

# Talk to Your C

You *Can* Practice Law with **Speech Recognition Software**



BM's commercial says, "You talk. It types." Is it that easy? Not quite. But I recommend continuous speech recognition software to just about any lawyer, regardless of whether you can type well.

The software can increase your personal productivity, reduce the turn-around time on your documents, reduce your fatigue and reduce your secretary's typing workload. However, it is not a panacea. You will obtain these benefits only after you have learned how to use the software and have trained it to understand your vocabulary and voice. And because of the errors it makes, complete proof-reading by you or your staff is required; this negates some of the gains in productivity.

Whether you currently dictate to a machine ("batch mode") or use a keyboard to draft documents ("interactive mode"), speech recognition software can make you and your secretary more productive. And you won't have to change the way you work. I work both ways and can, at times, agree with both sides of the debate among attorneys who have strong convictions about the "right" way to work. Of course, both ways are right. There are flavors of speech recognition software to suit any lawyer's needs.

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James A. Eidelman

# omputer



## For Those Who Now Use a Dictating Machine

Since 1973, I have practiced law with a dictating machine. Many lawyers who use dictating machines believe typing is unproductive because most lawyers can speak faster than they can write or type. For drafting original documents, effective dictation beats fast typing every time. Moreover, because lawyers spend so much time communicating verbally, dictation is the way their minds work best when being creative. The effort of typing interferes with the

smooth, effective flow of their billable creativity.

I carry a dictating machine wherever I go. I use it in the car and just about anywhere else to draft letters, e-mail notes, memos, time entries and even lengthy documents. I haven't entirely given up my dictating machine and transcriptionist yet, but I have been able to go a significant part of the way.

When I am in the office, I dictate to the computer in "interactive mode." E-mail, time entries and short memos I will correct myself. But for long documents, now that the software lets me defer correction to a later time, I often treat it as a "batch mode" process. I save the file, and my secretary makes the corrections, playing back what I said as she works. When I am away from the computer, I currently use a Norcom dictating machine. If I am in town, my secretary will "play" the dictation into the computer, and she can make the corrections. If I am out of town, I will "play" the tape into the computer and transfer the document by e-mail for her to correct.

(There are some inconvenient aspects of this, including the need for separate voice files for interactive and dictating machine use, and for the different PCs I use. In the near future, I hope to be able to use one of the dictating machines that lets you read a

digitally recorded WAV file directly.)

The more robust software packages support "deferred correction," letting a staff member highlight any text that looks strange and listen to the words that were dictated. This lets a secretary work with the text and voice files together, while formatting and further editing are done. In fact, SpeechLaw's implementation of Philips' Speech-Magic, a high-end solution for the batch processing of dictation, is built around this design.

## For Those Who Use a Keyboard

Lawyers who use a keyboard feel they have a big advantage.

Seeing your thoughts come alive onscreen aids the creative process. The ability to edit as you create can allow you to do the equivalent of several rounds of dictate-edit-markup-review in one sitting. I enjoy drafting with a regular word processor, and even more with a creativity enhancer like an outline processor such as Grandview and Ecco, or the outliner built into Microsoft Word and WordPerfect.

As a fast typist, I can draft almost as fast at the keyboard as I can dictate. So when I am sitting at my desk or laptop, I use the computer; when I am

Will talking to your computer—rather than using a dictating machine or keyboard—help boost your productivity? Here are some answers.

For updates on the information in this article, visit [www.abanet.org/lpm/magazine/speechrec.htm](http://www.abanet.org/lpm/magazine/speechrec.htm)

## ■ LET SOMEONE ELSE HANDLE IT

If you don't want to mess with the hardware, software or transcription locally, there is one service bureau that will do it all for you. CyberTranscriber from SpeechMachines can be found on the Web at [www.speechmachines.com](http://www.speechmachines.com); (650) 568-1500. It uses a speech recognition product developed by the military.

You can use the telephone or digital dictating machine as an input device. That means you can call the company on the phone, dictate your document and then receive it in Microsoft Word by e-mail!

## ■ HEADSETS WITH HIGH-END MICROPHONES

Using the right high-end microphone is critical for success with speech recognition software. VXI Corp. and Andrea Electronics are the two leading vendors of high-end mike/earphone combinations. VXI products currently ship with Dragon technology, Andrea products with IBM.

Some experimentation may be required to find the best product for your PC. The better products have noise reduction built in, so you can work in a noisy place and still get good results. Both VXI and Andrea market an add-on device that adds a little more power, needed for some sound cards (especially with some laptops).

With a telephone headset, you get the best of hands-free talking on the phone and high-quality sound. You can talk all day without getting tired from bending your neck and holding the phone. I strongly recommend a headset with an amplifier that lets you use the headset with both your telephone and computer. I use VXI's Parrott 60V-20, and I love it. I can switch between dictating to the computer and talking on the phone simply by pressing one button, with the highest quality for each.

walking or in the car, I dictate using a portable dictating machine.

Unfortunately, too many years of heavy typing now causes wrist pain. The Microsoft Natural Keyboard solves most of my problem—but speech recognition software is even better. I can talk to the computer, and the words appear onscreen. It surely beats typing!

Speech recognition software used interactively gives you the best of both worlds. You can create text by talking to the computer, not having to type as you create new text. And you get to work with your documents interactively and visually; your secretary doesn't need to transcribe a tape. You can sit at your computer, type some

list), time entry, word processing, Web browser and FrontPage. As I work, I switch windows. For example, if I receive a phone call, I may type in notes during the call, then draft a word processing document, an e-mail message, a time record and a task or calendar entry.

I have been using a combination computer and telephone headset, with a button I can press when the phone rings to change modes (which I strongly recommend). This arrangement lets me avoid changing headsets when the phone rings.

With the low-end versions of continuous speech recognition software—and with slower machines—you cannot dictate directly into Microsoft Word, Outlook, Timeslips or FrontPage. Rath-



**“I strongly recommend putting money into a fast computer and good microphone, and putting time into learning and training the software.”**

and talk some. You dictate to the computer and watch the words appear onscreen as you talk, correcting and formatting as you go.

Lawyers comfortable with a computer and keyboard will prefer the interactive mode, speaking into a microphone or headset. You need a very fast computer and decent computer skills, but you don't have to mess with disks or tapes.

### How I Use Speech Recognition Software

I have begun using speech recognition software on a regular basis—all day, every day—when I sit at my computer.

My work pattern: As the day goes on, I typically have six or more windows open on my desktop, including Outlook (e-mail, calendar, contact manager, task

er, you dictate into a simple SpeechPad or VoicePad word processor. If you wish, you can format and print right from the word processor, although the formatting is less robust than in WordPerfect or Microsoft Word. You also can save the document as an .rtf (rich text format) or .doc (Word) file, which can be read by most other programs—or you can copy and paste the text into the other program.

With the earlier versions, the way I worked most of the time was to dictate into the voice window, then cut and paste the text into the time record, e-mail message, Word document or other application. Most of the packages now let you dictate into any window. You can speak right into an e-mail reply, time record or your favorite word processor. Microsoft Word users will be

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happy to know just about all of the products have special integration with Word. WordPerfect users are not left out; there is full integration with WordPerfect from Dragon and Typhoon. I have tried all these packages, and they work quite well—although you need a snappy machine when working with other applications.

When I'm in applications other than word processing, I talk right into the application (particularly helpful when entering time records).

#### Proofreading Required

Speech recognition software makes no typos. However, it makes lots of mistakes (especially at first). Most of the time, the mistakes do no damage. Confusing "in," "an" and "and" generally affects only the readability of the sentence. However, on one occasion the software typed "doesn't" when I said "does," completely changing my meaning. I missed it. The error would have caused serious problems had not a proofreader caught it.

I find it particularly difficult to proofread my own work when using speech recognition. When proofreading, one's brain scans the text, looking for misspelled words without reading for content. It takes another person to scan the document looking for words or phrases that do not make sense in context. When I send e-mail that someone else hasn't proofread, I sometimes put a note at the beginning: "This text was entered using speech recognition software, assuming you prefer a prompt response to perfection. Please excuse any 'funny' or sound-alike words in the text that I may have inadvertently missed."

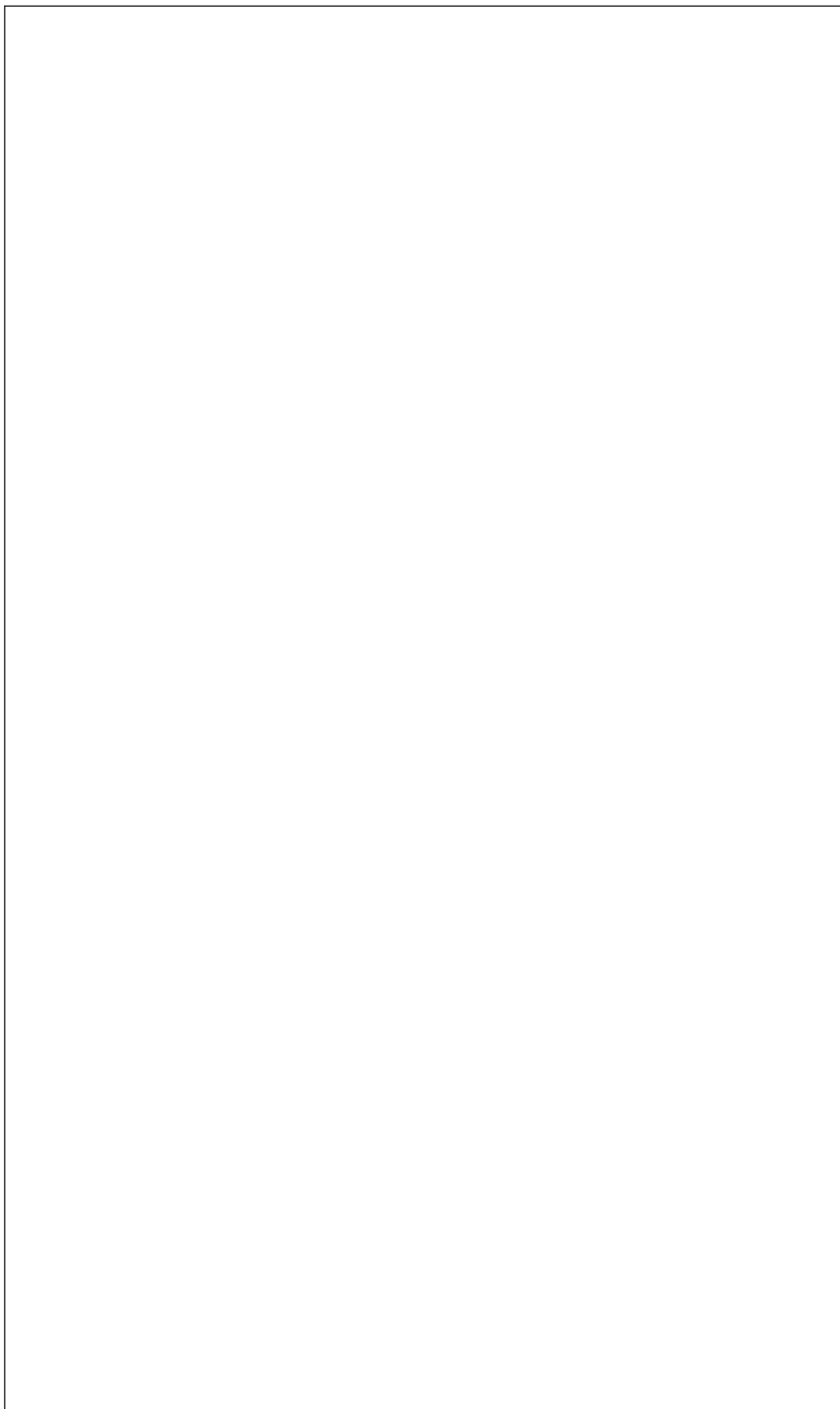
#### Impact on Productivity

I liken learning to use speech software to learning to ride a bicycle. When it isn't going well, you cuss a lot and get

nowhere. When you "get on a roll," using it can feel like coasting with the wind blowing through your hair. You can crank out letters, e-mail and other documents quickly and easily. Talking is

less tiring than typing. Instantaneous turnaround without waiting for transcription is an important benefit.

But bear in mind the system will make lots of errors, some of which can



# The Speech Recognition Vendor Round-Up

Here's an overview of the vendors and the market for voice recognition software.

## Products that Work Interactively on Your Own PC

■ **DRAGON SYSTEMS NATURALLY SPEAKING.** Dragon Dictate, a discrete speech program, was the first PC-based speech product on the market. It also was the first "continuous speech" program to market in summer 1997. It has an excellent interface. In August 1998, Dragon began shipping new, enhanced versions of the software.

Dragon NaturallySpeaking won more than 20 major awards and was named "Best of the Year" or "Editor's Choice" by just about every reviewer, from *Time* to *PC Magazine*. Its interface is excellent, especially for making corrections and "training" the system about how you pronounce words. The "vocabulary builder" even lets you feed it word processing documents to add words that aren't already in the dictionary.

WordPerfect Legal Suite 8.0 now comes with a free copy of Dragon NaturallySpeaking, Personal Edition—the basic, least expensive version. (You'll want to upgrade, because the Personal/ Standard Edition doesn't include the Mobile module to let your secretary convert and hear your sound files.) The Preferred and Professional versions add features, including (most important) the ability to talk right into your word processor, the Mobile module for transcription of WAV files, and the ability to create voice macros.

The single most important feature of the new software is the NaturallyMobile module. The software can directly transcribe a standard Microsoft WAV sound file. This can come from text dictated directly to the PC using the Sound Recorder software (it can be dictated directly or through a wire from a Norcom handheld unit), or from a WAV file captured on a digital dictation machine. Your secretary, while correcting, can listen to the sound file that goes with the text during that session, although the sound file is erased once the session is closed. You cannot save the sound file for later correction. (Note that the WAV files should be in the following format: PCM, sampling at 11,025 Hz, 16-bit, mono (21kbps).)

Dragon also offers a Dragon NaturallySpeaking Legal Suite specifically for lawyers. It is a combination of the Deluxe version plus an extensive legal vocabulary of more than 240,000 words. These include court names, case history and weight of authority, Latin and French phrases, litigation terms, and abbreviations. You

say the term the way you would say it in conversation (for example, "New York second"), and the software interprets it and types it correctly ("N.Y. 2nd"). In addition to the preexisting vocabulary, you can create your own vocabulary with terms from your legal specialty. Dragon NaturallySpeaking Legal Suite does not come with predesigned macro templates; you can create your own.

If your computer has extra RAM, note that the new version also supports BestMatch technology. This is a module that increases performance and accuracy. It is strongly recommended. With BestMatch loaded, Dragon's accuracy is better than all of the others.

■ **IBM VIAVOICE 98.** IBM has been working in speech recognition for decades. The first ViaVoice product for PCs was released in 1997. Most users, including myself, didn't like its interface or usability as well as Dragon's, but it set a standard in price (very low!) and in one other important feature: the ability to save the dictation with the text of the converted document, so dictation can be in batch mode with correction deferred, to be done by a secretary.

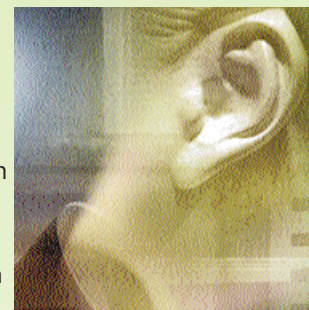
ViaVoice 98, released in July, is the latest addition to IBM's recognition software family. At \$149, its Executive version is by far the least-expensive full-featured product. With ViaVoice 98, you can open files and e-mail, format text, and dictate documents and e-mail directly into most Windows 95 and Windows NT applications (although the menu commands don't work in Windows NT). This software has the macro capability mentioned above, so you can eliminate repetitive typing by calling in standard paragraphs, form letters, addresses, etc., using simple verbal commands. For example, by merely dictating "thank you," you can have the entire body of a standard thank-you letter appear on your screen. Another example would be to print your document by simply uttering "print."

ViaVoice 98 features some context recognition, which improves recognition of sound-alike terms such as "there," "their" and "they're." It also offers a full legal dictionary for only \$149 retail.

Topics for legal specialties like Worker's Compensation and corporate law are now, or soon will be, available for purchase at IBM's Web site. Developed by SpeechLaw, they offer a specialized vocabulary and a language model.

The 98 version is a complete makeover—a much-improved interface, improved accuracy and other features. As I learn it and get used to it, I like it. Anyone who rejected the IBM program based on the earlier version should take another look.

Olympus offers a combination product that includes a digital dic-



tating machine with a customized version of IBM ViaVoice 98. It looks like a terrific combination, although recognition in the initial version is not quite as good as expected. Dictaphone soon will offer a similar arrangement with its Boomerang and Walkabout products.

Special versions that directly read a WAV file are or will be available from makers of dictating equipment such as Olympus and Dictaphone. But as of this writing, the off-the-shelf versions of ViaVoice from IBM do not yet match Dragon NaturallyMobile's ability to read WAV files.

■ **LERNOUT & HAUSPIE VOICEXPRESS PLUS.** The new kid on the block is L&H VoiceXpress Plus. L&H began in language translation software, then acquired the product Kurzweil had invented. Then Microsoft invested more than \$40 million in the company for 8 percent of the stock.

The first L&H package was not designed for dictating text into a document, but rather for controlling Windows and formatting Microsoft Word documents with voice commands. The company's first continuous speech product, released in May, stands out for its ease of controlling Microsoft Word with plain English voice commands and its ability to dictate numbers and letters naturally.

By the time this article is in print, L&H expects to have released new versions of its product line. Like Dragon and IBM, L&H will offer four levels of functionality: Standard, Advanced, Professional and Legal. The industry has great expectations for this product line, as Microsoft moves toward adding speech commands as part of the operating system in the future.

■ **PHILIPS FREESPEECH.** Like IBM, Philips—a Dutch company—has been working in speech recognition for two decades. Until now, Philips has marketed only high-end solutions through third parties targeted at the professional market (*e.g.*, SpeechLaw); Philips has not offered a consumer product. New to the market is Philips FreeSpeech, which you can download and test for free from [www.freespeech98.com](http://www.freespeech98.com)—assuming you have a high-quality microphone. It has some nice features, such as its patented dictation playback with synchronous highlighting, the ability to work with Microsoft Office and other applications, and the ability to improve accuracy by learning from correction of recognition errors.

■ **SMITH CORONA/TYPHOON.** Typhoon produces a specialized adaptation and interface with the IBM ViaVoice 98 engine to optimize its performance in the major word processors (Word 97 and WordPerfect 7 and 8), as well as Novell GroupWise and, soon, MS Outlook. It has produced 500 commands for editing text and gives a complete, natural experience for using speech to create documents. Typhoon's founder is a lawyer who has taken special pains to optimize a product for the professional user. It is available in a version

that allows the user to save the original voice dictation; thus, a transcriptionist can listen to the original session while making corrections to the draft, then delete the voice file—which is memory-intensive. Typhoon promises improvements later this year, adding artificial intelligence for further accuracy and speed enhancement. Smith Corona will soon market Typhoon software internationally.

### Batch Mode: Converting Sound Files into Text on a Server

#### ■ **SPEECHLAW (USING PHILIPS SPEECHMAGIC OR IBM VIAVOICE).**

Philips created the first continuous speech recognition product for PCs. Through SpeechLaw, the creator of the legal ConText (a combination of a specialized vocabulary and voice model), it began marketing to lawyers at the ABA TECHSHOW in 1997. This is not a shrink-wrap product, but rather one that is sold for network integration—often with training and integration services—at \$1,500–2,500 per attorney (purchase price) or \$125 per attorney per month (after setup) on a subscription basis. Consulting services are extra.

SpeechLaw's software was designed so lawyers who dictate with a machine can just keep doing what they have always been doing. They don't even need a PC; if they have one, it doesn't have to be powerful. The recorded sound files are transferred to a speech server running on a Windows NT machine, converted into Word or WordPerfect documents and routed to the secretary or back to a lawyer. A secretary can use a foot pedal/headset combination to listen to the attorney speaking while the words are highlighted onscreen. The secretary can stop, back up and make corrections; the corrections will be used by the system to improve accuracy in the future.

SpeechLaw has set up special ConTexts (Philips) or Topics (IBM) for many practice areas, including various litigation specialties, real estate, corporate law and labor law.

The software also has database compatibility through Microsoft's ODBC (open database connectivity) standard, so it can read SQL and Access databases. If the integration work has been done and the system is connected to a case management or other database, an attorney can dictate the variable names in the text. When the sound files are converted, the package can look up the names and other information and replace the variables with text from the data file. The vendor reports that over time, its clients have achieved dramatic improvements in lawyer-to-secretary ratios.

— JAMES A. EIDELMAN



## ■ DICTATION UNITS THAT CAPTURE YOUR VOICE

Philips and the high-end versions of Dragon and IBM support batch entry of voice, recorded on a special digital device. Dragon recommends the Norcom 2500. It currently sells for about \$500 and has a special adapter that lets a tape play into the PC. Dragon's new NaturallyMobile module also directly reads Windows WAV files that are captured digitally.

Philips hardware and software work together. The Olympus D1000 digital dictating machine records a sound file. As with the Philips, the customized version of the IBM software recognizes the digital WAV sound file directly.

The Norcom 2500 ([www.norcom-electronics.com](http://www.norcom-electronics.com)) with an SRC-1

Speech Recognition Coupler, pictured, is a high-end minicassette recorder that functions just like any other dictation machine. Norcom Electronics has worked with Dragon Systems and IBM to optimize it for use with those companies' speech recognition software. The SRC-1 is necessary to change the line-out signal from the dictation machine to be compatible with the microphone "in" jack on your computer, when playing your recordings back for transcription. With the SRC-1, the Norcom 2500 sells for around \$500; you may find it discounted. I have tried it, and like it.

Sony markets the MZ-R50, MZ-R30 and MZ-B3 minidisk recording Walkman. In theory, it offers the advantage of digital recording with much larger storage than PC Cards. Earlier models we tested didn't have the dictating machine controls lawyers need. We haven't seen or tested these yet. Stay tuned for our comments.

Olympus markets a digital dictating machine that saves the sound files on a PCMCIA memory card (PC Card). It's bun-

dled with a customized version of IBM ViaVoice 98. The benefit is that unlike the Norcom or Sony, you don't need to play the dictation through a wire back into the computer. Rather, the software just reads the sound file and uses it. List price is \$349, with an expected street price of \$299. One of the competitors claims the accuracy is not high enough, but we look forward to trying it. We understand the Olympus works great with SpeechLaw software and Dragon.

Philips began in the dictating equipment business, and that heritage shows. An attorney who is comfortable with traditional dictation will feel right at home with either of Philips' two handheld units:

- The SpeechMike attaches to the PC and has the look, feel and function of a desktop dictating machine. It offers a comfortable combination of buttons for fast-forward, rewind, record, listen, stop and pause.
- Philips also markets a pricey (\$2,000, at the moment) portable unit that captures almost an hour of speech to a PC Card. The card then can be plugged into any PC Card slot to have the voice files processed by the speech recognition software.

Dictaphone's Boomerang, like the Philips SpeechMike, will be a natural for lawyers who are used to working with a desktop dictating machine with a handheld mike. It has the normal buttons and slide controls you can manipulate with your thumb. Since it is digital, not only can you go forward and backward and insert spoken text in the middle of other spoken text; it saves the speech as a standard Windows WAV file. Dictaphone makes a companion unit for the secretary, with headset and foot pedal, for manual transcription. Dictaphone is releasing a customized version of IBM ViaVoice 98 that is bundled with the Boomerang products. They are also releasing the Quest, a high-end portable dictation unit with some palm computer features.

— JAMES A. EIDELMAN

See the chart on page 37.

change the meaning of what you say. You must have someone else proofread your document!

### Getting Started

Each of the interactive packages is easy to learn, assuming you already know how to use a PC with Windows. (If you don't, you should get basic PC training before you start.) Each has a startup procedure, in which you go through the following steps:

1. **Read the simple instructions on how to get started.**
2. **Install the software on your machine.**
3. **Adjust the audio controls for your microphone and speaker.**
4. **Review online introductory documentation and tutorials.** I particularly like the IBM audiovisual demos that explain things while words appear onscreen and the mouse clicks on various controls.

5. **"Enroll."** The high-end versions can set up multiple users on one machine. The computer needs to know who you are so it can work with your vocabulary and voice files. Each person speaks differently, and the computer needs to get to know you. Enrollment takes an hour or so. During the process, you read a short story or two and some explanatory material while the computer instructs you on how to speak to it. When it is done, it takes another hour or so for the computer to process your language and learn how you pronounced the words in the enrollment exercise.

6. **Take it for a spin.** Try dictating to the computer, watching your words appear onscreen.

7. **Build the computer's vocabulary in two ways:**

- Use the software's "topic builder" facility to read word processing documents containing words you



■ INTEGRATED DICTATION HARDWARE AND SOFTWARE SOLUTIONS FOR BATCH DICTATION AND DEFERRED TRANSCRIPTION

Hardware Vendor	Product	Media	Speech Rec. Software	Requires Playback?	Sound Quality	Street Price* (w/software)	Comments
<b>Portable Handheld Dictation Units</b>							
Norcom	Norcom 2500 Portable Dictating Machine w/Speech Recognition Coupler	Minicassette tape	Dragon, IBM and others	Yes	Excellent	\$399 wo/software	Record to tape, then play back through wire
Olympus	Portable Dictation Machine	PC Card memory	Customized version of IBM ViaVoice 98; SpeechLaw; Dragon	No	With IBM, adequate in first version. With SpeechLaw/Philips, excellent.	\$299 w/ IBM ViaVoice 98	Compressed WAV files
Dictaphone	Walkabout Mobile portable dictation machines	PC Card memory	Customized version of IBM ViaVoice 98 (Available 1/99); Dragon	No	Quest is excellent; others are barely adequate	\$279–449	Saves standard MS.WAV files
Sony	MZ-R30 MZ-R50	Minidisk Minidisk	Dragon Dragon	Yes Yes		\$399.95 \$449.95	Terrible controls
Phillips	SpeechPad	PC Card memory	SpeechLaw	No	Good	\$299.99	
Dragon Systems	NaturallySpeaking Mobile	PC Card memory	Dragon	No	Excellent	\$299.99	
<b>Handheld Digital Dictation Microphones with Thumb Controls</b>							
Dictaphone	Boomerang Dictation	Saves WAV files on PC hard disk	Includes customized version of IBM ViaVoice 98	No	Excellent	\$395	Shipping November 1998
Phillips	SpeechMike	Saves WAV files on PC hard disk	SpeechLaw; Philips FreeSpeech (not included)	No	Excellent	\$139.99	
<b>Foot-Pedal/Headset/Playback Units for Transcriptionists</b>							
Dictaphone	Boomerang Playback Unit/ Dictation	ViaVoice 98 translates sound files, or works as traditional unit	Includes customized version of IBM ViaVoice 98	No		\$395	Shipping November 1998
Phillips	Foot pedal, headset, playback unit		Phillips	No		\$89.99	Plays back with synchronized sound and highlighting onscreen

commonly use which are not in the dictionary. You can select the words you want and even speak them, to train the system further.

- Correct errors as you go, training the computer about the words it did not recognize.

This experimentation is best done on a weekend, while you're not in the

middle of "billable hours" and the phone is not ringing. If you play with it, teach it and learn from it on Saturday and Sunday, by Monday you will begin to be effective in dictating to the computer.

If you are working in batch mode, it is much easier. The SpeechLaw/ Phillips software requires very little enrollment. As the secretaries make corrections, the

accuracy will increase. Like other programs, the more you use it, the fewer errors it will make.

If you are using one of the interactive packages in batch mode, you need to speak the enrollment exercises into the dictating machine and play them back, so the computer can learn how you speak. Accuracy will never quite reach the level of interactive use, because

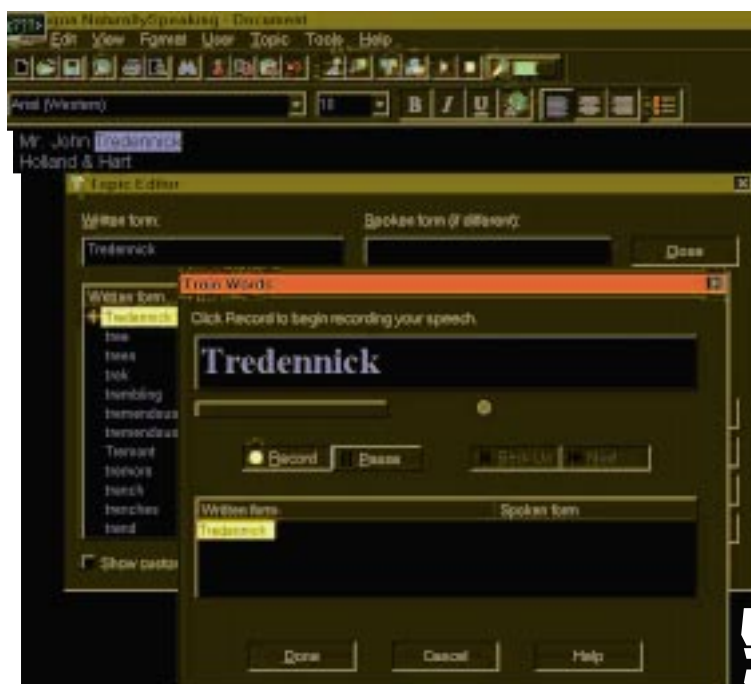


Figure 1: Dragon's add-a-new-word screen.

the lawyer isn't there to record the pronunciation of problem words. If the secretary corrects the word without recording, the system doesn't learn as well for the future.

### Training the Computer

You can train the computer to recognize phrases or words you use. For example, I quickly trained the system to learn the names of people and streets I use regularly. There are still problems when the new words sound like standard words.

Figure 1 shows Dragon's "Correct That" screen.

### Failures to Communicate

To get the computer to understand you (even after you have trained it to understand your voice), you must:

- Enunciate very clearly;
- Emphasize consonants;
- Buy a high-end microphone;

- Slow down a little until the system becomes reliable.

The computer has trouble with "sound-alike" errors. It's hard to get mad at the computer for not recognizing mumbling. But it can be frustrating when you think you are speaking clearly, and it just isn't good enough.

For example, when I said, "I sure look forward to seeing you," the computer heard "Assure look forward to seen in you." When I repeated the same words with better enunciation, the computer got it right.

Figure 2 shows some other examples of failures to communicate between the computer and me. The errors happened even after a reasonable amount of training.

### Using a Laptop

Some laptops just don't work well with speech recognition software, even if they otherwise have enough pow-

er. There can be two reasons: 1) The sound card is inadequate and 2) the circuitry is jammed so close together there can be interference. For example, the Dell Inspiron is an inferior computer to the Dell Latitude CP—but the Inspiron worked better for me with speech recognition. If you are planning to use speech recognition software and have not yet bought your laptop, experiment first. Don't forget to experiment with two or three different headsets; the results can vary widely.

One laptop that works particularly well is the Micron TransPort line. Micron has worked closely with Dragon, and Dragon recommends Micron products. Similarly, I assume the high-end IBM ThinkPads work well with IBM's ViaVoice, but have not tried them.

Noisy background? I am happy to report I was able to dictate successfully on a train from D.C. to New York, despite an extraordinary amount of background noise from the road, the fan and other travelers. I was even able to dictate directly into my laptop computer in the car while driving.

### Supporting Speech Recognition in a Law Firm

I do not recommend simply buying the software and delivering it to your attorneys to learn on their own. This would frustrate most attorneys. Only the "techies" would succeed. Most firms should:

- Set up a pilot group of patient lawyers to try it out.
- Have the techies use the PC directly. Team them with a paralegal or associate to proofread their briefs, pleadings and contracts; a secretary can make corrections on simple letters. Use only software that lets the secretary or proofreader listen to what was dictated.
- Have a pilot group of lawyers who already use dictating machines

enter text with a dictating machine, such as the Norcom/Dragon or IBM dictating machine combination.

- When you roll the system out to the firm, be ready with personal trainers and floor support.

- Require that everything be proofread carefully.

Attorneys need to take care not to let the proofreading and correction time kill their productivity. If I can dictate or type an agreement in an hour, it may take me an hour and a half to dictate it into the computer and correct it. I have saved my secretary the trouble of transcribing the tape, but I have lost productive time.

Some attorneys will have a smooth

ride. After they have been using the system interactively for a few weeks and suffered some productivity loss, their productivity will rise again to where it was. Others will not. For them, most of the time they should work in batch mode, letting the software serve as a tool to improve the secretaries' productivity. Each firm will need to experiment to see what works best.

### The Vendors and the Market

Speech recognition software packages work in one of two modes:

- **Discrete:** The early packages used what is called "discrete" speech recognition. They included Dragon Dictate and IBM VoiceType. These packages work well, but you cannot dictate in a conversational tone. Rather, you-must-speak-like-a-ro-bot, separating every word and syllable with a slight pause. Most of us would rather use a dictating machine or type than dictate that way.

- **Continuous:** The new packages use "continuous" speech recognition. As long as you enunciate very clearly, you can dictate to the computer much as you would dictate to a transcriptionist. This is what most lawyers have been waiting for. All packages described in this article are continuous.

The market for continuous speech recognition is experiencing roller-coaster-ride excitement, with dramatic changes every few months. New features, new versions and price drops abound.

I will leave it to the trade press to describe the current features of each package. Journals like *PC Magazine* and *Windows Magazine* are in a much better position to present blow-by-blow comparisons of new versions of the products as they are released.

The sidebar starting on page 34 provides a general description of the offerings from each of the vendors.

### ■ FOR MORE INFORMATION

For updates on the information in this article, visit [www.abanet.org/lpm/magazine/speechrec.htm](http://www.abanet.org/lpm/magazine/speechrec.htm)

#### Learn More at ABA TECHSHOW™99

To see speech recognition in action, come to ABA TECHSHOW™99 in Chicago, March 18-20, 1999. This three-ring circus on law office technology will include presentations on speech recognition, along with vendor demonstrations in the exhibit hall. For information, fax your name and address to (312) 988-5820 (see page 63 of this issue), and visit the ABA TECHSHOW Web site at [www.abanet.org/techshow](http://www.abanet.org/techshow).

#### Reviews and Articles

- "Voice Recognition Makes Itself Heard," *Windows Magazine* (August, 1998); [www.winmag.com/library/1998/0801/rev0020.htm](http://www.winmag.com/library/1998/0801/rev0020.htm)
- "Speech Recognition: Finding Its Voice," *PC Magazine* (October 20, 1998); [www.zdnet.com/pcmag/features/speech98/index.html](http://www.zdnet.com/pcmag/features/speech98/index.html)

#### Vendors and Consultants

- Andrea Electronics Corp.: [www.andreaelectronics.com](http://www.andreaelectronics.com); (800) PRO-INFO
- Dictaphone: [www.dictaphone.com/products/boom/boom20\\_index.htm](http://www.dictaphone.com/products/boom/boom20_index.htm); (800) 447-7749
- Dragon Systems: [www.dragonsys.com](http://www.dragonsys.com) or [www.naturalspeech.com](http://www.naturalspeech.com); (617) 332-9575
- IBM: [www.ibm.com/ViaVoice](http://www.ibm.com/ViaVoice); (800) 825-5263
- IBM Speech Systems: [www.software.ibm.com/is/voicetype](http://www.software.ibm.com/is/voicetype)
- Lernout & Hauspie: [www.lhs.com](http://www.lhs.com); (617) 238-0986
- Norcom Electronics: [www.norcom-electronics.com](http://www.norcom-electronics.com); (203) 374-1500
- Philips: [www.freespeech98.com](http://www.freespeech98.com) and [www.speech.be.philips.com](http://www.speech.be.philips.com); (770) 821-2400
- SpeechLaw: [www.speechlaw.com](http://www.speechlaw.com); (949) 837-8272
- Typhoon: [www.typhoon.com](http://www.typhoon.com); (800) 933-6520
- VXI: [www.vxicorp.com](http://www.vxicorp.com); (800) 742-8588
- Voice Recognition Systems, Inc.: [www.iglou.com/vrsky](http://www.iglou.com/vrsky)
- 21st Century Eloquence: [www.continuous-speech.com](http://www.continuous-speech.com)

ORDINARY WORDS IN THE DICTIONARY	
I Said:	The Computer Typed:
does	doesn't
error	air are
proof	prove
my own work	my homework
where	were
librarian	library and
meet	me
the check	paycheck
note the	notebook
us	costs
yet	at
since	sense
you	use
is sending	ascending
went well	112
days	day is
WORDS NOT IN THE DICTIONARY	
I Said:	The Computer Typed:
c:	see:
Intellimouse	Intel mouse
MMX	in Amax
Holland and Hart	Holland and heart
System/36	system 36

Figure 2: Examples of failures to communicate.

## ■ VOICE RECOGNITION SOFTWARE PRICE COMPARISON

Personal	Business	Professional	Legal Add-Ons and Features
<b>Dragon NaturallySpeaking</b>			
<b>Standard Edition:</b> This value-packed edition includes all of the major features that made Dragon America's No. 1-selling continuous speech product, according to PC Data. It includes Dragon's BestMatch technology for superior accuracy; Natural Language Commands with Select and Say editing, dictation into virtually any Windows application and more. <b>\$109.</b>	<b>Preferred Edition:</b> Contains all of the features of the Standard Edition plus features for business and other users, including: Dragon NaturallyMobile for transcription of recorded speech with recorded speech playback and text-to-speech for easier editing. <b>\$229.</b>	<b>Professional Edition:</b> Contains all of the features of the Preferred Edition and adds sophisticated features for the user who creates significant amounts of text. In addition, this edition adds advanced macro support which allows for total control of forms, the ability to add and customize vocabularies, and Dragon Dictate 3.0 for complete hands-free use. <b>\$695.</b>	<b>Legal Suite:</b> More than just a word list, this edition's 230,000-word legal dictionary contains not only an extensive collection of legal terms, phrases and abbreviations, but also the context of those terms as used within typical legal documents. <b>\$995 (includes Professional Edition).</b> <i>Read WAV file? Yes.</i> <i>Save dictation with text? Yes.</i>
<b>IBM ViaVoice 98</b>			
<b>Home Edition:</b> This edition creates letters, reports and e-mail. Say numbers, dates, times and currencies. Dictate directly in Microsoft Word or ViaVoice 98 SpeakPad. Save speech files for deferred correction. <b>\$49.95.</b>	<b>Office Edition:</b> Contains all of the features of the Home edition plus allows you to navigate and control desktop and applications by voice (filenames, toolbar buttons, icon names). Creates voice shortcuts for repetitive keyboard commands. Includes ViaVoice 98 Business and Finance vocabulary. <b>\$89.</b>	<b>Executive Edition:</b> IBM's most powerful continuous speech software, the Executive Edition includes all ViaVoice 98 Home and Office features, plus you can dictate directly into most popular Windows applications. Supports multiple users sharing the same PC, and there is an option to buy specialty vocabularies (medical and legal). <b>\$149.</b>	<b>Full Legal Vocabulary.</b> Add-on. <b>\$149.</b> Additional specialized topics are also available. <i>Read WAV file? Only customized versions.</i> <i>Save dictation with text? Yes.</i>
<b>Lernout &amp; Hauspie VoiceXpress</b>			
<b>Standard Edition:</b> This edition allows users to dictate, format and edit documents using continuous speech and Natural Language technology. Includes a 60,000-word vocabulary. <b>\$49.99.</b>	<b>Advanced Edition:</b> Contains all of the features of the Standard Edition plus the ability to work directly in Microsoft Word with formatting commands. Outstanding control and formatting commands. <b>\$79.99.</b>	<b>Professional Edition:</b> <b>\$149.95.</b>	<b>Legal Litigation Law.</b> This is a specialty domain designed for attorneys who practice civil corporate litigation. L&H expects to introduce a general vocabulary for the legal community by year's end. Approximately <b>\$1,500.</b> <i>Read WAV file? No.</i> <i>Save dictation with text? Yes.</i>
<b>Philips FreeSpeech</b>			
	<b>Philips FreeSpeech with Philips SpeechMike:</b> Includes patented dictation playback with synchronous highlighting, the ability to work with Microsoft Office and other applications. Accuracy improves as it learns from correction of errors. <b>\$109.</b>		
<b>Smith Corona/Typhoon</b>			
<b>Starter Edition:</b> Does not include microphone. Documentation is on the Web. <b>\$65.</b>	<b>Home Edition:</b> <b>\$129.</b>	<b>Professional Edition:</b> <b>\$299.</b>	<b>Legal or Medical Dictionary.</b> Add-on. <b>\$199.</b> <i>Read WAV file? Yes.</i> <i>Save dictation with text? Yes.</i>
<b>SpeechLaw</b>			
For network software and context/topic. Price per attorney (secretaries are free) on a purchase basis, \$1,500-2,500; subscription basis, \$125 per month (after setup). Services are extra. <i>Read WAV file? Yes. Save dictation with text? Yes.</i>			

### Conclusion

The Dragon, IBM and the other interactive products are extraordinary values. So is SpeechLaw, when viewed in light of the value of an attorney's time and a secretary's efficiency. I strongly recommend putting money into a fast

computer and good microphone, and putting time into learning and training the software.

In the future, each of these packages will continue to become easier to use, more accurate and more robust. But you don't need to wait. *Now is the time.* ■

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