeable to listen to, which above all means shorter advertising interruptions. This is why Clear Channel has introduced a campaign called "less is more", in which it sells fewer minutes to advertisers in the hope that this will drive up ratings and prices.

Historically, radio has been good at adapting. When Franklin Roosevelt gave his "fireside chats", radios were in the living room and families gathered round them during prime time. Then television came along, and radios migrated to the car for use during rush hours. Podcasting may herald yet another migration, to a place and context yet to be determined.

## Wonders of the Metaverse

A fantasy world where people make their own films

"LET'S build a really cool swing and see if we can get somebody to sit on it," says Philip Rosedale. A few clicks later, there is the swing, and quite an artful one. Onlookers have gathered to watch. One, named "mermaid", declines to sit on the swing, but another, called "ninja", hops on and rides for a bit. Then a dragon comes along that is so beautifully crafted that everybody stares.

Technically, all this is happening not in real life but in Second Life, a "metaverse" (for "metaphysical universe") created by Linden Lab, a San Francisco internet company. Mr Rosedale, its founder, says that Second Life is "not a video game but a place where people make things." This is hard to imagine until one sees it, but then instantly addictive. People who log on to Second Life create an "avatar" (ie, an online extension of themselves). As avatars, they mingle, go to parties, create what they wear and drive in, build the houses where they live, paint pictures and compose music.

Second Life is not as separate from real life as one might expect. Larry Lessig, a real-world author, recently gave a book talk in Second Life, and lots of avatars showed up. People own copyright in real life for the things they create in Second Life. Avatars trade their creations in "Linden dollars", convertible into hard dollars on Linden's currency exchange, which has a monthly trading volume of \$4m. One user, Anshe Chung, pays Linden Lab the equivalent of about \$200,000 a year to buy land in Second Life. Ms Chung turns a profit by developing this land into residential communities (such as "Hangzhou", "Gotland", "Emerald Island" and so on) and charging avatars rent. "It's the purest way of profiting from creativity," says Mr Rosedale.

A lot of the things created in Second Life are exported into real life, as fashion, songs and so on. One user, Natha Keir (whose avatar is called Kermitt Quirk) created an online multiplayer game called Tringo, which is a bit like bingo but more fun. Tringo started as a game within the game but has now taken on a life of its own outside Second Life.

Other avatars have created cameras and are filming things that happen in Second Life. In effect, some avatars become actors for other avatars who become directors. These new directors then post their films to websites in real life ("real" having become a slippery concept by now). "You can be the next Coppola here," says Mr Rosedale, as he watches one such film, in which a cowboy is just sauntering into a saloon and gun-slinging appears imminent. "Second Life reduces the cost of filming a movie to zero."

Second Life opened in 2003 and is now inhabited by about 100,000 people from around the world (still a small number compared with the video-game giants). Unlike earlier generations of video games, which appealed mainly to narrow demographic groups, Second Life is popular with women as well as with men, and with middle-aged people as well as teenagers. If there is a trend, Mr Rosedale says, it is perhaps that Second Life does best in places with bad weather, fast broadband connections and unexciting entertainment options. He considers British suburbs an excellent growth market.

In time, metaverses could disrupt the economics of mainstream film-making. Philip Evans at Boston Consulting Group estimates that Linden Lab has so far invested about \$25m into the Second Life environment. But as "about 90% of the content is created by the players", calculates Mr Evans, this works out at a total "investment" of perhaps \$250m, which brings Second Life up to the budgets of Hollywood blockbusters. "The production values are amazing," says Mr Evans. This potential economic disruption to Hollywood, he thinks, "could be the harbinger of something very much bigger."

## The Gazillion Dollar Question

So what is a media company?

FOR his first few decades in the media industry--at CBS, then Walt Disney, then Warner Brothers, where he was chairman and co-chief executive--Terry Semel felt pretty clear about what media companies were. He was running them, after all. Then, in 2001, he left Hollywood and went to Silicon Valley as the new boss of Yahoo!, the world's largest internet "portal" (gateway). A self-avowed technophobe who barely knew how to use e-mail, Mr Semel suddenly found himself in "meetings with a bunch of 23-year-olds". He already had the ambition to turn Yahoo! into the archetypal "21st-century media company", but suddenly he was no longer so clear on what that meant.

Mr Semel has spent the past five years educating himself, counselled by trusted advisers such as his daughters, aged 24, 19 and 13. The first does a lot on the internet, the second does everything on the internet, and the third "lives online" and has so many beeping devices that Mr Semel, who has a New York accent and the kind of humour that goes with it, occasionally wonders "whether she is trafficking". Between them, they have helped him to work a few things out.

The internet "is a much larger change than the coming of television" in the 20th century, says Mr Semel. In the past, "someone decided that the news goes on at 11 o'clock at night; people like my wife never even saw the news, because she never stayed up that late. We all grew up when somebody else was the programmer; now the user is the programmer." That is change number one. To Mr Semel it means that Yahoo! must do more than provide technology. "We decided to open Yahoo! up, so that anybody using [their personalised start page] MyYahoo! can instantly go wherever they want to go," even if that leads to the web pages of rivals. That credibility, he thinks, will keep users coming back for a "deeper engagement". As people spend more time on Yahoo!'s pages--news, blogs, e-mail, chat groups, photo and music sites and so on--whether as their final destination or as stops on a journey, Yahoo! can put more and better advertising in front of them.

Change number two, says Mr Semel, is that--unlike in television, say--"you don't need hits". Many small audiences are as good for advertisers as few large audiences, and indeed may be better. This has huge implications for content, turning it into one long continuum--from professional to amateur, from blockbuster to subculture niche. Chris Anderson of Wired magazine calls this stretched statistical distribution "the long tail". In his forthcoming book of the same title, Mr Anderson argues that old-media economics, which are biased toward the hits at the "head" of this distribution, are being replaced by new-media economics, which allow creation and consumption along the entirety of a much longer content tail.

Yahoo!, says Mr Semel, will therefore be happy to mix professional content and user-generated content, no matter how small its potential audience, on its pages. The general direction, however, is towards ever more user-generated stuff. In March, Yahoo! said that it would limit its own production of content.

Where does all this lead? "It will look more and more like a stock exchange," says Mr Semel. An exchange, that is, for users who "offer" (create) and "bid" for (search, navigate, share, enjoy) content. And a stock exchange for advertisers, who bid against one another to have their sponsored links placed in front of these users.

Open outcry

To most old-media executives, the conversation turns baffling at this point. They find it much more reassuring to insist that, in one sense, media companies will probably never change. They are still, at heart, audience aggregators that make money by selling advertising to third parties who want to reach those audiences, or by charging the audiences directly through subscriptions, or a bit of both.

Upon closer examination, this is not so reassuring. Using this definition, the media industry now includes strange newcomers. Google, for instance, "happens to be a media company run by technology people", says Larry Page, its co-founder, because virtually all of Google's revenues come from advertising. In fact, Google is the most valuable media company in the world, with a market capitalisation about half as large again as that of Time Warner, the largest "traditional" media company. This is remarkable because Google, an internet search engine with lots of other free internet services, explicitly does not produce that which media companies have traditionally manufactured: content.

"We're engaged in a semantic exercise," says Jeff Bewkes, the number two at Time Warner. "Is Google a media company? It's a weird discussion, what is a media company." Ultimately, he thinks, "everyone is going to the same media place but they're coming through different doors to get there." This still begs the question: What does that place look like? And do all the doors provide equally good access?

"The history of the world would suggest that the newer companies that were designed for the medium will prevail, and will then combine," says Jonathan Miller, the boss of AOL, a rival to Yahoo!, partner in search technology to Google and itself part of Time Warner. That

is because the newcomers are at ease in the long tail of content, whereas old-media firms tend to get stuck trying to generate hits.

Exchanges become necessary because people need help navigating around this huge continuum of content. In the present century, says Paul Saffo of the Institute for the Future, "you get large by allowing the many and small to gather on your lawn." This is the media equivalent of what eBay, a Silicon Valley neighbour to Google and Yahoo!, has done for the trading of secondhand goods among individuals. It is what Wikipedia has achieved as an encyclopedia. It is also very similar to what, say, the New York Stock Exchange does.

Vinod Bawa and John du Pre Gauntt at PricewaterhouseCoopers, a consultancy, argue exactly this in a report called "The Rise of Lifestyle Media". Successful media companies, they write, will become "marketplaces that let consumers search, research, share and configure their media experiences." To be good, these exchanges need to combine "a personalised media experience with a social context for participation." Instead of "exclusive ownership of content or distribution assets" (the stuff of old media), the media marketplaces will compete in their "knowledge of consumer activity", which they will use both to interact more intimately with consumers and to match them better to advertising that is unobtrusive and helpful (itself a novelty), and thus lucrative.

The analogy to marketplaces has another important implication: network effects. The value of networks (such as the telephone or postal systems) and exchanges (such as eBay or the New York Stock Exchange) increases dramatically as the number of participants rises. Once achieved, network effects also become barriers to entry by rivals. If they are looking for an exchange, for instance, both buyers and sellers will gravitate towards the market with the greatest liquidity in a given share or bond.

This is why a lot of new-media companies are now hurrying to create marketplaces with network effects before somebody else does. YouTube, a start-up launched about a year ago, lets people upload and share their own videos. It already transfers more data each day than the equivalent of an entire Blockbuster video-rental outlet. It goes without saying that Time Warner's AOL, Google, Yahoo!, Amazon and other internet companies are also working to exploit network effects.

This race to become the most liquid media marketplace has just started, and the winners are not yet obvious. But the giants, Yahoo! and Google, do have a head start. They already have network effects in their advertising, and emerging network effects in some types of media (text-based blogging, say) that can be transferred to other types (such as video). That is because the distinctions between different types of digital files are becoming increasingly unimportant (assuming a good broadband connection). To savvy teenagers, it's all just stuff passed around among friends.

A tale of two markets

As it happens, Yahoo! and Google have very different visions about what a media exchange should look like. This might be surprising, because on the surface the two companies are very similar. Their headquarters are in adjoining and equally drab suburbs; each was founded by two friends at Stanford University; and "both have assembled audiences of users the likes of which the world has never seen," says Michael Moritz at Sequoia Capital, the lucky venture capitalist who early on invested in both of them.

But Jerry Yang and David Filo, Yahoo!'s founders, started their company as a hobby, says Mr Moritz. It was always meant to be a media company, and a rather relaxed, human one at that. Larry Page and Sergey Brin, by contrast, have always been "intellectually obsessed" with their mathematical algorithms, says Mr Moritz. This shows. Today, Yahoo! does interesting research into the sociological aspects of the internet, whereas Google hires the world's top computer geeks.

This is not unlike, say, the rivalry between the New York Stock Exchange (with its tradition of open-outcry floor traders) and the NASDAQ (where trading has always been done by computers). In news, for instance, Google displays stories selected by computer algorithms, whereas Yahoo! uses human editors to select the line-up. Caterina Fake at Yahoo! (and the co-founder of Flickr) says that Google's people "solve problems by brute-force computation", whereas Yahoo!'s approach is "about people, behaviours, sociology". Speaking for Google, Tim Armstrong, its advertising boss in North America, counters that Yahoo!'s talk about "creating a community has some of that old-media tone about it; is the future for corporate-created communities or user-created communities? Google has a high trust level in users." It is a religious war, in short, but one where worshippers for once get the benefit. Yahoo! is working on the social "folksonomies" described earlier in this survey. Google is working on solving problems such as providing (without charge) the enormous online storage required for all this uploading of media files. It is also working on the economics to ensure that not only Google but its users too get some of the financial benefits of their creativity. Google Video, for instance, is a service (or rather, the rough draft of one) in which Google lets anybody upload video. The main innovation is that the creators can determine whether their video is free or has a price. If it is charged for, the creators get 70% of the purchase or rental money and Google keeps the rest.

Where does all this leave old-media companies? For a number of years, they might continue to do well without changing, because many innovations (like Gutenberg's movable type) take decades to become mainstream. A few of these companies stand a decent chance of turning themselves into a genre-specific brand (such as "family content" for Walt Disney). Others, such as Viacom, which recently split its distribution and content into separate companies, are preparing for a future as content producers at a specific point in the "tail". Yet others, such as News Corporation and Time Warner, are staying vertically integrated for now, and trying to combine old-media empires with new-media marketplaces (MySpace and AOL, respectively). But this is risky, since "in an attempt to protect the one you could screw up the other," as Mr Evans at Boston Consulting Group puts it. For old-media moguls who have become new-media moguls, such as Yahoo!'s Mr Semel, all of this is tremendous fun to watch. "Until recently they were just being protective, keeping their arms around their copyright," says Mr Semel about the old industry that he left behind. "The faster they start to pay attention to making stuff for people like Yahoo!, the better for them." They've been warned.

## What Sort of Revolution?

Both good and bad--but it's too early to say in what proportions. As a rule, some people, such as Jacobins, tend to be more enthusiastic about revolutions than others, such as monarchs. Another fairly reliable rule is that revolutions abrupt enough to be associated with a single year (1642, 1789, 1848, 1917) tend to cause trouble but rarely bring lasting change. By contrast, revolutions gradual enough to be associated with a name (Renaissance, Reformation, Industrial Revolution) often do have enduring effects. A third rule, or hypothesis, might be that revolutions seem never to be entirely for the better or the worse, but somehow manage to combine both.

This survey has argued that society is in the early phases of what appears to be a media revolution on the scale of that launched by Gutenberg in 1448. This invites comparisons. There are Jacobins and monarchs to be found in both revolutions. In the first, the Jacobins were, by turns, printers, publishers, Protestants and writers; in today's revolution, the Jacobins tend to be those bloggers, vloggers and podcasters that bay for the blood of the odious "MSM" (mainstream media). As to monarchs, the first revolution had popes, monasteries and the real thing; today's revolution has, well, the MSM. Both revolutions are firmly in the category of gradualist, name-not-year revolutions.

That leaves benefits and evils. Gutenberg's revolution undoubtedly had enormous democratising effects. It enabled entire populations to read the Bible in their own language, liberating them from Latinate clergies that had kept them in superstitious serfdom. Further on in the revolution, people got news from far-flung corners of the world; one of the things that impressed Alexis de Tocqueville during his travels through America in 1831 was that even frontier families in remote Michigan had weekly newspapers delivered to their doorsteps. And the dramatically lower cost of disseminating the written word allowed many more people to express themselves creatively.

Each of these benefits also seems to have had a dark side. The availability of religious texts in the vernacular led to literalist and fundamentalist movements, and indirectly to religious wars. The surge of textual expression produced not only classics but also pornography and propaganda. Printing presses reproduced "Mein Kampf" just as accurately as the Gospels. Hell or heaven?

Against this backdrop, the big thinkers about today's media revolution tend to veer towards extremes of optimism or pessimism. Often the alignments are surprising. For instance, Michael Moritz, the venture capitalist who became famous for spotting both Yahoo! and Google, has a strongly pessimist streak. He worries about "amplification of the internet soapbox" and imagines what role user-generated media would have played in "1931 in Munich, how easy it would have been to broadcast the message; I think the Nazis would have got power quicker."

Paul Saffo, a futurologist and one of the world's most enthusiastic technophiles, also looks at the downside. "Each of us can create our own personal-media walled garden that surrounds us with comforting, confirming information and utterly shuts out anything that conflicts with our world view," he says. "This is social dynamite" and could lead to "the erosion of the intellectual commons holding society together...We risk huddling into tribes defined by shared prejudices."

Now for the optimists: Lee Rainie, the director of the Pew Internet & American Life Project, a research foundation, believes that "people will become not less but more aware of differing arguments as they become heavier internet users," because contradictory views are just a hyperlink away. A survey by Pew appears to confirm this view. Mr Anderson of "The Long

Tail" says that "opinion is a marketplace, and marketplaces work when you have liquidity." Liquidity is exactly what participatory media provide.

Some people worry about what the new media will do not only to democracy but also to brains, thoughts, grammar and attention spans. These concerns usually arise out of encounters with teenagers in their native habitat--ie, in front of screens with several simultaneous instant-messaging "threads" ("cu2nite bfz4evr"--"see you tonight and best friends forever"), besides iTunes and a video game running in the background, blogs in the foreground, and homework in the small window to the bottom right.

Other people are not worried at all. Steven Johnson, the author of "Everything Bad is Good for You", argues that the very things about new-media culture that scare older generations actually make younger generations smarter, because participatory media train kids from an early age to sift through and discard clutter, thus "enhancing our cognitive abilities, not dumbing them down".

Linda Stone, a former executive at both Apple Computer and Microsoft and now a consultant, argues that the affliction of "continuous partial attention" is in fact a hallmark of the era that is now ending, not the one that is starting. For the past two decades, Ms Stone thinks, many people have felt overwhelmed and anxious, constantly afraid that they could miss out on social opportunities if they concentrate on any one thing. This is now producing its own backlash, Ms Stone argues, because as people "long for protection and meaningful connections, quality over quantity", they are "discovering the joy of focusing".

Many new-media companies understand this, she says. Just as Google calms the chaos of the web with a clean white page, other companies are working on the filtering technologies that could--counter-intuitively, perhaps--make the era of participatory media more serene than the era of mass media.

The honest conclusion, of course, is that nobody knows whether the era of participatory media will, on balance, be good or bad. As with most revolutions, it is a question of emphasis. Generally speaking, people who have faith in democracy welcome participatory media, whereas people who have reservations will be nostalgic for the top-down certainties of the mass media. Joseph de Maistre, a conservative who lived through the French Revolution, famously said that "every country has the government it deserves." In the coming era, more than ever before, every society will get the media it deserves.