Cites & Insights: Crawford at Large

Volume 2, Number 5: April 2002 ISSN 1534-0937 Walt Crawford

The Literacy "Crisis": Good News—Or Is It?

Surely you remember the shocking "facts" about the adult literacy crisis in America? Forty-seven percent of adult Americans are functionally illiterate—or at least they were in 1992, according to *Adult Literacy in America*, published by the National Center for Education Statistics. That was devastating news back then and has continued to be heard almost as a drumbeat in some discussions: nearly half of Americans can't read.

I don't recall seeing similar coverage for a recent reconsideration of those figures, based on looking closely at the survey on which they were based. Same publisher, 2001, *Technical Report and Data File Users Manual for the 1992 National Adult Literacy Survey*. I base these comments on a secondary source, "Will anyone accept the good news on literacy?"—an essay by Dennis Baron in the February 1, 2002 *Chronicle of Higher Education.* Other than one or two newspaper articles, that's the only mention I've seen of this thrillingly titled reconsideration.

What's the change? As much as an order of magnitude. By using a more plausible definition of functional literacy—or, rather, by reconsidering how to score the survey responses—the new study shows functional illiteracy rates anywhere between five and 13 percent. The numbers might be significantly lower, for reasons cited by Baron.

Baron claims that the authors of the original study had, in essence, drawn their conclusions before analyzing the numbers. They assumed that literacy was a problem; they looked for reading problems more than for reading success. I'd love to see the questions in the original survey, but we do know that if you got less than 80% of them "right" (and some were open-ended, not multiple choice), you were considered functionally illiterate.

Do you believe that half of adults can't read well enough to function in society or that they couldn't in 1992? I didn't—it struck me as implausible—but I never questioned the Authorities. I should know better. So should we all.

This isn't the only case of its kind. I've seen horrifying articles about America's scientific illiteracy, and when you see the claimed number of believers in astrology, alien abduction, and creationism, it's hard not to buy into the panic. But I've also seen some of the questions used to arrive at the alarming figures and recognize that, as an adult long out of college, I wouldn't do that well on the test either. For that matter, there are those who would assert that I'm ignorant if not illiterate: I've read shockingly few of the classics, prefer CBS to PBS, and have ongoing problems with punctuation and sentence structure. It all depends on where and how the bar is set.

Inside This Issue

Doom crying gets press. It also gets funding. Positive messages do neither. That's a shame. It's particularly a shame, I think, because there's such a difference between trying to cope with 5% to 13% functional illiteracy and trying to deal with an overwhelming 47%. One's a problem worth addressing; the other looks like a sign of societal breakdown.

Questioning the Improvement

Who among us doesn't subconsciously pay more attention to reports that resonate with our own beliefs? Presumably, the purest scientists and scholars deal with new material in a personal vacuum: they are, as they assure us, interested only in the Higher Truth and always willing to see their own results and assertions undermined. In practice, I think that good scientists (specifically, "hard scientists" such as chemists and physicists) *do* look for contrary results and examine them carefully; without that openness,

science can't move forward. Even there, I'd imagine a scientist is more pleased to find new confirmation of their theories than to find them shattered.

I wrote the comments above—down to the subheading—with the pleasure of confirming a longtime belief. Just as I find it hard to reconcile assertions that today's kids are somehow dumber than we were with evidence that today's kids take to technology like ducks to water, I find it hard to believe that nearly half of adult Americans don't read well enough to function in society—the only definition of "functional illiteracy" that makes sense to me.

But did the new report *really* undermine the original publicity, or is Baron overinterpreting the report in a different direction? One way to find out was to go to the report itself, which happens to be available on the Web.

Fine—except that the report is 621 pages long! Maybe Dennis Baron plowed through the entire 621 pages before preparing his *Chronicle* piece. I'm not dedicated enough to do the same in order to confirm (or question) his findings for this small audience! But at this point, I was beginning to be uncomfortable with the situation: surely the 1992 summary wasn't *that* far off?

I downloaded and read a couple hundred pages, selecting the portions that seemed most cogent to evaluating claims of overall literacy. I read them carefully, applying my moderate statistical background, common sense, and literacy to the task. If the rest of these notes seem to waffle—I encourage you to download the whole report, read it, and draw your own conclusions. Send me email summaries: I'll run them in future issues if they're coherent and nonlibelous, and if space permits. (I won't hold my breath, but that's a sincere offer.)

Some items are worth noting. The definition used for [functional] literacy was reasonable: "Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential." But, as applied, this goes far beyond what you might think of as literacy (being able to read and comprehend prose)—for example, it includes significant numeracy skills, called "quantitative literacy" in the study.

The study did *loads* of statistical imputing—necessarily, since each respondent answered only a few questions and many respondents didn't complete the questionnaires. The preference of the researchers becomes clear in a number of statements such as this one: "Ignoring the pattern of missing data would have resulted in overestimating the literacy skills of adults in the United States." Think about that one for a while: it's an assertion that makes most sense if you assume there's a problem.

Much of that is beside the point. As I understand it, the key point is one that Baron doesn't quite state correctly. It's not that adults had to answer 80% of the questions correctly in order to be considered functionally literate. It's that they had to answer in such a manner that, after statistical manipulation, you could assert an 80% confidence that these adults could carry out literacy-related tasks *most of which they hadn't been asked to perform*. None of this is necessarily unreasonable or horrifying: it's what deep statistical inference is all about. I'll admit that the inference in this study got deep enough that I started looking for a life jacket, but you can attribute that to my lack of a Ph.D. in sociology.

Tasks at hand weren't all trivial. The report includes a few samples. One shows a pediatric dosage chart for a children's pain reliever, where dosage is stated according to age and approximate weight range—for example, "6 to 8 yr/44-62 lb; 9 to 10 yr/63-79 lb." The question: How much syrup should you give a 10-year-old child who weighs 50 pounds?

The discussion says that, in order to answer this question correctly, the reader must read an asterisked note relating to the Weight Range column to find that "the correct dosage is to be based on weight not age." The actual footnote, in five-point type quite a ways from the chart itself: "If child is significantly under- or overweight, dosage may need to be adjusted accordingly." Or, at actual type size:

*If child is significantly under- or overweight, dosage may need to be adjusted accordingly

Now, you can go on to another tiny-type note: "The weight categories in this chart are designed to approximate effective dose ranges of 10-15 milligrams per kilogram." If you know enough about metric measure, that suggests that weight matters more than age—but if you don't have great vision, you're illiterate in this case. Another example shows a newspaper ad for home mortgages, showing the monthly payment and term for each loan amount; the question is how you would determine how much total interest you were paying. Quick: write that down! The interviewer is sitting there patiently waiting, $20 bill in hand…which, of course, you get whether you answer the question right, mess it up, or just skip it. (This isn't a hard question, since they're not asking for the actual interest amount, just the methodology. I'd multiply the payment amount times the number of payments, then subtract the principal.)

The problem isn't the questions, although knowing the questions might help us interpret what they mean by literacy. The problem—one of the problems—is that the final numbers are based on assertions of the likelihood that people are "able to do" literacy-related tasks required to function in society.

(Andrew Kolstad, who wrote the key chapter, uses quotes around that phrase: it's absolutely key.) This study used an 80% probability level; other similar studies used a 65% probability level.

What if you turned it around—concentrated on the number of adults *unlikely* to succeed at literacy-related tasks? I can suggest common-sense reasons that people will try harder in real life than they will when completing a survey to get their $20 reward, and I *will* suggest that people do better when they try harder and when it matters more.

If you accept all the statistical weighting and ignore a bunch of population issues that Baron addresses in his brief article, you could turn this around to argue that someone is *clearly* functionally illiterate if it's 80% probable that they'll fail to carry out literacy-related tasks needed to function in society. If you use that cutoff, only five percent of U.S. adults fall into the lowest category, another five percent in the second lowest—and it's not clear that the second level implies functional illiteracy. At the other extreme, this generous cutoff places a full 62% of adults into the highest literacy category. That seems too high—but see below.

Kolstad makes a good case for using that 80%-failure figure. "When the purpose of reporting is to discuss what students or adults 'can't do,' there may be some value in reporting achievement according to a low response probability convention." Kolstad goes on to note, "Those who are as likely to get a question right as to get it wrong have not mastered certain skills, but they are not unskilled either." For the lowest level of literacy—and, again, we have no clear definition of what that level actually means—that turns out to be 15% of the study (the difference between the 5% at a 20%-probability or 80%-failure cutoff and the 20% at an 80%-probability cutoff).

At the original 80% cutoff, only three percent of adults qualify as highly literate in 1992—and I'll assert that's nonsense. That's the same level that places 20% of adults into the lowest category, another 27% in the second lowest, and yielded scare headlines that 47% of us were functionally illiterate.

Consider a 50% cutoff. If I'm right in suggesting that people who *need* to comprehend something correctly are more likely to do so than people answering a survey, then 50% may be "good enough for society." Where does that leave us? With nine percent at the lowest level, 13 percent second lowest, 24 percent at the highest level, and just over half of all adults somewhere in the middle. That sounds about right. Add in the effects of immigration, reading disabilities, and other aspects, and that nine percent is a whole lot less urgent than the original 47%.

Initial Conclusions

If I haven't lost you by now, here's the truth: This is one of those cases where there is no absolute truth. As with almost all statistical studies in the social sciences, there are only more or less supportable data manipulations and inferences.

What started out as a fun little citation of an article confirming one of my many biases—that things are rarely quite as bad as they seem—turned into something else, something dangerously close to my sometime obsession with numeracy. This is a reminder that "Trust but verify" is a tough slogan when verification involves 600 pages of heavyweight statistical discussions, still operating at one remove from the actual data.

Some adult Americans don't read well enough to succeed. Nobody knows how many. Some larger number, I'd guess, can read and comprehend just fine—but can't be bothered to think independently. I'm not sure who suffers more.

The Wayback Machine

I wrote the essay above for *Cites & Insights* 2:4 (March 2002), beginning shortly after the *Chronicle* article appeared. I found the situation shocking and puzzling, enough so that I downloaded (and read) substantial portions of the 2001 interpretation, glanced at some other sources, and got to work.

Three factors kept me from using the essay in the March issue:

- I wanted to review more secondary sources, including a report on the International Adult Literacy Survey of which NALS was a part—and the more sources I looked at, the more complex the situation became. Since the initial report's been around just under a decade, I guessed that another month would make no difference.
- There wasn't room in a 16-page issue, and I was reasonably happy with the mix of material. I wasn't willing to postpone one of the other sections to make room for this one, particularly since I sensed that more coverage was useful.
- The more I thought about the whole situation, the more I wanted to discuss it with a broader audience. Thus the heading above: another way of saying, "Welcome, *American Libraries* and *EContent* readers from the distant future of June 2002. Here's the adult literacy discussion I will have promised you, or at least the beginning of it." Which is to say that "DisContent" in the June 2002 *EContent* will discuss the controversy over functional illiteracy rates and how clever econtent design could add value by helping us study the situation in ways that traditional

media can't do as well, while "The Crawford Files" in the June/July 2002 *American Libraries* will discuss the controversy and how it relates to library reference, library-based literacy programs and, glancingly, the "digital divide."

What follows, then, includes comments on other resources I've looked at, resources that you should consider reviewing, and additional thoughts about the difficulty of pinning down literacy rates. More to follow in later issues? Probably.

Factsheet Problems

Do literacy organizations overstate the problem? In some cases, I think they do. The bullets that follow contain direct quotes from eight different factsheets, taken from the first page or two of a Google search on "functionally illiterate." Hundreds (and possibly thousands) of such factsheets exist, on the Web and elsewhere. I almost hate to mention the specific Web sites. I'm not trying to single out these organizations as problematic, but I'm tired of being accused of inventing straw men—thus the actual addresses.

- At www.covinaliteracy.org: "The U.S. Department of Education reports that 49% of the U.S. adult population is 'functionally illiterate'" Later, "An estimated one half of all Americans cannot fill out a job application." The first statement exaggerates the most negative reading of the 1993 report. The second would seem to be inherently improbable, given employment rates in the U.S. Looking at information from the 1992 survey itself, filling out a job application was a Level 1 task (thus, completed successfully by 96% of all those surveyed).
- At www.broomtiogaliteracy.com: "21%-23% (40 to 44 million adults) were at Level I … those we refer to as functionally illiterate." This is a reasonably conservative reading (and directly cites NALS). This factsheet, with roots in Literacy Volunteers of America (LVA), represents a clear statement of scope given the 1993 interpretation.
- At www.spoke-n-word.org: While this factsheet also uses Level I as "functionally illiterate," it includes the startling claim that "Forty-nine percent of the adults in Camden, New Jersey can't read." Quite apart from the astonishing percentage, "can't read" is a *much* harsher statement than "functionally illiterate." I've now looked at the adventurous statistical models that serve as the basis for this claim—but those models, unlikely as they may be, show 49% of Camden adults at Level 1. Adults at Level 1 *can* read; they just don't read very well. (Next installment, I'll take a look at the "synthetic estimates" used for the 49%.)
- At www.Danbury.org: This factsheet for another Literacy Volunteers of America chapter uses another clear, reasonable set of statements—given the 1993 interpretation.
- At main.nc.us: "[In] a 1985 study of 21-25 year olds, 80% couldn't read a bus schedule, 73% couldn't understand a newspaper story, 63% couldn't follow written map directions, and 23% couldn't locate the gross pay-to-date amount on a paycheck stub." Apart from the oddity of quoting a 1985 study in 2002, these figures have two characteristics: first, they seem ludicrous on their face unless the U.S. was a third-world nation in 1985; second, when taken in conjunction with the 1993 interpretation, they suggest that education made *phenomenal* leaps forward in a mere seven years.
- At home.fuse.net/mllwyd, taken from Laubach Literacy Action: "20% of American adults are functionally illiterate; another 34% have only marginal skills. 50% of American adults cannot read an eighth-grade level book." This sheet also repeats the startling 1985 study above. Suddenly, the total of "marginally literate" adults is up to 54%!
- At www.firstbook.org: "A study conducted by the U.S. Department of Education found that half the adult population does *not* possess the most basic level of reading ability." [Emphasis added.] That is an almost grotesque misstatement of the 1993 findings.
- At www.eastsideliteracy.org: While the primary factsheet uses the "conservative" set of numbers and implications, one factoid on a left-hand table is astonishing: "The United States ranks 49th among member nations of the United Nations in literacy." The source: "The Association of Lifelong Learning: Vol. 2, No. 2, 1987." That's a remarkable claim, one that needs loads of explanation, particularly since most functionally illiterate adults are still "literate" by U.N. definitions.

It's worth noting that LVA-based factsheets include numbers and claims that are reasonable, based on the 1993 interpretations. Others leave out qualifiers and round up in ways that make the problem more severe but also make the numbers improbable. Do you believe that, in 1985, three-quarters of young adults couldn't understand newspaper stories and four-fifths couldn't read bus schedules? I don't—any more than I believe that half of the adults in Camden, New Jersey "can't read" at all.

I glanced at a few dozen more factsheets. The pattern was similar, with about half of them making somewhat extreme claims. One consistent problem: *none* of them—LVA or otherwise—modified or softened their numbers based on the 2001 book. Maybe it's too soon, or maybe the book is too difficult to absorb. After all, if only 3% of us are highly literate, are there enough people around who can understand the 2001 book?

A Sampling of Longer Reports

Understand that these are only tiny samplings of the vast literacy (or functional illiteracy) literature. I can't read it all, and there would be little point. The first four noted here are from non-governmental sources; the next two from government agencies.

Jane M. Schierloh reviewed the 1993 *Adult Literacy in America* for the Ohio Literacy Resource Center; the review is at literacy.kent.edu/Oasis/Pubs/nalsrev.htm. It starts out well:

> Recently a colleague of mine heard a news reporter announce that the National Adult Literacy Survey (NALS) found that nearly half of Americans are illiterate. This is a gross misstatement of the survey's findings. However, the survey did find that 90 million, or nearly half of American adults have limited literacy skills.

Schierloh goes on to summarize, highlight, and interpret NALS findings "for the busy adult literacy provider." It's a good brief overview—but she never mentions the crucial "80% success" cutoff used to place people in one of the levels. Still, it's a clearly written summary of the 1993 findings, as good a quick overview as I've seen. **Recommended** with caveats noted.

It's probably unfair to mention "Illiteracy: an educational crisis" (www.aacs.org/publications/ces/cesilliteracy.asp) as part of this runthrough. The text appears under a header that makes the perspective clear: "Christian Education Series" next to the logo for the American Association of Christian Schools. On one hand, the claimed functional illiteracy rate is lower than most: "24 million functionally illiterate people." On the other, this paper adds in "cultural illiteracy" and "moral illiteracy" to make the desired case—public schools, by abandoning "sound religious and moral values" and "the uniqueness of our culture," are responsible for "the increased violence and disrespect of the youth in our country." To keep your children from this morass, you must assure that everything is evaluated "in light of Biblical truth" and, of course, send them to Christian school.

"Illiteracy," at www.efmoody.com/miscellaneous/illiteracy.html, uses a number similar to the "24 million" above but in a different context: "Over 10%--25+ million—cannot read or write at all. Another 45 million are functionally illiterate." I don't remember seeing a claim for 10% full illiteracy elsewhere, and it doesn't gibe with the usual 96% literacy rate using U.N. measures. You won't be surprised to hear that's why "the country is falling further and further behind in skills and competency." Oh, and "a illiterate person working hard probably isn't worth that much anyway." ("A illiterate" is one of quite a few subliterate phrases in this paean to illiteracy. Maybe that proves the writer's point?) How about this: "11% of management are functionally illiterate." And, in the next paragraph, a flat statement that "Most people don't read" said to be "borne out" by a 1992 study that 60% of households didn't buy books in the previous year. Later, there's a claim that the OECD said in 1998, "50% of the work force in the United States is not literate enough to work in a modern economy." Which makes the performance of the U.S. economy all the more startling, particularly as compared to Moody's vaunted Japanese with their superior skills and love of reading. Still later, a report that seems to conflict with earlier assertions: a Gallup poll said, in essence, that 84% of Americans read at least one complete book in 1990. Moody (Errold F. Moody Jr.) is a financial planner whose Web site is full of all-capital paragraphs and grammatical problems. His real thrust in this odd piece is aliteracy (choosing not to read), not illiteracy.

One of few reactions to the 2001 interpretation came from Irwin S. Kirsch of the ETS Center for Global Assessment. Reacting to a Washington *Post* article on the 2001 book, he claims that the reporter gets it wrong, asserts (correctly) that the 1993 study didn't say what it was reported as saying, and argues forcefully that the 80% cutoff is appropriate. While I believe Kirsch doth protest too much, I **recommend** this article (at www.ets.org/aboutets/litstandard.html) for some significant points that it does make. To wit, a reasonable goal is that every adult should be able to read at a 12th grade level, and lower reading capabilities *do* make it more difficult to achieve the widest possible range of goals. Where I think Kirsch fails is in ignoring the counterpoint: overstating the problem—suggesting that half the nation is nearly illiterate—undermines efforts to cope with real reading problems.

The National Institute for Literacy offers "Fast facts on literacy" at www.nifl.gov/newworld/fastfact.htm. On one hand, the "facts" use the same questionable assertions as the 1993 study. With that shortcoming, this particular document offers fairly clear statements—but, unsurprisingly, groups the top two literacy levels together (thus raising the question of why there is a fifth level). The sheet goes on to

provide comparisons with other countries that are difficult to make sense of. The set of Level 1 figures suggests that the U.S. is in much worse shape than most other countries, but high literacy (Levels 4 and 5) rates are better in the U.S. than almost anywhere else. Most of the document deals with figures other than actual literacy.

"Adult literacy in America" at www.nald.ca/fulltext/Report2 provides a fairly detailed, nuanced view of the 1993 study—*without* noting or questioning the key statistical assumptions. (The site is for Canada's National Adult Literacy Database.) Consider, however: "66 to 75 percent of the adults in the lowest level and 93 to 97 percent in the second lowest level described themselves as being able to read or write English 'well' or 'very well.' Moreover, only 14 to 25 percent of the adults in Level 1 and 4 to 12 percent in Level 2 said they get a lot of help from family members or friends with everyday prose, document, and quantitative literacy tasks. *It is therefore possible that their skills, while limited, allow them to meet some or most of their personal and occupational literacy needs."* (Emphasis added.) In all, a worthwhile and thoughtful discussion, although not yet modified based on the 2001 interpretation. If these numbers are fundamentally wrong, what does that mean? Nonetheless, **recommended**.

Benchmarking Adult Literacy

Finally—for now—consider *Benchmarking adult literacy in America: an international comparative survey*, issued in September 2000 by the U.S. Department of Education and available at www.ed.gov/offices/ovae/publicat.html. Some of these comments are based on a "program memorandum" and cover letter for the report, at www.ed.gov/offices/OVAE/AdultEd/InfoBoard/aememo200103.html.

The good news, and a shocking contrast to some of the claims above: the U.S. ranks among the most literate Western nations. Literacy proficiency of U.S. adults aged 26-65 is exceeded only by Canada, the Netherlands, and three Nordic nations. The bad news: U.S. high school dropouts are less literate than those in most other nations—one of those numbers that requires *enormous* background to make sense of. "Literacy inequality" is more extreme in the U.S. than in many other countries—as you'd expect in one of the most diverse nations. Most immigrants whose primary language is not English don't score well on English literacy tests: now *there's* a revelation! (And, to be sure, a real problem that libraries are heavily involved in solving.)

Now consider the report itself. The preface includes a mild overstatement: "Policy makers and researchers associated with the [1992] survey discovered that *at least one in four adults* lacked the minimum literacy skills needed for coping with everyday life and work in a complex, information-dependent society." That's a waffle: it either *overstates* the Level 1 numbers or severely *understates* the combined Levels 1&2 numbers—and, of course, uses the 80% cutoff in both cases. The international survey involved 75,000 adults in 22 countries—a shallower survey in all respects than the 26,000-adult NALS survey. The 80% cutoff was used in these studies; in many ways, they carry forward the methodology and problems of the NALS survey.

Beyond those comments, I can only **recommend** that you look at the report itself—and consider the ways you can manipulate numbers. There are far too many numbers here to comment on, particularly since most numbers come from fairly complex massaging of raw data.

What does it all mean? The more I read, the less I know. And, frankly, the less I *desire* to read. This kind of mind-numbing, badly designed, over-interpreted report makes me want to go watch television. That may not be the intended result.

Bibs & Blather

Regular readers might have five questions about this issue, all of them good ones:

- "Where's the Good Stuff?" Postponed until next issue—but there's some good stuff mentioned within the major essays this time around. "The Good Stuff" and "Trends and Quick Takes" are the only two features that typically appear in every issue, but "typically" doesn't mean "absolutely."
- "What about the rest of text-e?" Same answer, partly because of timing (the final fortnight hasn't ended), partly because I'd like to see whether I have any overall perspective.
- "Have you given up on filtering?" Nope—if all goes well, I'll have a roundup in the next issue. (Hmm. The next issue's starting to look full, and I haven't edited this one yet!)
- "Literacy?" It's a surprise to me as well—a big enough surprise that, for the first time, both of my "real" columns in June will be on aspects of the same topic. These things happen.
- "How on earth can you call this an April issue?" Easy answer: I've already received the April 2002 *Macworld*, *Consumer Reports*, and *Asimov's Science Fiction*. So what's new? Real answer: I really and truly do not intend to do

more than four issues in a calendar quarter. So this, the fifth issue in Volume 2, is April—starting the second quarter.

Lately, I'm finding that issues of *Cites & Insights* are ready when the growing sections and essays make them ready—a process I can't consciously predict. I planned this issue for March 17. In some alternate universe, maybe it is March 17.

Trends and Quick Takes

Perfect Compression!

Any long-time *Analog* readers out there? You might remember the Dean Drive, an obsession of the great editor John W. Campbell, Jr.. It had many of the elements of perpetual motion machines and true exothermic systems—that is, systems that *create* energy without converting matter. As I remember, once an independent party actually tested the Dean Drive, they determined that its supposed miraculous properties (demonstrated by reducing the measured weight of a platform running the drive) came about by disturbing the scale itself.

Perfect compression is like perpetual motion or faster-than-light travel (without using workarounds such as black holes). It's mathematically impossible—for reasons that don't require much more than common sense to demonstrate. It is mathematically impossible to create a program that will compress *any* file by at least one bit in total length (when combining the output file and needed tracking information) in such a way that the original file can be restored without change.

That's lossless compression—what you get in Zip archives, for example. It's quite different than lossy compression (e.g., Jpeg, MP3, MPEG-2 as used for DVDs), where the nature of the data is known and the intent is to restore a version that's *perceived* as equivalent to the original. You can't use lossy compression for spreadsheets, word processing, or software itself: there are no characters in this text that a person can't read because they're obscured by other characters or because your verbal acuity doesn't recognize them or care about them. Notably, lossy compression requires detailed knowledge of the kind of file being processed.

Here's a common sense demonstration that perfect lossless compression is impossible. If it's possible, then you can remove at least one bit from *any* file—including a file that's already been compressed. Thus, logically, you can reduce any file to a single bit without loss of original information. (Actually, you could reduce any file to *zero* bits if perfect compression was possible.)

In practice, any lossless compression algorithm will *expand* some files while compressing others. That appears to be mathematically demonstrable as well, but we've reached the limits of my mathematical prowess. In real life, of course, it works that way: Zipped archives of previously compressed files can be considerably larger than the originals.

But where there's money, there's always a will. A January 16 *Wired News* item discusses ZeoSync, a Florida company that announced on January 7 that it "has succeeded in reducing the expression of practically random information sequences." The press release asserts flatly, "ZeoSync's mathematical breakthrough overcomes limitations of data compression theory." More specifically, Peter St. George asserts that the company's algorithms constitute "a significant breakthrough to the historical limitations of digital communications as it was originally detailed by Dr. Claude Shannon in his treatise on Information Theory." That seems to negate the "practically random" loophole earlier in the release.

The press release is riddled with trademarks and oddly worded claims. Supposedly, the company collaborates with top experts throughout academia. The *Wired* item includes a brief interview with St. George, one that includes no details at all but asserts that details would be announced in "a few days" from January 16. Naturally, ZeoSync plans to be filing a bunch of "proprietary patents."

What happened "a few days" later? Nothing that's been reported. A handful of online and press outlets ran portions of ZeoSync's press release without much skepticism; some, including *New Scientist*, were more doubtful.

Claims of this sort have popped up over the years, sometimes as part of startup companies, including WEB Technologies in 1992 and Jules Gilbert in 1996 and beyond. (Gilbert didn't claim perfect compression—but *did* claim that 100:1 or 1000:1 lossless compression was feasible "if the input file is sufficiently large." Gilbert also claimed that he could compress a 3MB file to 50KB without loss of information.) Generally, such claims fade away after a few months as they are put to independent test.

Could ZeoSync be the exception? Watch for further news, but don't be surprised if there isn't any.

Here's Your Link, Where's Your Nickel?

Richard Stallman convinced me that I've been using "intellectual property" in a couple of cases (specifically my February "Crawford Files" in *American Libraries*) where I'm specifically concerned with copyright, not the broader set of IP issues.

Which is not to say that all's hunky-dory in the rest of the IP landscape. Heard about British Telecom and its claim to hold a valid, current patent on Web hyperlink technology? The company claims that, when it was doing a routine scan of its vast corporate patent holdings, it discovered that its "Hidden Page" patent covers hypertext links. The patent was filed in the U.S. in 1976, granted in 1989—and has expired in other countries.

So BT contacted America Online, Prodigy, and 15 other American ISPs in June 2000, asking them to buy a license to use hyperlinks. They all refused. BT then sued Prodigy, because it was the first commercial ISP (1984) and the first to "offer Web access to the masses," according to one of a string of *Wired News* articles on the case by Michelle Delio.

I know even less about patent law than copyright, but Delio's February 12 posting says "typically, patents and copyrights must be consistently and constantly defended by their holders in order to be considered valid." In other words, you'd think that after 12 years (for the patent) or 9 years (for Prodigy), it was a little late to sue. BT's out is that they didn't realize they owned a relevant patent. If BT wins, they'll almost certainly sue other U.S. ISPs and, possibly, corporations with Web presences.

A February 13 follow-up, commenting on the low probability that this case can succeed, includes wonderful quotes. This may be a "what the hell" suit, where a big company with lots of lawyers throws legal spaghetti at the ceiling to see if anything sticks. Bob Bemer, an 82-year-old programmer, comments in a February 14 followup that he came up with escape sequences while working at IBM in 1949 or shortly thereafter. He wrote an article about the methodology, putting it into the public domain. "Some programming and legal experts said Berner's escape sequence concept is more closely tied to current hyperlink technology than BT's patented claim." There's other prior art, of course, including Ted Nelson's hypertext work in 1965 and Stanford University work in the late 1960s. Berner "would really like to see BT's claims shot down just on principle." I love a direct quote from Berner that ends the brief February 14 piece:

> Advanced technology only happens when people take a basic idea and add to it. All this new patent stuff is crazy and counterproductive.

Stay tuned. This one won't go away any time soon.

The Cleansing Fires

You may have skipped over an item on page 19 of the February 2002 *American Libraries*, "Pastor's Potter book fire inflames N. Mex. town." You'd probably seen the photograph already—Alamogordo's Jack Brock preparing to throw more Harry Potter books on a bonfire. But while that photo and a brief story appeared elsewhere, the *AL* piece adds some interesting nuance. For example, the chair of the Otero Country Republican party refuted a report that the party had been among the many counter protestors across the street from the burning: the party "had not taken any official position" on book-burning.

Here's what charmed me: among the items burned in the cleansing fires, along with "a masterpiece of satanic deception" (Brock's description of Harry Potter), were copies of *Cosmo*, ouija boards—and *The Complete Works of William Shakespeare*.

No additional comment required.

Shared Wireless?

Neighborhood-area networks? A strike against the corporate oligarchy? Violation of service agreements? Or maybe a new reason for paranoia about your home computer network?

Home "Wi-Fi" (802.11b) networks may be dessert toppings and floor wax all in one. I've seen some real nonsense about the utopian capabilities of shared wireless networks, as though that bandwidth just arrives out of nowhere. Internet service providers are *properly* dismayed at the idea that your $45/month cable connection is serving as an open entryway into their network for anyone who passes by. (Given the economics of ISP and broadband providers these days, "free" networking may last about as long as free ISP service did.)

Steve Bass offers a different perspective in the "Home Office" column in *PC World* for March 2002: "Going wireless? Consider cost, security." He tells us why his four-PC home network is wired, despite the hassles of routing wires through crawlspaces. For one thing, the Ethernet connections are cheaper.

The other reason is at the heart of "shared" networking: anyone who's near your 802.11b network can become part of it—without your knowledge. Unless you add security *within* your network (more burdensome than using a firewall), such drive-by connectors could even use or corrupt your own files.

Speech Recognition Returns

People concerned about the future of voice recognition software had reason for dismay when Lernout & Hauspie went bankrupt after acquiring Dragon's software. Two of the top three programs were potentially off the market or, at best, not being developed.

The good news: ScanSoft picked up the software and has released Dragon NaturallySpeaking 6 Preferred (4200), incorporating the best features of

L&H's Voice Xpress 5. A March 2002 *PC World* mini-review gives it 4.5 stars. As always, good recognition requires lots of training—and fast touch-typists can probably beat the overall speed.

The February 26, 2001 *PC Magazine* compares the high-priced spread, Dragon NaturallySpeaking Professional Solutions 6.0 ($695), with IBM's new $230 ViaVoice for Windows Pro USB Edition Release 9. Both earn four-dot ratings; NaturallySpeaking earns the Editors' Choice for easier navigation and additional capabilities. The $199 Preferred version has similar usability and accuracy—which, in this review, ran as high as 99% after two hours of use, two training sessions, and running an acoustic optimizer. (I find it hard to believe that English speech recognition can achieve 99% accuracy; I suppose it depends on the metrics.) ViaVoice achieved 98.5% accuracy after some hours of use.

The Shrinking Web?

For once, I'm on the side of the believers. Yes, the number of registered domain names dropped more than 180,000 between November 2001 and December 2001. No, I don't think it has much to do with the long-term health of the Internet or the Web. A brief February 26, 2002 *PC Magazine* commentary suggests that it's due to the dot-bomb situation: thousands of domains registered at the end of 1999 for startup companies weren't renewed two years later because the companies aren't around.

I suspect there's more to it. Squatters—clowns who purchased thousands of domain names in the hopes of big rewards—have been disappointed, particularly as Google and directories make catchy domain names less important. Who in their right mind would pay thousands of dollars to renew unused domain names that may not be salable?

Product Watch

Adobe Illustrator 10

It's rare for *PC Magazine* to hand out five-dot reviews, particularly twice in one page of First Looks. That's the grade J.W. Olsen hands to Adobe Illustrator 10 ($400, upgrade $150) in the January 15, 2002 issue. The new version is "X-compatible," running on Windows XP and Mac OS X; it's still the vector leader, offers better compatibility with other Adobe products, and has "slicing" tools to allow faster-loading Web pages.

ScanSoft PaperPort Deluxe 8.0

Here's that second five-dot review. Alfred Poor says, "If you have a scanner, you should get PaperPort Deluxe 8.0… If you have a computer but not a scanner, you should get a scanner—and then get PaperPort." For that matter, you don't even need a scanner. "If you've ever wasted time searching for a lost document, struggled with a mountain of paper forms, or wished for an easier way to e-mail information to someone, you need PaperPort."

Samsung SPH-1300 Palm Phone

Maybe convergence makes sense for some people in some settings. Some of you may *love* this $500 device: a CDMA/analog Sprint cell phone that's also a color Palm. At 4.9x2.28x0.82" and six ounces it's bulkier than some cell phones but sleek for a color handheld with wireless communications built in. The display is 160x240, 256 colors, smaller than a standard Palm display; it comes with 8MB RAM.

HP cp1700d

Another neat product from HP shows up in the February 26, 2002 *PC Magazine*, earning a "perfect" five-dot rating. HP's Color Inkjet Printer cp1700d costs $600 including a duplexer; it can print 13x19" (tabloid) pages, attaches directly to a network with a $199 module, and prints rapidly and cleanly. That's all good, but not what makes the cp1700d special, and one of the first plausible networked inkjet printers around. This printer uses *stationary* ink cartridges, one for each color, sitting off to the side of the carriage. Four printheads have small reservoirs; the carriage returns to the cartridges for refills as needed. That makes the overall printhead lighter (and quieter?)—and it also means that ink cartridges can be much larger, reducing ink costs. HP claims 2.2 cents per monochrome page, 8.4 cents for a 20%-coverage color page.

Sensiva Version 3

After four positive comments in a row, you have to give me this one—even though the January 2002 *PC World* gives this $30 program four stars. What does it do? Lets you launch applications or carry out other "tiresome, repetitive actions" by drawing on your screen with your mouse. You have to draw the symbols just as shown on a cheat sheet, of course—but isn't it much faster and more intuitive to right-click your mouse and scrawl a huge "W" on your screen in order to open Word, instead of clicking on a desktop icon or Office toolbar?

If you're just sick of all those "tedious tasks" like moving to the top right corner of a window to minimize or close it, I'm sure you'll be happy to right-click and draw a slash on your screen instead. That's *so* much more obvious: just the thing for "im-

patient people" like Aoife McEvoy, the reviewer. To which I say: hey, it's your $30 and system overhead.

Super Mini Optical Mouse

This $50 Mac-oriented mouse from Atek seems like a good idea for PowerBook and iBook owners who don't like the TrackPad or want another button. It's tiny, an inch wide and 2.5" long, and it works well. Just one problem—but it's one that made me surprised to see this writeup in the February 2002 *Macworld*: the software that lets you program the buttons doesn't work under Mac OS X.

TransNote Gone, Pen Tablet Going

Some time back, I ran items on Sony's Vaio Slimtop Pen Tablet, a desktop computer using a stylus-sensitive LCD screen as combined screen and drawing surface. It struck me as a clever design for a niche market at a good price; early reviews of the system were positive.

Similarly IBM's ThinkPad TransNote, a portfolio with a ThinkPad on one side and a paper pad on the other—with direct capture of what you write on the pad. About the same price as the Vaio Slimtop, it was too expensive for its notebook capacity, but seemed like an intriguing concept for a niche market. I wasn't as thrilled with the TransNote; without handwriting recognition, it seemed too specialized.

According to a February 4, 2002 ZDNet News note, IBM has stopped manufacturing the TransNote. The item also says that Sony announced in January that the Slimtop was on its way out.

John Spooner, who wrote the item, suggests that these two failures may say something about the future of Microsoft's highly touted Tablet PC. It's a good point. As people are busily adding strange keyboards to PDAs and Pocket PCs, are they really anxious to buy overpriced devices that are too big for pockets, even more expensive than notebooks, and *don't* have keyboards? I don't have answers; heck, I don't even have a handheld or notebook computer.

PowerBoots!

Keep walking while you're talking—that's one future if SRI International and DARPA (yes, the same DARPA from which we got ARPANET, the Internet's direct ancestor) pull off one new idea. Boots with heels constructed of electroactive polymer, a plastic that generates electricity as it's squeezed and unsqueezed. Supposedly, you could generate enough electricity to power a radio or a cell phone.

This may be three years away (or more), but I'm not making fun or discounting the idea. Converting pressure to electricity: that's hardly new technology, although the specific material is relatively new. Soldiers generating the power for their own radios; hiking boots with built-in self-powered signaling devices; these seem like plausible developments.

Sonicblue ReplayTV 4040

A full-page review in the February 12, 2002 *PC Magazine* gives this $699 DVR a perfect five-dot rating. The reviewer is breathless: "No self-respecting television junkie should be without a digital video recorder (DVR). Thanks to built-in hard drives (and other gear borrowed from the PC arena), these devices let you do addictive things such as pausing and resuming live TV or recording hundreds of hours of programs you've chosen from an on-screen guide."

This model, with a 40GB drive, won't record "hundreds" of hours of TV. If you want broadcast-quality video, figure 13.5 hours—but if you pay $1,999 for the 320GB version, you could record just over a hundred hours. Or, since DVR owners are supposed to believe that "it's digital, so it must be better," you could record 320 hours of "standard"-quality video, which every *objective* review has tagged as visibly inferior to low-speed VHS.

This is one of the models that has broadcasters in an uproar, not only because of automatic commercial-skipping features but because of its "rebroadcast" capability. You can send recorded shows to someone else on your home network—or over the Internet, if you know their IP address. I wonder how worried the networks should be: sending a one-hour broadcast-quality program takes "anywhere from 10 hours to two days, depending on your ISP's outbound speed cap as well as congestion on the Internet." Now *that's* entertainment!

I'm bemused by this perfect review in the same issue as Michael J. Miller's encomium to broadband and a router review that tells us you can't live without broadband. If you're addicted to pausing live TV *and* you're spending 63 hours a month online because broadband's so keen…when do you eat, sleep, and have a life?

Following Up

Corrections, amplifications, apologies, sequels and other *small* direct additions to essays and other topics from the last couple of issues.

Broadband Optimism

In March, I noted John Dvorak's downbeat *PC Magazine* column on broadband. Not surprisingly,

Michael J. Miller disagrees vehemently with him in the February 12, 2002 editor's column, "Forward thinking." Miller assures us that "broadband is inevitable" and predicts that "almost everyone will eventually move to faster Internet connections" leading to "a revolution in computing no less important than the one that popularized the Web."

What does broadband do for the user? Miller "can check TV listings and movie times faster online than in the newspaper." Wow! He goes on to emphasize how much broadband would "help the industry," because broadband users spend so much more time online and use more streaming media.

Here's his list of benefits from broadband: "from amazingly customized, high-quality streaming video and more massively multiplayer games to grid computing, which harnesses the power of lots of computers working together." For gamers, I concede the point: If you desperately want companionship while absolutely rejecting *real* company, broadband's just the thing. Grid computing? Where's the benefit to the consumer? As for "amazingly customized high-quality streaming video"—the fact is, today's broadband doesn't support high-quality streaming video. At least not the way I define high quality (that is, *at least* broadcast, DVD, or SVHS quality). That requires another generation—and that generation only gets built if we all pay our big bucks for years to support the promise (which will cost *bigger* bucks).

Bill Machrone's Video Follies

An earlier "Good Stuff" item noted a Machrone "ExtremeTech" column, "No danger to Spielberg," about his travails doing video editing on a PC. His February 26, 2002 column (*PC Magazine*), "Video editing: readers know" offers some informed feedback from the "ton of reader mail" he received. Some video professionals like the PC just fine. If you're an aspiring videographer and a PC user, read the followup column for more.

Copyright Currents

Crosscurrents abound these days. The U.S. Supreme Court has agreed to hear *Eldred v. Ashcroft*, a case arguing that Congress' extension of copyright terms violates the constitution. Fritz Hollings, the "Senator from Disney," is holding hearings on his proposed SSSCA—an act that is so intrusive and swings the balance of rights so far in the direction of intermediaries that it makes DMCA seem balanced by comparison. (This time, a Democratic senator from South Carolina seems to be lead Bad Guy acting on Hollywood's behalf—and Republican congressmen, one from North Carolina, may be the heroes. You can't predict these things!)

Where's Cher When You Need Her?

Gayle Horwitz began recent coverage with a February 8, 2002 item (seen on Yahoo!): "Is Congress Mickey Mouse-ing with copyrights?" She notes that the Supreme Court included *Eldred v. Ashcroft* on its February 15 private conference agenda—the fourth time it was on the agenda. Lawrence Lessig, lead counsel, discussed the core of the case: "This is truly one of those unique cases where the issues are not political. This is about interpreting the original intent of the Constitution." The 1998 Sonny Bono Copyright Term Extension Act (CTEA) added 20 years to existing copyright—which now stands for individually created works at "life plus 70 years" and at 95 years for corporate works.

Eric Eldred has a Web site with the text of 50 classic books, poems and essays in the public domain. He and copetitioners argue that Congress, which has extended copyright terms 11 times since 1960, has overreached its constitutional authority. Two lower courts rejected the claims. Lessig notes that Disney has profited greatly by adapting works from *Grimm's Fairy Tales*—works that might still be under copyright given current trends.

The Supreme Court decided to hear the case. Several articles since have discussed the case and its implications. Dan Gillmor's February 19, 2002 column (from the San Jose *Mercury News*) at www.siliconvalley.com pulls no punches: "Copyright dictators are winning out." In a strong, **recommended** piece he says, "If the justices don't overturn the 1998 [act], they will be telling us that property rights and corporate interests utterly trump free speech and the public interest." As he notes, copyright began at 14 years with one 14-year renewal. That seemed to work pretty well—offering incentive to create works without retaining that "incentive" indefinitely long for corporate heirs. Gillmor sees no legitimacy to any of the arguments for copyright extension, including the "need" to bring U.S. laws in line with European copyright—which, if it's so absurdly long, is out of whack.

Kendra Mayfield weighed in at Wired News on February 20, 2002 (www.wired.com/news) with a **recommended** summary that highlights real damages being done by indefinitely-extended copyright. For example, film distributors won't spend the money to restore and preserve movies from the 1920s and 1930s because, with those films removed from the public domain (CTEA extends *existing*

copyrights, not just new ones), there's no revenue potential. In other words, while copyright acts as an incentive for creative work, grotesquely extended copyright serves as a *disincentive* for restoration, republication, and derivative work.

At Salon, Damien Cave posted "Mickey Mouse vs. the people" on February 21, 2002. Most of the article is a conference call with Eric Eldred and Laura Bjorklund, the lead plaintiffs in the case. Fascinating and **strongly recommended**. The plaintiffs assumed the Supreme Court wouldn't hear the case. They offer clear cases of how Sonny Bono's legacy damages the creative arts and offer reason for hope.

Jonathan Tasini offered a commentary in the March 3, 2002 Los Angeles *Times* (www.latimes.com), "Extending copyright helps corporations, not artists." Yes, the same Tasini who sued to protect the rights of freelance writers—and there's no conflict in the two positions.

I see a lot of nonsense in some of these articles from U.S. attorneys about how the First Amendment isn't violated by excessive copyright—but that isn't the only issue. Look above the amendments to Article I, Section 8 of the Constitution:

> The Congress shall have power…To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries.

Look carefully in those words for "effectively unlimited times" or "to promote corporate profitability." Maybe my eyes aren't working well these days.

You'll find much more material on the Internet, from anti-copyright ravings to justifications for CTEA. You can also find some of the court texts that lead up to the Supreme Court hearing (coming this fall). For example, *Tech Law Journal* (www.techlaw.journal) has the original district court complaint from January 11, 1999, *Eldritch Press v. Reno*. The same site has the District Court's decision (October 28, 1999) upholding the CTEA and the similar February 16, 2001 decision of the Court of Appeals, a lengthy finding that includes a dissenting opinion. Finally, the opinions of that court denying a rehearing—including a dissent from two judges—appears at laws.findlaw.com/dc/995430d.html.

My guess is that we won't hear much more about this until the Supreme Court hearing this fall—and that we'll hear a *lot* more about it then.

SSSCA: Security for Who?

How did Fritz Hollings become an expert on PCs and other consumer electronics devices—so expert that he *knows* they all need digital "copy protection" chips? He must know—he already prepared the invidious Security Systems Standards and Certification Act, which would prohibit selling or distributing "any interactive digital device that does not include and utilize certified security technologies"—and would have the Commerce Department impose standards if industry hasn't agreed on them.

Hollings planned to introduce the bill last September. Stuff happened. Now he's back—but starting out with hearings. The first hearing, held February 28, featured Michael Eisner from Disney, the MPAA's Jack Valenti, and representatives from Intel. Valenti struck before the hearings with a Washington *Post* piece asserting the need for security devices. Disney has already called SSSCA "an exceedingly moderate and reasonable approach." Leading up to the hearings, RIAA claimed that the slight revenue declines last year were largely due to piracy and CD burning. (These notes from Declan McCullagh's February 27, 2002 item on *Wired News*.)

McCullagh's own politechbot.com (www.politechbot.com) includes various materials about SSSCA, including a peculiar February 27 letter from a bunch of tech CEOs to the biggest music and movie CEOs. The letter argues the merits of voluntary groups and, in effect, promises that Dell, IBM, Compaq, Intel, and the rest will roll over to assure that producers have all the control they feel they need. User rights and fair use never enter into the letter. Another McCullagh article at *Wired News* on March 4, 2002 sets up an odd new situation: a Democrat's trying to take away consumer rights—and such left-wing radicals as Dick Armey and John McCain dislike the concept of SSSCA. Armey is taking a consistent free-market position in this case (he also opposed the V-chip: is he against CIPA?), and deserves praise for that stance. Notably, the Republican chair of the House Judiciary Subcommittee on Intellectual Property, Howard Coble (North Carolina), feels that SSSCA is "too interventionist."

An odd counterpoint comes from *BusinessWeek Online* in the form of a March 4, 2002 commentary by Alex Salkever: "Entertainment execs, fear not the Net." He argues that it's absurd to try to keep people from copying music and that producers are failing to see the big picture. While it's an interesting piece, there's at least one silly-season aspect to it.

> Now circulating in the digital underground is powerful software that can take an analog signal and convert it back into an MP3 file for swapping or

> trading. That means any CD player can be transformed into a platform for taking legally purchased music that might otherwise get blocked by copyright-protection systems and converting it into a more convenient format that can play in car stereos or on portable players.

I don't know about the "digital underground," but there's nothing exotic or "powerful" about software that can convert analog audio to digital form, whether CD-equivalent .WAV or compressed MP3. Microsoft throws it in with Windows; Apple throws it in with the Mac OS; MusicMatch and others provide more powerful versions at modest prices. But it's a minor nuisance—you add two digital/analog conversions, each with a possible loss of quality (nowhere near that caused by 10x MP3, to be sure!), and you can't identify the tracks automatically when they're converted through this method.

Copy-Protected Pseudo-CDs

Start with Neil McAllister's January 31, 2002 *SFGate* article, "The big rip-off." Klaus Petri of Philips offers this simple comment about copy-protected discs: "Those are silver discs with music on them, which resemble CDs but aren't." Discs with Midbar's Cactus Data Shield don't qualify for the CD logo, as far as Philips is concerned. McAllister notes that people have already ripped "protected" discs to MP3 form and that these discs may not work on car CD players or DVD drives. Gerry Wirtz at Philips: "We worry they don't know what they're doing."

Paul Boutin offers a similar story February 4 on *Wired News* with a peculiar twist: he thinks that Philips' actions "may only be hastening the death of the 20-year-old compact disc format." Maybe.

At Newsbytes.com, Michael Bartlett reported on a Digital Media Summit panel of "industry experts." One of them praises online distribution—you know, we're *all* waiting for broadband and just *love* to pay every time we hear music: "forces are inevitable and irresistible." One music executive said to stop worrying about copy protection and move toward "affordable" online music (presumably abandoning CDs): a copy-proof CD is impossible. From the report, it appears that the entire "summit" was on how to more efficiently separate consumers from their money using technology; after all, in the "entertainment business," the second word is the one that matters.

A February 12 note on Cnet says Midbar claims more than ten million "CDs" with its copy-protection technology have been released in the U.S. and Europe. The Israeli company is thrilled and will keep on improving the technology. Isn't that sweet?

Wired News has another Declan McCullagh item on March 7, 2002 noting that Rich Boucher plans to introduce legislation banning or regulating copy-protected CDs, in order to protect consumer rights. Hilary Rosen of RIAA calls such discs "a measured response to a very serious problem facing the music industry today." (Note how moves to take away consumer rights are always "measured" or "moderate," as opposed to us radical consumer-thieves.) Rosen calls copy protection a "self-help technology." So are guns in the hands of thieves.

I haven't purchased any audio CDs lately. When I do, I'll pass by any CD without the "Compact Disc Digital Audio" stamp or with any admission of copy protection—and, since my only CD players are my PC, a DVD player, and an auto stereo, any disc that doesn't play in all three is defective and will be returned. With its publisher going on a personal blacklist. Heck, maybe I have enough music already.

Copyright Miscellany

- Steven M. Cherry discusses copyright licensing in "Getting copyright right," posted February 19, 2002 at *IEEE Spectrum Online* (www.spectrum.ieee.org). It's a different take on possible ways around *some* copyright-related problems, although I don't believe it addresses key issues. Still, worth reading.
- Hal Plotkin's "All hail creative commons," February 11, 2002 at *SFGate*, describes the new initiative of Lawrence Lessig and "a small band of collaborators." Creative Commons "will make available flexible, customizable intellectual-property licenses that artists, writers, programmers and others can obtain free of charge to legally define what constitutes acceptable uses of their work." This isn't "copyleft" but, potentially, a new middle ground for creators and users to balance rights. Lessig's involvement suggests this will be worth watching.
- The big studios sue over the damnedest things. One more proof came with suits against ReplayTV arguing that it's illegal to record and store shows based on the genre, actors, or words in an online program description. (Information and some wording from a February 11, 2002 Los Angeles *Times* article by Jon Healey.) "If a ReplayTV customer can simply type 'The X-Files' or 'James Bond' and have every episode of 'The X-Files' and every James Bond film recorded in perfect digital form and organized, compiled and stored on the hard drive of his or her ReplayTV 4000 device, it will cause substantial harm to the market for prerecorded DVD, videocassette and other copies of those episodes and films." Huh? But

then, the studios sued Sony when Beta came out. That time, they lost. Maybe if they'd called the right senators instead of going to court… Of course, now Sony's on the other side of this fight. More's the pity.

- Rick Boucher contributed a heartwarming perspective to at Cnet's News.com on January 29, 2002: "Time to rewrite the DMCA." The Virginia congressman discusses the imbalance caused by DMCA, the lack of the "promised new digital content" that publishers used to push the law, and some of the unfortunate results. Boucher suggests that "A time may soon come when what is available for free on library shelves will only be available on a pay-per-use basis"—but Boucher's case for that "time" presumes that most or all books are purely digital. His basic point is sound: sections of DMCA have the effect of abridging legitimate fair-use rights and require rewriting. Unfortunately, Boucher seems to be a lone voice in the congressional halls.

PC Group Reviews

Desktop Computers

Karagiannis, Konstantinos, "2.2 GHz: P4 packs more than clock ticks," *PC Magazine* 21:2 (January 29, 2002), pp. 33-4.

It's hard to get excited about a faster CPU, but the newest Intel chip uses less power and has twice as much onboard cache, making it a significant improvement. What do you *do with* almost six times as much speed as my current PC (at this writing)? That's another question. This mini-roundup includes well-configured systems from three big-name makers (Dell, Gateway, Micronpc) and one smaller outfit (Tangent). Editors' Choice is Gateway's $2,819 700XL, which comes with a 15" LCD display, a monster hard disk (120GB, 7200rpm), *both* a DVD-RAM/DVD-R burner *and* a CD-RW drive, as well as Firewire, a hot ATI Radeon graphics card, a five-piece Boston Acoustics speaker system, MS Office XP, and—oddly—256MB RDRAM (I'd expect at least 512MB for that price).

O'Brien, Bill, "The fast five," *Computer Shopper* 22:2 (February 2002), pp. 102-10.

Unfortunately, one key lesson from this group review is that *Computer Shopper* has long editorial lead times. While *PC Magazine* reviews PCs with 2.2GHz Pentium-4s, this review discusses "the fastest clock speed of any computer processor to date"—namely, 2GHz. Minimum configuration is 256MB RDRAM, an 18"-viewable display, DVD-ROM and CD-RW drives, GeForce3-based graphics with 64MB RAM, speakers, a V.90 modem and Ethernet, and Windows ME. The five systems cost $2,195 to $2,404 and include three name brands.

There's no Editor's Choice or Best Buy; instead, three systems earn identical 7.7 ratings , with the other two trailing only slightly. The review finds the ABS Performance 8, Dell Dimension 8200, and Micronpc Millennia Max XS to be equivalent values. Given those results, I'd choose the Dell.

Digital Cameras

Aquino, Grace, "Livin' large: cameras with pixel power," *PC World* 20:3 (March 2002), p. 56.

These two cameras capture five megapixels, nearly the resolution of 35mm film. (Two of the three appear in the Grotta article noted below.) Nikon's $1,100 Coolpix 5000 gets a near-perfect 4.5-star review; it's a point-and-shoot camera with varied manual overrides. Olympus' $1,999 Camedia E-20N is bulkier and far more expensive but, as a true single-lens reflex (SLR) camera, offers the best possible control for experienced photographers. ("Bulky" and "SLR" are pretty much synonymous—it's almost impossible to fit SLR optics, which show you the *actual* lens view through the viewfinder, into a truly compact case.)

Grotta, Sally Wiener, and Daniel Grotta, "Reaching the 5-megapixel plateau," *PC Magazine* 21:3 (February 12, 2002), pp. 28-30.

Three cameras that up the ante for consumer digital photography another notch and combine point-and-shoot operation with full sets of manual overrides. They're not cheap--$1,000 to $1,999—and they're all, to some extent, "prosumer" devices. (An awful word for devices that combine some aspects of professional and consumer models.)

All three cameras earn four-dot ratings and use the same Sony chip; this is a case where the writeups might guide your choice. They're all from top names in digital cameras: Nikon, Olympus, and Sony. Sony offers the lowest price, nighttime capabilities, and excellent overall results, but lacks a few features. The Olympus is twice as expensive and slow to operate but may be the best model for serious photographers. Nikon's model is somewhere in between but does offer the best default-mode images.

Digital Video

Baguley, Richard, and Paul Heltzel, "Must-see DV," *PC World* 20:3 (March 2002), pp. 90-100.

This two-part survey covers digital camcorders and video editing software. Digital camcorders have come down to reasonable prices—the seven units reviewed here run $500 to $1,499—and make the best starting point for computer video editing. They also capture sharper pictures than VHS camcorders, on even smaller tapes (or, in one case, miniature DVD-RAM discs). Best Buy and the only four-star (out of five) rating go to Panasonic's $899 PV-DV701, the only camer to combine very good image quality and very good ease of use. If you want a tiny little camcorder, consider the Honorable Mention: Canon's $1,299 Elura 20MC. Note that three of these units—the Panasonic and models from RCA and Sony—can take "black-and-white" videos in the dark, using infrared illumination.

What do you do with a digital video after recording? With luck, you edit it down to a crisp, semi-professional presentation; that's where editing software comes in. Be aware that DV chews up disk space like crazy: 3.6MB per second, or just under 13 gigabytes for an hour of video. Of the seven consumer-priced programs reviewed, Best Buy honors go to Pinnacle Systems' $99 Studio 7 for being user-friendly, "versatile enough for most people," and inexpensive. Adobe's $549 Premiere 6 gets the same 4.5-star rating and offers more professional options, but it's also harder to learn and costs a lot more.

Displays

Jantz, Richard, "The skinny on big, flat screens," *PC World* 20:3 (March 2002), pp. 117-20.

One of my personal reservations about LCD screens has been size: I won't trade my 18"-viewable Trinitron for a 15" display no matter how skinny it is. Fortunately, prices of 17" and 18" LCD displays has come down—although they're still at least twice as costly as CRTs. This roundup includes tests of eight 17" models, although (*PC World* being *PC World*) you only get reviews of the "top" five in each category. I find it odd that *PC World* relies entirely on subjective evaluations of displays: can't the magazine afford the test equipment to add some objective measurements?

Quibbles aside, there are some interesting displays here. The same maker captures both Best Buy awards: ViewSonic, for its $769 VG171 at the smaller size and $949 VG181 for the bigger picture.

"Macworld's ultimate buyer's guide: monitors," *Macworld* February 2002, pp. 56-73.

When *Macworld* does an "ultimate buyer's guide" you can expect good background information and extensive testing—but not individual writeups, which is a shame given the number of pages involved. This roundup includes 37 displays in three groups: 17" LCDs, 19" (18"-viewable) CRTs, and 21" (20"-viewable) CRTs. That latter category gets into fringe territory for most PC users, but this is a Mac magazine—and graphics artists, one of the strongholds for the 5%ers, need that real estate.

That graphics focus explains *Macworld*'s greater awareness of one LCD shortcoming, rarely mentioned in PC-oriented reviews: color isn't as accurate as on properly-adjusted CRTs. Additionally, the best CRTs offer sharper text and are still a lot cheaper—but they're bulkier, heavier, and use more power.

Editors' Choice for a 17" LCD display is Neovo's $999 X-174. Sony's $530 CPD-G420S offers "excellent details and stellar uniformity" to earn it an Editors' Choice among 18"-viewable CRTs, even though it's relatively expensive at $530. And if you want to upsize, $799 buys Sony's CPD-520, Editors' Choice for a 20"-viewable CRT (and about half the price of the other big Sony, which rated equally high). Note that, although this is a Mac-oriented review, most of these displays work just fine on Windows machines.

Poor, Alfred, "Flat-out brilliant," *PC Magazine* 21:4 (February 26, 2002), pp. 116-30.

The two major PC magazines plan reviews months ahead; presumably, the near-simultaneous appearance of two group reviews of big LCD screens is coincidental. As usual with such a comparison, *PC*'s individual reviews and detailed tests stand out from *PC World*'s once-over-lightly. For displays, that's even truer: *PC* uses objective measures, not just subjective tests. This roundup includes 16 displays, six of them 18"; they're judged as one group. That also means one display per manufacturer—and ViewSonic's VG171 didn't do that well in this roundup. Almost all of its measurements fall in the middle of the pack, it's a bit shy on features, viewing angles are limited and there are light leaks along the edges of the screen. The ViewSonic scored three dots out of five along with four others. Five displays scored four dots; one, the Editors' Choice Samsung SyncMaster 171P ($900), scored a perfect five. That's the "bang" Editors' Choice; the "buck" choice is the $630 CTX PV720A.

Graphics and Sound

Labriola, Don, "Rock-solid sound," *Computer Shopper* 22:2 (February 2002), pp. 112-16.

This review covers five of the "latest three-piece speaker systems" for PCs—not unreasonable, since most of us aren't in a position to site five speakers

around our PCs (and around our heads seated at desks). The price range is $50 to $180, and the $50 model rates third out of the five. Songistix' $149 Monsoon MM-702 Flat Panel Audio System takes the Editors' Choice for its midrange and imaging, and of course the flat panels are snazzy.

Unfortunately, there are no objective tests or results, absolutely typical for PC magazine reviews of sound equipment and, I believe, just this side of unforgivable. Most PC magazines do *some* objective measurements for displays and they all use objective tests for the PCs, mass storage, and the like. It's not as though there aren't any measurements for audio equipment or they don't have space for a tiny little response chart.

This review is short on the usual "thumpin' good bass" nonsense, although it includes at least one totally absurd comment in hacking away at the Altec Lansing 621: "The subwoofer's huge cabinet appears too large for its driver, forcing the cone to pump out lower bass frequencies than it can handle." Hello? That just plain makes no sense.

I don't review breadmakers, bourbon or bicycles, or comment on such reviews, because I lack the vocabulary, methodology, and understanding to make such reviews meaningful and reasonably accurate. That never seems to bother computer-magazine reviewers when working with sound equipment. Sort of a shame.

The bargain in this group is Logitech's Z-340 system. It costs $50 and appears to work fairly well.

Metz, Cade, "Movin' on up," *PC Magazine* 21:2 (January 29, 2002), pp. 80-95.

Does it ever make sense to upgrade? Maybe, although this "ultimate upgrade guide" concentrates on graphics and audio cards, with sidebars on motherboards and speakers. Reading the graphics-card section, it appears that all the hot cards serve primarily gamers, with little impact on anyone else. That said, two cards win Editors' Choices. Asus' AGP-V8200 Deluxe costs $390, but the nVidia GeForce3 Ti500 chip is the fastest on the market and the card comes with a comprehensive software bundle. For about half the price and 80% of the performance, choose the "value" winner, Leadtek's $150 WinFast Titanium 200 TDH, based on nVidia's GeForce3 Ti200—a whole half-generation old! (If you're stuck with a mere GeForce2, remember that it was the hottest CPU less than a year ago and still probably offers more speed than you can use outside gaming circles.)

Audio cards? In their Audigy boards, Creative Labs couples their market-leading features and pricing with superior audio performance. Editors' Choice is the $85 Sound Blaster Audigy Gamer because it's the cheapest of the lot; the $90 MP3+ and $170 Platinum earn equal five-dot ratings. If you plan to do heavy-duty sound editing, the Platinum's breakout box for I/O may be worth the money.

Multifunction Devices

Cekan, Lisa, "All-in-wonders," *PC World* 20:2 (February 2002), pp. 103-12.

Don't let the pages fool you: while this is a long review by *PC World* standards, five of those ten pages are ads. Oddly, the review includes a mere six devices—three inkjet, three laser, with prices from $199 to $599. Among inkjet units, HP's $399 PSC 950 ranks highest. It does everything well and lets you print pictures taken with digital cameras—*selectively*—without using a computer. It lacks a sheet feeder, so it's not a perfect fax or copy machine. Brother's $599 MFC-9700 does have a sheet feeder (and does flatbed copying, scanning, and faxing) and has a reasonably large paper tray. With good speed and output quality, it gets the highest rating among laser units. Both of these multifunction machines will work as standalone fax machines.

Pittelkau, Jeff, "Multifunction printers," *Macworld* February 2002, pp. 48-9.

This two-page "roundup" also covers six devices, all of them inkjets, obviously in much less detail than *PC World*. No test results, no individual writeup, not much of anything. This time, HP's OfficeJet G85 (a $500 unit not tested by *PC World*) ties with the PSC 950 for top rating. The OfficeJet is a small-network workhorse; the PSC is better suited for small-office and home users.

Mice and Keyboards

Honan, Mathew, "Wireless mice," *Macworld* February 2002, p. 60.

Here's a case where a page really doesn't provide enough information. The highest mouse rating among these four wireless mice is for Kensington's $130 Turbo Mouse Pro Wireless, but without a photo it's hard to imagine a mouse with five main buttons and six additional buttons on a trackball. Buying advice suggests the Kensington for "power users accustomed to trackballs" but Logitech's $70 Cordless MouseMan Optical for average users.

Multimedia Software

Metz, Cade, "Prime time players," *PC Magazine* 21:2 (January 29, 2002), pp. 98-107.

Is there a single best way to handle digital media—that is, MP3, Internet radio, and Internet video? Probably not. This review covers six major applications for these functions, including the names you know best. It's a careful, thoughtful review. The split conclusion: for audio, MusicMatch Jukebox (now 7.0) continues to deserve the Editors' Choice award, and $20 for the Plus version (a one-time fee covering all version upgrades) may be worthwhile. For video? No player works best for all versions; they advise downloading free versions of QuickTime, RealOne, and Windows Media Player—and using each native version for its own video.

Ozer, Jan, "Disc masters," *Computer Shopper* 22:2 (February 2002), pp. 128-31.

What's the latest on CD-burning software? This brief roundup profiles five current Windows programs with a sidebar on two Mac alternatives. It's a good writeup (as usual, Ozer knows his stuff), but there's one real oddity. No Editors' Choice appears, even though there's a clear point leader at 8.0: Easy CD Creator 5 Platinum. I'm not sure why no award, unless it's that the runner-up, Nero Burning ROM 5.5, is a more powerful system for advanced users. If you're a Mac enthusiast, you're Toast—or, rather, the clear leader for your platform is Toast 5 Titanium, the Mac sister product to Easy CD Creator (Roxio owns both programs).

Network Hardware

Janowski, Davis D., "Share the wealth," *PC Magazine* 21:3 (February 12, 2002), pp. 118-31.

You get the propaganda drumbeat in the very first sentence: "Once you can finally get a blessed broadband connection, you realize that you can't live without it—nor can anyone else in your household or office." Religion and the necessities of life aside, this roundup offers a fairly comprehensive view of broadband routers costing less than $500: two dozen routers from nine companies. If you need a router, read the article; there's too much to summarize, including *four* Editors' Choices: the $350 Netgear FR318 for small offices, Linksys' $150 Etherfast BEFSRU31 for home wired use, and both Siemens' $240 SpeedStream SS2623 and SMC's $220 Barricade 7004AWBR for wireless networking.

Portable Storage Devices

Nike, Kristina de, "Portable 20GB FireWire drives," *Macworld* January 2002, pp. 25-6.

I wonder about the first line of this seven-device roundup: "Portable FireWire hard drives spark the imagination." I suppose. These are all tiny (at most 6x4x1") drives holding at least 20GB. The FireWire connection means drives aren't slowed down by usual external-device limitations, but don't expect incredible speeds: internally, these are all relatively slow ATA drives (not SCSI), all running at 4,200RPM. Most internal drives these days rotate at 5,400 or 7,200RPM, a few at 10,000—so you won't see miracles. (Tests showed these drives as little as 10% or as much as 70% slower than a typical internal drive, depending on the task.) Four drives use IBM hard disks; three use slower Toshiba disks. Top ratings go to the $249 QPS Que M2 Quadslim and $250 EZQuest Cobra Slim 20GB.

Security Products

Brown, Bruce, "Enterprise-level security made easy," *PC Magazine* 21:1 (January 15, 2002), pp. 28-9.

This brief roundup considers a new class of Internet security appliances—boxes that provide firewall protection, "IPsec-compatible VPN routing" and triple DES encryption for medium-sized networks. Editors' Choice is Symantec's $1,200 Firewall VPN 200R. If you have the right-size network and need better Internet security, read the review: you'll probably understand it better than I do.

Dreier, Troy, "To protect and surf," *PC Magazine* 21:4 (February 26, 2002), pp. 102-11.

Bad pun, good story: a group review of personal firewall software with some notes on why router firewalls aren't good enough. Windows XP has a built-in firewall that hides ports from probes, but that's only a partial solution. It may be no surprise that eight products deserved review (five firewalls, three security suites); the surprise is that ZoneAlarm no longer tops the charts. Instead, Sygate Personal Firewall PRO 4.1 ($40) earns an Editors' Choice as a pure firewall; Norton Internet Security 2002 ($70) gets the nod as a security suite.

Tax Software

Yakal, Kathy, "Tax software 2001 style: better, smarter," *PC Magazine* 21:2 (January 29, 2002), pp. 24-6.

OK, here's the deal. If you're happy paying an accountant or H&R Block to do your taxes, fine with me. If they're simple enough to do by hand, more power to you. And if you're happy with the tax software you're already using—as I am—you should probably get the newest version. All three major programs should produce correct results; all three sup-

port electronic filing. I've used TurboTax Deluxe (from Intuit) for years, watching the "top rating" level swing between it and H&R Block's TaxCut Deluxe. This roundup gives a slight edge to the latter, mostly because it's cheaper. Both offer loads of guidance, all the forms you're likely to need, and decently friendly ways to enter information. You may even be able to import some 1099 and W2 information directly. TaxACT Deluxe is clean and easy, but a bit less powerful than the competitors.

Utilities

Spring, Tom, "XP moving day: easing the pain," *PC World* 20:2 (February 2002), p. 24.

When's the last time you changed PCs? Did the new PC have a newer OS? Remember all the fun you had restoring user preferences, making sure your data files all made it to the new system, and moving applications without clobbering upgrades?

If you're a Windows user, Microsoft's improved the situation in XP. The Files and Settings Transfer Wizard does a decent job on data and the 46 major programs that it supports—as long as you can either connect the two PCs with a serial cable or have large-capacity removable media available. It won't write directly to CD-R or CD-RW, but you can write the whole update file on your old hard disk and then copy that to optical disk. The MS Wizard gets a respectable three-star ranking in this mini-roundup—but there's enough room for improvement so that five competitors exist. Best in the reviewer's opinion, although not flawless, is Eisenworld AlohaBob PC Relocator 3.0 ($50 for a single migration). It handles all applications and is easy to use—but you *must* have the PCs side by side or on the same LAN, since it doesn't support removable media at all. Other products may suit your needs better.

Web Software

Clyman, John, "Server's advantage," *PC Magazine* 21:1 (January 15, 2002), pp. 106-15.

Everybody knows that Apache's the best Web server software, right? After all, it runs more than half of all Web sites, it's well established—and it's free. Sure, lots of turkeys hosting Web sites on Microsoft Windows NT/XP Pro platforms use IIS (the price is right), but what do they know?

This roundup yields a surprise Editors' Choice and some test results to back it up—and no, it's not Internet Information Services 5.0. Zeus Web Server 4.0 costs $1,700 per Unix server, but you get superior speed and scalability. What's superior? In tests serving static pages from fairly modest servers (IBM E servers with 1.2GHz Pentium III CPUs and 1GB RAM), Apache topped out at 1,300 requests per second; Zeus hit 5,500 requests per second. With dynamic CGI, Apache managed no more than 1,000 requests per second—and Zeus hit 4,500. (Zeus also provides real-time performance monitoring with graphic results.)

Simone, Luisa, "Flash 'em," *PC Magazine* 21:2 (January 29, 2002), pp. 109-17.

If you *must* animate your Web site because the content won't hold anyone, you probably use Flash. That no longer means you must use Macromedia Flash 5; the five other programs in this roundup also generate Flash code. But while Adobe LiveMotion and the low-cost SwiSH 2.0 ($50!) both earn four-dot ratings, Macromedia's $400 Flash 5 still earns Editors' Choice.

Spanbaurer, Scott, "Browsing & beyond," *PC World* 20:2 (February 2002), pp. 80-7.

Here's another roundup of the "best" tools for using the Web, with comparisons in a few categories. Some Best Bets are obvious: Internet Explorer 6 for browsing, AOL Instant Messenger if you need IM. Some are less clear—for example, their top rating for RealOne as a media player (see "Multimedia Software" in this article for another view) and their suggestion that you use the Copernic 2001 metasearch engine in lieu of specific search engines. Supposedly, Outlook Express 6 now includes "strict new security measures"; it gets the nod for e-mail clients.

The Details

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