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There's Something in the **AIR**
PODCASTING IN EDUCATION

By Gardner Campbell

"Imagine"

It's midweek at Anywhere State University. Jenny rolls out of bed at about nine a.m., as usual, and thinks about breakfast and her first class. As she's dressing and getting ready to go out, she fires up iTunes on her laptop and checks her podcast subscriptions. There's a new show from Adam Curry at *Daily Source Code,* another one from Cody at *Vinyl Podcast* ("fair use of forgotten music"), and three audio feeds from her classes. She doesn't notice that the classroom material and the leisure-time entertainment are coming through the same medium and desktop utility; for her, it's natural that school stuff would mingle with other aspects of her daily life. ■ The first school podcast comes from five group members in her philosophy class. They're presenting on Descartes that afternoon, and the members take turns explaining what they hope to accomplish, as well as reading aloud brief excerpts from the assigned readings—with just enough commentary to whet Jenny's appetite for the upcoming presentation. Even better, Jenny can suddenly understand one of the tricky sentences in *Discourse on Method,* a sentence that had never been quite clear to her. Hearing a classmate read it aloud with emphasis, feeling, and comprehension makes a huge difference. The podcast ends with a little self-conscious giggling and a shouted chorus of "See you in class!" Jenny smiles: this tag line has characterized each of the podcasts, starting with the first group's podcast six weeks ago.

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She thinks about her own group's presentation and its preparatory podcast with some satisfaction: the group members are planning to do a movie-trailer-style podcast on Nietzsche and *Also Sprach Zarathustra*, and she is already musing about how to combine the sound effects with the readings and commentary so that her classmates will be especially inspired to engage with the presentation that day. The informal, good-natured podcasting competition in this class means that Jenny reads the assignments more carefully than usual, hoping to find something that will make her group's podcast especially memorable—and enjoyable.

Jenny's next school podcast comes from her Arabic class. Again, the students in the class have put together a podcast, but this time they're interviewing each other in Arabic about a guest speaker who visited their class last week. This distinguished writer had just published an essay on international relations in the Arab-speaking world, and the current podcast includes excerpts from her presentation mixed with students asking each other about the significance of her ideas in relation to what they had learned so far about Arab culture. Although it is frustrating for the students to try to discuss complex concepts in fairly basic Arabic—this is a first-semester intermediate course—Jenny finds that her classmates' struggles help focus her attention on one particular moment in the speaker's lecture, one that is becoming more interesting the more she thinks about it. In addition, listening to her classmates gently correct each other's vocabulary and pronunciation in the podcast reminds Jenny that a big test is coming up at the end of the week, and she makes a note in her to-do list.

Now Jenny looks at her watch: each of these podcasts has taken about ten minutes, and she has one to go. She also wants to hear the first two podcasts again to catch things she missed. So she quickly synchronizes her MP3 player to her music-management software to load the latest podcasts onto her portable player. With player in hand and earbuds in place, Jenny walks out to get in the dining hall

breakfast line before it closes. The earbuds don't block out ambient sound—she can pause the playback and hold a conversation with a passing friend with little trouble—but they do allow her to start listening to that last podcast as she walks the five hundred yards to the cafeteria. This final podcast for the morning comes from her biology professor, who each Wednesday does a quick, enthusiastic summary of several journal articles the professor has read in the preceding week. This podcast is a special favorite of Jenny's; she loves to hear the excitement in her professor's voice. Sometimes the articles pertain to the class or lab work for the week. More often they do not—at least, not directly. But always, Jenny feels an intense bond with this teacher, who shares with her students not only her expertise but also her delight in continuing to acquire and reflect on new knowledge. News of this biologist's "scholar's diary" podcast had spread across campus last semester. To her surprise, Jenny had found herself getting hooked on each week's installment herself, even though she had never taken a class taught by this professor. When she was fortunate enough to snag a seat in the course this semester, Jenny found that the podcasts had done a great job of conveying the learning environment the teacher created in class. Jenny felt as if she had become an apprentice to a master thinker. The interesting rhythm of lecture, lab, group projects, and each week's podcast gives her a rich sense of what the life of the mind could be at its most intense. Jenny has even e-mailed her parents to tell them about this professor's podcasts, and now her parents are listening too.

Imagine a busy commuting student preparing both emotionally and intellectually for class by listening to a podcast on the drive to school, then reinforcing the day's learning by listening to another podcast, or perhaps the same podcast, on the drive back home. Imagine the members of a debate team getting key instructions from their coach on a podcast as they hurry from debate to debate. Imagine a professor reading aloud a series of poems over the summer in preparation

for a fall seminar in which his readings will help students overcome obstacles of language and syntax in this difficult verse. Imagine a liberal-arts university supplying its community, and the world, with "profcasts" of classes and presentations delivered by its talented instructors—not to give away intellectual property but to plant seeds of interest and to demonstrate the lively and engaging intellectual community created by its faculty in each course.

These things, and more, are happening now.

"Hailing Frequencies Open"
A complete history of podcasting would likely double the length of this essay. Fortunately, there's already a good one available at *Wikipedia*: <http://en.wikipedia.org/wiki/Podcast>. As the article notes, *podcasting* is a portmanteau word that combines *iPod* with *broadcasting*. The term is mildly controversial, since it privileges the Apple iPod and to some people implies that one must own an iPod to listen to a podcast. But podcasting is not limited to the iPod or even to MP3s or portable music players. In some respects, podcasting is not even new: both streaming and downloadable audio are as old as the World Wide Web, and the RSS specification that enables podcasting has been around for several years.[1] What's new about podcasting is the ease of publication, ease of subscription, and ease of use across multiple environments, typically over computer speakers, over a car stereo, and over headphones—all while the listener is walking or exercising or driving or traveling or otherwise moving about.

Still, "ease of publication" may overstate the case just a bit. A few intricacies that lie behind the notion of publishing a podcast deserve consideration. One is that you have to produce a podcast before you can publish it. It is true that one can produce a podcast very simply. Some gifted audio "jotters" can make very compelling off-the-cuff *audio vérité* podcasts, quick spiels spoken into inexpensive MP3 players with voice-recording capabilities. Nevertheless, such "first take" podcasting is difficult to sustain, and it's

the rare individual who can make his or her rambling into a compelling listening experience.

For most of us, podcasting will involve a little preparation, and perhaps a little editing or other post-production, before we'll be ready for the world to hear our efforts. The good news is that once you get the hang of a few technical issues common to any kind of audio recording, you'll be on your way. You'll need to understand some of the basics of digital audio: sampling rates (higher is usually better), bit depths (greater depth, again represented by higher numbers, is usually better), compression formats (the major players are MP3, Windows Media Audio or WMA, and Apple's Advanced Audio Coding or AAC), and compression bitrates (higher is usually better). Why do I

keep saying "usually"? Because there's a trade-off between quality and file size. Whereas broadband access means that a ten- or twenty-megabyte file is a convenient download for many people, especially overnight, longer podcasts (of an hour or more) can generate rather large files if one isn't careful. If only for the sake of elegance and good bandwidth stewardship, it's good to try to hit the sweet spot where moderate file size meets pleasing audio quality. Besides, bandwidth isn't free, and exceeding bandwidth limits on a Web-hosting service can shut down a podcast very quickly.

Producing a podcast is the hardest part of publication. Actually distributing a podcast is quite simple. Any RSS 2.0 feed includes an "enclosure" tag that will send a signal to a special feed-reader or RSS aggregator (sometimes referred to as a "podcatcher") indicating that some kind of binary digital content has been published to that RSS feed and is available for download. Typically, podcast publication is part of a blog or is structured around a blogging template. The blog is arranged chronologically, of course, and it almost always generates an RSS feed as well. All one has to do to publish the podcast is to upload the audio to the Web server that hosts the blog, then link to that digital content from somewhere within the blog entry. The enclosure tag for the RSS feed is generated automatically.[2] The blogging platform also has another advantage in that one can easily publish "show notes" or outlines in the dated blog entry for each podcast, a handy way to allow listeners to search for particular podcasts, since searching within audio files is still an emerging technology.[3]

At this point, many readers will have thrown up their hands in despair. Am I suggesting that those of us in higher education—we who have spent our lives perfecting our writing and speaking—must now learn to be audio and video engineers too? Can't we leave the multimedia authoring to the audio/video gurus at our institutions? The short answer is "yes." Perhaps few of us

will have the time, energy, or motivation to add an entirely new skill set to our working lives. Most of us, however, can and should learn the potential uses and value of rich media authoring—in this case, the podcast. Once we have, we can certainly partner with the IT and AV specialists at our institutions, specialists who will do the technical work to bring our teaching and learning designs to life in the classroom and on the Web. Learning more about podcasts and other types of rich media authoring will simply help us communicate more intelligently and precisely when we call in the IT specialists.

The longer answer is more complex—and also more daunting or exhilarating, depending on your point of view, risk tolerance, and curiosity. There may be very good reasons for acquiring at least rudimentary skills in "rich media" (or "multimedia") authoring. More and more students come to school with these skills. This is a language they not only understand but use, often on a daily basis. Some of them have been blogging, shooting and editing video, creating Flash animations, manipulating photographs, and recording digital audio for many years. These are the tools of their native expressiveness, and with the right guidance and assignments, they can use these tools to create powerful analytical and synthetic work. Yet even such digitally fluent students need to learn to manipulate their multimedia languages well, with conceptual and critical acumen, and we in higher education do them a disservice if we exclude their creative digital tools from their education.

At the same time, our own professional lives will increasingly involve rich media authoring. As the *Infoworld* writer (and prolific blogger) Jon Udell points out, there was a time when professors did not do their own typing or line editing. Now, however, moderate skill in typing and word-processing is simply assumed. Those of us who compose at the keyboard probably prefer to do our own typing; indeed, in most cases, the line between
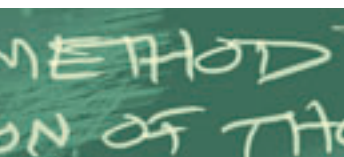
Even such digitally fluent students need to learn to manipulate their multimedia languages well, with conceptual and critical acumen.

typing and composing has grown so faint as to be practically invisible. The same process will inevitably overtake rich media authoring as well.[4]

Once a podcast has been produced and published, it's ready to be downloaded by the listener. (Many writers call podcast listeners "consumers" and speak of the activity as "consuming content," but that metaphor denies the delicate, responsive human interaction that charac-

I n a March 2005 podcast (http:// weblog.infoworld.com/udell/ 2005/03/ 03.html), Jon Udell persuasively identified five major factors behind the explosive growth of podcasting and rich media authoring in general:

1. Internet activity is pervasive.
2. Broadband has grown very rapidly, which makes it far easier to "consume large media objects."
3. The multimedia personal computer can "more or less be taken for granted."
4. The "distinction between streaming and downloading of media content has begun to blur. . . . People can now have the experience of streaming while enjoying the simplicity . . . of downloading."
5. Finally, there is the iPod phenomenon and "the rapid adoption of portable MP3 playback devices"—up to eleven million devices in the United States alone. Udell calls the portable audio device "the new transistor radio" and points to the beginnings of a "renaissance of creative stuff happening." Because this renaissance coincides with the Creative Commons phenomenon, traditional business models need not constrain the artist's work.

terizes the best communication, indeed the best *listening* and *reading*.) The real power of podcasting, however, is unleashed by the RSS function in tandem with the podcatcher (audio-video RSS aggregator or feed-reader) described above. With a podcatcher, the listener can subscribe to his or her favorite podcasts, which will then be downloaded automatically to the computer at a time of the listener's choosing, usually overnight as the listener is sleeping. When the listener awakes and prepares for the day, as in Jenny's narrative above, he or she can either listen to the podcasts from the desktop or transfer those podcasts to a portable audio device for mobile listening throughout the day. The podcast remains in the portable player as long as the listener wants and can be deleted at any time.

The subscription feature (or, seen from another perspective, the notification feature) of the RSS feed transforms the experience for the listener. Think of the daily newspaper delivered to your door. It's an aggregator combining the work of many individual reporters and editors. Its production occurs while you sleep. And though you could go to a newsstand to read or purchase the paper, you don't have to. Instead, you subscribe to the newspaper and have it delivered to your door each morning. As you prepare for the day, you look over the newspaper pages, read articles of interest, and if you're not finished with it, you take it with you. The difference with podcasts is that persistence of content is potentially greater (yesterday's podcast may be more worth preserving than yesterday's newspaper), skimming the content is harder (though show notes help), and certain kinds of portability are enhanced. One may be able to read a newspaper on a jostling subway, but one cannot (or at least should not) attempt to read a newspaper while driving a car. Even reading a newspaper while walking across campus is difficult, although some people try. By contrast, podcasts can be listened to very easily while driving, walking, or working out at the gym.[5]

Several especially promising devel-

opments in podcasting emerged during the spring and summer of 2005. First, Adam Curry, a former MTV VJ and an early developer of podcatching software, helped to create a utility he calls a "castblaster" that automates much of the recording, encoding, and uploading process.[6] Second, Curry's PodShow.com, "Odeo" (http://www.odeo.com), and other such services began promoting themselves as one-stop-shops for podcast creation, publication, and subscription. (Both PodShow.com and Odeo also acquired considerable venture capital over the summer.) All these services aim to become easy-to-use hybrids of podcast production, distribution, and promotion, offering something like the blogging service provided by Blogger but with the greater sophistication and complexity that multimedia authoring requires.

Is there a noncommercial alternative to Podshow, Odeo, or other such services? Yes: "Ourmedia: The Global Home for Grassroots Media" (http://www. ourmedia.org/). This service boasts nearly 40,000 members worldwide and promises to host software, video, audio, images, and text "forever" with unlimited bandwidth. To achieve these lofty aims, Ourmedia uses an open source content manager called Drupal as a front end to media stored on the Internet Archive (http://www.archive.org/). Students and faculty may use Ourmedia to host blogs, store content, and publish podcasts, all free of charge. The only catch is that everything must be made available to "a global audience." That kind of sharing may sometimes not be appropriate for certain class productions—but then again, publishing to a potential audience of a networked planet could be just the motivation many students need. Ourmedia is not a one-click-and-you're-done operation, but it is free, and its mission is laudable.

In the third development, both ease of subscription and ease of portability took a large step forward with the release of Apple's iTunes version 4.9, which incorporates an extensive podcast directory-and-subscription service into the

structure of the iTunes Music Store. Corporate podcasts, including content from all the major broadcasting networks, are prominently featured on the front page of the directory. Some of the more popular "indie" podcasts are featured as well; several thousand that had already been listed in other directories were incorporated into the iTunes podcast directory at launch. Indie podcasts that are not currently in the directory can be submitted to iTunes for inclusion, though all such submissions are subject to review and one must have an iTunes Music Store account to submit a podcast. But even if a podcast isn't in the directory, it can be subscribed to very easily in the iTunes interface by simply typing the podcast's URL into a special subscription field.[7] This new version of iTunes could take the entire podcasting phenomenon into the mainstream. Indeed, Apple reported that iTunes customers subscribed to over one million podcasts in the two days following the launch of iTunes support for podcasts.[8] As of this writing, Apple states that more than 15,000 podcasts are available for subscription through iTunes 5.0 (http://www.apple.com/podcasting/).

For educators, the implications of Apple's embrace of podcasting are both exciting and troubling. The development is exciting because students will have a free, easy-to-use, dual-platform (Windows and Mac) audio-content manager that will help make podcasting pervasive and effective. Even more important for educators, the new version of iTunes enables "enhanced podcasts" that offer a chapter function, allowing the listener to jump directly to sections within a podcast. Each of these sections can be accompanied by an image and by a clickable URL. Since one of the challenges with audio feeds has always been that of making individual parts of the feed directly accessible, encoding chapters within podcasts (as opposed to dividing the audio into tracks, each of which would need to be downloaded separately) is a very attractive feature. Why is Apple's

Adam Curry's nickname is "the podfather." His *Daily Source Code* podcast has done much to popularize the medium, and along with witty (and sometimes profane) banter, the show continues to be an inspiring example of what can be done with podcasts. In some respects, it's as if the most popular podcast on the Internet is also one of its best proof-of-concept productions. That's in large part because Curry is besotted with the very idea of radio. Curry's *Daily Source Code* is also free (as are almost all currently available podcasts), but Curry's larger plans include a business model in which he and his co-investors will establish a service that hosts and aggressively promotes the most-listened-to podcasts, many or all of which will be available exclusively through Curry's podcasting site (http://www.podshow.com). These shows will presumably make money through advertising or, perhaps, through paid subscriptions.

What's particularly interesting about Curry's model is not that it seeks to commercialize podcasting, an inevitable development despite complaints from some quarters that Curry is out to ruin the medium. No, what's interesting is that Curry plans that the money earned by hosting and promoting premium podcasting content will help pay for a free service that will enable podcasts with smaller audiences to reach those audiences and sustain their service. If Curry's plan works, it could restore older models of public service and public access in broadcasting—models that have withered as deregulation has spread across the industry over the last three decades. Or it could end up simply confining premium podcasts within a "walled garden" along the lines of MSN or AOL. It's a measure of this new medium's potential that so many interesting developments and troubling questions have emerged so quickly.

embrace of podcasting troubling to educators? Because this easy-to-use audio-content manager just happens to sit inside a store that sells music.

"Radio Is a Strange Craft"

Radio began as an amateur medium. Even after it became thoroughly professionalized, radio retained a strong flavor of particularity linked to specific announcers and specific localities. Beginning in the 1980s, however, more and more radio stations were bought up by giant broadcasting conglomerates such as Clear Channel and Infinity Radio. The result was predictable: a few popular syndicated shows; a timid playlist relying on overplayed songs; and a homogeneous approach to programming and announcing. Part of the reason that podcasting has taken off so quickly is that there's very little worth listening to on the radio. Ironically, Infinity's KYOU in San Francisco is now an all-podcast radio station with substantially listener-generated content. As of this writing, KYOU has 2,338 podcasts in its

lineup, nearly double the number of just two months ago.

But the collapse of radio is only part of the story of the rise of podcasting. The endurance of radio, or the *idea* of radio, is the other part and is a major reason why podcasting has such potential value in teaching and learning. There is magic in the human voice, the magic of shared awareness. Consciousness is most persuasively and intimately communicated via voice. The voice is literally inspired language, language full of breath, breath as language. Consider the phrase "thinking aloud." Consider a Shakespearean soliloquy. This peculiar capacity of spoken language puts the edge on Tennyson's grief in *In Memoriam*: death is horrifying not because of decay but because of silence. Photographs are undeniably powerful, and perhaps a picture is worth a thousand words, but a few words uttered by a dear voice may be worth the most of all.

Of course, the droning voice of a professor reading from yellowed lecture notes will not be so affecting, but a voice

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that creates a theater of the mind—radio's time-honored heritage—can connect with the listener on a profound level. The theater of the mind can be both compelling and transformative, often far more than anything witnessed visually. A gifted teacher could be said to create just such a theater of the mind, as well as the conditions whereby students may be enticed to create such a theater for themselves. At its best, podcasting can serve as training in rich interiority and in shared reflection.

There's also considerable value in what I call "the explaining voice," the voice that performs understanding. The explaining voice doesn't just convey information; it shapes, out of a shared atmosphere, an intimate drama of cognitive action in time. The explaining voice conveys microcues of hesitation, pacing, and inflection that demonstrate both cognition and metacognition. When we hear someone read with understanding, we participate in that understanding, almost as if the voice is enacting our own comprehension. In other words, the explaining voice trains the ear to listen not just for meaning but for evidence of the thought that generates meaning.

I'm counting on the explaining voice, or at least as much of it as I can muster, in my current series of podcasts: *A Donne a Day.* This fall I'm teaching a senior seminar on John Donne, and in my summer preparation I was reminded just how difficult it can be, even for a specialist, to make sense of some of these poems. The syntax is tough, made even knottier by Donne's various poetic licenses. The subject matter is self-consciously erudite, in fact recondite. The poetic voice is witty, bitter, exuberant, desperate, naughty, hyperintellectual, self-mocking, self-celebrating. I can't pretend to capture all of that in my own recitations, but I know that I start from a position of greater comprehension than my students (at least, I hope I do, though I always look forward to being surprised). In casting about for a way to share that tacit knowledge without spending every class meeting doing nothing but reading aloud—lovely as that might be for me—I decided to podcast a Donne poem each day during the summer, thereby building up a collection of poetry and commentary in little five- to eight-minute chunks that students can use to help them prepare for each day's reading assignment. My hope is that students will understand the main argument in each poem faster as a result of hearing my reading and will thus come to class better prepared to mine the depths. I also hope they will come ready to question, even to take issue with, my reading and/or my commentary; indeed, I will encourage them to do so. As usual for my poetry seminars, I will also assign a recitation for each student, and my reading can serve as a paradigm to emulate or to work against. Best of all, I've found that reading these poems aloud to prepare them for a public audience has put me on my mettle and has taught me that some lines I *thought* I understood well could stand more sustained attention from me before the fall term.

One of my colleagues at Mary Washington, a cognitive psychologist, insists that audio is a poor channel for conveying information to learners because the learner cannot control the pace. The listener is at the mercy of the speaker's tempo. I take the point, but I wonder if that necessity doesn't have a virtuous dimension. Perhaps it is sometimes a good thing for the learner not to control the tempo, particularly if one wants to lead the learner away from habitual patterns of perception and cognition. Perhaps listening attentively to the pace of another mind, revealed in voice, can help train the learner to be more attentive generally. One can listen to a podcast with "half an ear" just as easily as one can skim a written text, but in the case of the podcast, it is more difficult to believe that one has actually attended to the words. Moreover, effective listening is no less crucial a skill than effective speaking, and even if the learner cannot control the tempo of a speaker's delivery, with a podcast he or she can listen again and again, in whole or in part, and thereby grow more practiced in listening. Listening is an activity. No good audience is passive.

Along these same lines, one crucial element of the promise of podcasting is its potential to be uniquely immersive, to evoke the intimacy and focus of a study carrel deep in the stacks of a library. One emerges from those dark, womblike spaces blinking and perhaps a little disoriented: a useful state of being in the constant struggle to defamiliarize one's surroundings and to prepare oneself for fresh insights. Podcasts, then, are like books in a study room, an information technology that may be scaled without necessarily becoming a mere commodity.

The voice also conveys our common humanity. For example, the *Washington Post* recently reported that many e-commerce sites have found more economic benefits in allowing customers telephone contact with real people rather than forcing all interaction through the Web. In another example, several newspapers are producing their own podcasts. Why would one want to *listen* to a newspaper? Frank Burgos, the editorial page editor of the *Philadelphia Daily News,* tells us why: "Podcasting, done the right kind of way, can . . . make a newspaper sound like a human being. Because that's what newspapers are: they're a collection of human beings."[9]

There's a strong analogy here. Done well, podcasting can reveal to students, faculty, staff, communities—even the world—the essential humanity at the heart of higher education. Among the impressive facilities and intricate processes, colleges and universities are essentially collections of human beings who seek to share the fruits of their labors with the world that helps support them. If this position seems extreme or sentimental, consider Todd Cochrane's assertion: "Podcasting represents a new way for individuals to communicate about the things they love. They can actually broadcast content that comes from their hearts."[10] If a mass-market text on podcasting begins by stressing the affective dimension of this new medium, educators would do well to think about how they might harness that energy in their teaching and learning practices.

The English word *radio* comes from the Latin *radiare*, to "emit rays." Podcasting, like radio, has the potential to spread its

effects to people both near and far and to unite them into a community of shared learning. Like radio, podcasting is less like a web and more like the spokes of a wheel. There may be many or few spokes radiating from the podcast, but the connections are essentially one-to-one, no matter how many listeners are in the audience. Indeed, one of the lessons I learned in my own thirteen years of professional broadcasting was that no matter how far the station signal carried or how many people lived in the listening area, I was speaking to one listener at a time every time I turned on the microphone. That kind of direct personal connection, scaled to encompass a large and diverse audience, offers a powerful glimpse of how podcasting can be a transformative instance of information technology in higher education. And the persistence of this content enables the "long tail" phenomenon to bring new listeners into the community many weeks or even years after a podcast was first published.

"Call Out the Instigators Because There's Something in the Air"

By the time this article is published, the phenomenon called podcasting will be about a year old. Its growth has been startlingly rapid even by IT standards. In April 2005, the Pew Internet & American Life Project reported that over six million *adults* (eighteen or older) in the United States had listened to a podcast.[11] Teenagers, of course, are the ones who use mobile audio devices the most. Who knows how many of them have listened to a podcast?

In a blog entry dated September 28, 2004, Doc Searls, a co-author of the book *The Cluetrain Manifesto*, discussed podcasting in some detail and noted that a Google search on "podcasts" brought up twenty-four hits. Searls went on to predict that in another year, the same search would "pull up hundreds of thousands, or perhaps even millions," of hits.[12] That esti-

As an experiment to accompany this article and test some of its claims, the author's reading of "There's Something in the Air" is also available as an audio file. See the online version of this article (http://www.educause.edu/er/ERM05/ERM0561.asp). Or, for the full podcast experience, RSS subscribers to Gardner Campbell's podcasts at his blog (http://www.gardnercampbell.net) will receive the podcast automatically. Those who both read the article and listen to the audio version are invited to comment on how the two experiences compare.

mate probably seemed liberal to Searls, but in reality it was far too conservative. On May 25, just eight months later, a commenter on Searls's blog entry clicked on the search link and found 4,460,000 Google hits for "podcasts." On June 23, that same Google search link returned well over 6,000,000 hits. On August 28, it returned over 21,000,000 hits. On September 18, the number had exceeded 60,000,000. Clearly, this medium has caught the imagination of a large and growing audience. During his keynote address at the Apple Worldwide Developers Conference in June 2005, Steve Jobs estimated that more than 8,000 podcasts were available through iTunes. At the time of this writing, that number has nearly doubled.

In the meantime, Musselburgh Grammar School in East Lothian, Scotland, carries on with its podcasts (http://mgsonline.blogs.com/mgspodcast/) and brags that it is the United Kingdom's first regular schools podcast. Steve Sloan, of San Jose State University, tracks and reflects on educational podcasting (http://www.edupodder.com). By the time you

read these words, the University of Mary Washington, where I teach, will have begun its "profcasts" (http://www.profcast.org). The University of Chicago will be continuing its *Poem Present* series (http://poempresent.uchicago.edu). Students at Manhattan Marymount College in New York City will be extending their fascinating "Art Mobs" project (http://mod.blogs.com/art_mobs/), in which they record their own guides to art galleries throughout Manhattan. Purdue University's "BoilerCasts" (http://boilercast.itap.purdue.edu:1013/Boilercast/Index.html) will be bringing entire courses to students as podcasts or streaming audio. My hypothetical Jenny will be producing podcasts of her study-abroad experience, or her service-learning assignment, or her job search. These podcasts will be listed in iTunes or in directories such as Podcast Alley (http://www.podcastalley.com) and PodNova (http://www.podnova.com). With a speed that makes even Moore's Law seem sluggish, podcasting has won a prominent place among the dizzying variety of grassroots media now available to everyone. As Jon Udell has noted, "When all the players are bloggers, podcasters, and screencasters, the game can be taken to a whole new level."[13] Those of us in higher education owe it to our students to bring podcasting and other rich media into our courses so that they can lift their learning to a whole new level too.

In *Areopagitica* (1644), John Milton argued: "For books are not absolutely dead things, but do contain a potency of life in them to be as active as that soul was whose progeny they are; nay, they do preserve as in a vial the purest efficacy and extraction of that living intellect that bred them." Podcasts too convey that potency of life, and they can preserve and communicate the living intellect with unusual immediacy. The air within the human voice retains its inspiration, even as it inspires the listener to speak in

Done well, podcasting can reveal to students, faculty, staff, communities—even the world—the essential humanity at the heart of higher education.

response. In this way, podcasting can help education realize one of its noblest goals: to make a better conversation out of the thing we call civilization. *e*

Notes

1. "RSS" stands for "Really Simple Syndication," a method of subscribing to Web pages and being notified automatically when they are updated. By definition, podcasts are RSS-enabled. For more information on RSS, see the Wikipedia entry at <http://en.wikipedia.org/wiki/RSS_%28file_format%29>.

2. My own blog—at <http://www.gardnercampbell.net>—uses the popular open-source blogging script called WordPress, which in its latest version (1.5x) includes this automatic support for podcasting. Sites such as FeedBurner (http://www.feedburner.com) will enable RSS 2.0 feeds from any blog, ensuring that all blogs can sponsor a podcast no matter what version of RSS or Atom they support.

3. But see <http://www.streamsage.com> and <http://www.nexidia.com/> for a fascinating look at recent developments in this area.

4. See Jon Udell, "Hypermedia: Why Now?" *O'Reilly Network,* March 18, 2005, <http://www.oreillynet. com/pub/a/network/2005/03/18/primetime. html>. Udell has an extremely rich body of writing and thinking. In my view, Udell is one of the most important practitioners and theorists of what many people are now calling "Web 2.0." His work also has tremendous implications for education. Three unusually fine pieces offer a good introduction to Udell's work. One is a podcast on podcasting, rich media, and the blogosphere: <http://weblog.infoworld.com/udell/2005/03/03.html>. Another is Udell's "screencast" on *Wikipedia* and heavy-metal umlaut bands, a fascinating look at the social construction of knowledge (or understanding, depending on your theoretical model): <http://weblog.infoworld.com/udell/gems/umlaut.html>. A third is Udell's justly famous walking tour through Keene, New Hampshire, a screencast uniting rich media, a compelling physical environment, Google Maps, and a global positioning satellite (GPS) receiver: <http://weblog.infoworld.com/udell/2005/02/25.html>.

5. Since I've been subscribing to *IT Conversations* (http://www.itconversations.com) and to the EDUCAUSE podcasts (http://connect.educause.edu), my morning commute and all my road trips have become extremely valuable development opportunities as I listen to expert presentations on every conceivable facet of information technologies in culture and particularly in education.

6. Another personal favorite, the BBC's *In Our Time* (http://www.bbc.co.uk/radio4/history/inourtime/), offers mini-seminars on the history of ideas, with subjects ranging from "Perception and the Senses" to "Renaissance Mathematics," all facilitated by the redoubtable Melvyn Bragg.

6. A free beta version for podcasts up to ten minutes long is available at <http://www.podshow.com>.

7. For a look at the design and operation of this version of iTunes, see Steve Jobs's demonstration at the June 2005 Apple Worldwide Developers Conference, available online at <http://www.apple.com/quicktime/qtv/wwdc05/>.

8. "iTunes Podcast Subscriptions Top One Million in First Two Days," Apple press release, June 30, 2005, <http://www.apple.com/pr/library/2005/jun/30podcast.html>.

9. Reported by Frank Langfitt, "Papers Turn to Podcasting, the Newest of Media," *All Things Considered*, June 2, 2005, <http://www.npr.org/templates/story/story.php?storyId=4673646>.

10. Todd Cochrane, *Podcasting: The Do-It-Yourself Guide* (Indianapolis: Wiley Press, 2005).

11. See <http://www.pewinternet.org/pdfs/PIP_podcasting.pdf>.

12. See <http://www.itgarage.com/node/view/462>.

13. Blog entry, June 17, 2005, <http://weblog.infoworld.com/udell/2005/06/17.html>.