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A nuanced ear

*In use for almost a decade in Europe and the United States, the 'voice reporting' method of judicial reporting is gaining popularity worldwide, says **Adrian Kelly**, who argues for retaining the human element in court reporting*

It almost goes without saying that the court record, that chronicle of events, is so fundamental to the legal system that sometimes little thought is given to how it is produced or the various methods of production, both in this country and around the world. What is regarded as a given, though, is that it must be accurate and produced in a timely manner.

Voice writing court reporters working in the US and Europe are at the cutting-edge of a new technology. They have trained computer programs within powerful laptop computers to recognise, decipher and translate their specific voices, and are using this technology right now in courts and other hearings such as conferences, annual general meetings and the like.

These highly skilled reporters shadow the words of a speaker and within seconds, they are in printed form on a computer screen, with all speakers identified, questions and answers formatted, and with the appropriate punctuation. It is a complete reporting package: the transcript is produced in real time, and the hearing is digitally recorded into the reporter's laptop, enabling a quick search and find feature to retrieve a particular segment of transcript, and as a back-up. The reporter can move his or her equipment within minutes to any setting. The device the reporter speaks into, called a Stenomaskā, is like a small sound booth, providing a crystal clear record of the reporter's voice, and thus extraneous sounds that prevent a less than accurate transcript have been completely eliminated.

The voice writer places the mask to his or her face and repeats spoken words, usually staying about seven or so words behind the speaker. As usual, the defence establishment had heavily influenced the mask's design and use characteristics, which is why it looks like an air force pilot's oxygen mask. Inside the mask is a microphone and voice-dampening materials. Constant improvements yielded today's original Stenomask and variants. Modern masks have two microphones; one for primary processing and one connected to a backup recorder.

In what the voice writing industry calls "real-time mode" for reporting and captioning, the voice reporter can pipe his or her English language output to more than one video display simultaneously. In a real-time scenario, the voice writer's words go through the Stenomask's cable to an external USB digital signal processor, where the analogue signal's words are converted into digital ones and zeros. From there the words go into the computer's speech recognition engine for conversion into streamlined text. The reporter can send the streamed text to the internet, a computer file, a television station, or other software programs, which format the text stream in a way most familiar to judges, barristers or subtitling consumers.

Voice writers have always enjoyed very high accuracy rates, based upon pure physiology. The route taken by a person's words goes from a speaker's mouth, to the reporter's ear, brain and 'inner' voice. This form of repetition is naturally effortless; it's what we all do in our daily conversation as we listen to a person speak, or when we read a book.

The most natural extension of this process is to psychologically split the repetition mechanism so that it is sent, simultaneously, to one's 'inner voice' and also to one's physiological 'spoken voice.' Therefore, we minimise the introduction of cognitive overhead in our task of routing the spoken word to its permanent destination as printed words. This streamlined process enables the achievement of excellent performance for many continuous hours, and high rates of accuracy.

Voice writers produce the same products as their Stenotype machine shorthand colleagues, including transcripts in all electronic and printed formats. Real-time verbatim reporters connect their laptops to captioning equipment, real-time viewer programs, and provide members of Parliament, judges and barristers, with computer files at the end of sessions. Only the physical means of capturing speakers' words differentiates voice writing from other





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methods. Every other aspect of this profession is the same, with the exception of the time required to learn the skill, which is much shorter with voice writing, due to the psychological and physiological efficiencies inherent in the manual process.

Speech recognition globally

VR CAT systems, in tandem with Scansoft's Dragon Naturally Speaking or IBM's ViaVoice programs, perform speech-to-text translation in real time, with a sustained high accuracy when used by an expert reporter.

Companies such as AT&T, Nokia, Verizon, Sprint, DoCoMo, Panasonic, Olympus, Philips, Sony, General Motors, Honda, Nissan, Ford, IBM, Xerox, Microsoft, Raytheon, Northrop Grumman, Boeing, Airbus, Lockheed Martin, TRW, Honeywell, Hughes, General Electric, LG Electronics, and many others, have spent billions on speech and voice, not just in research and development, but in actual implementation, worldwide. Speech recognition is now irreversibly embedded into the global telecommunications infrastructure.

The success of voice writing in real time applications has caught the eye of the BBC, the European Union and Thomson Financial for real-time captioning and financial news reporting. The judicial and reporting markets of individual American states are undertaking economic self-correction measures by adding voice reporting, despite some internal efforts to resist the introduction of a new, disruptive technology. Half of America's 50 states officially use the voice reporting method, and the other 25 are rapidly following the US Government's lead in embracing this technology.

A judicial setting

While speech recognition may be nearing levels of accuracy amenable to general consumer acceptance, the legal world demands perfect understanding of communications where real justice is on the line. Any recording system that processes only one aspect of human communication is insufficient to determine the true meaning of what was communicated. Only a human reporter can decipher the extremely complex process of human communication across many channels – hearing, seeing, and sometimes feeling. IBM research has identified as "multimodal communications" those quantifiable aspects of human communication: speech recognition, facial recognition, gesture recognition and eye tracking.

Recent developments in Australia

Because of the shortage of skilled and trained traditional court reporters in Australia, many courts in this country are utilising electronic recording systems, recording sounds, which are later transcribed by typists in most cases. Even the latest form of recording, digital, is merely recording sounds.

The important element of the human reporter in the courtroom has, in many cases, sadly been lost. Although electronic recording can take care of recording sounds, it is the court reporter that records speech. A person tasked to reduce an electronically captured recording to a series of printed words is not reporting from a first-person, or even an eyewitness, point of view – this person is reporting only second-hand information, because the non-human machinery recorded merely a one-dimensional string of words. An electronic recording system cannot perceive the complex interactions involved in conveying human thought.

In cases where a multimillion-dollar verdict or a person's liberty hinges upon the perfect transcription of one word, the courts must have an accountable, liable, insurable person to produce the record. End-user licence agreements that attempt to hold the producers of hardware and software harmless for problems that cause inaudible or undecipherable transcripts are simply unacceptable.

Thus, where possible, the judiciary should always seek to make a competent human the responsible guardian of a true and accurate record of human communication.

Court Room 21

The Court Room 21 Project (www.courtroom21.net) based in America, is an international effort to experiment with how best to ensure the judiciary is able to deliver the most technologically advanced form of legal service. It was originally set up as a mock courtroom in 1993 and now contains the most up-to-date courtroom technology in the world. It regularly invites voice writers to demonstrate.

A recent BBC documentary on the project, saw court reporters of the future as the 'managers' of the courtroom record, and that indeed speech recognition had a large part to play in the future development of the judicial system throughout the world.

Multi-modal communications have superseded the keyboard and mouse to a large extent. In the hands of qualified reporting professionals in the US the voice writing method is facilitating

significantly expanded access to 21st century communication opportunities for business, financial, governmental and judicial reporting, global language translation and more.

As technology continues to advance at a speed that defies belief, speech recognition will also develop further, and voice writing has emerged as one of the ways in which this cutting-edge technology can be utilised.

America's National Verbatim Reporters Association (NVRA) has elucidated a strategy for rapidly increasing the number of reporting schools to service government institutions and the legal and subtitling industries. In true Open Source fashion, NVRA is willing to freely share their strategies and plans with the Australian judiciary, both directly and by way of Intersteno, a global reporting organisation. There will be an ever-increasing presence of real-time communication brought by speech recognition-enabled reporters. It is up to Australia to exploit this new technology for its own judiciary's benefit.

Adrian Kelly is the principal of Transcripts Plus and a licensed shorthand writer of the Supreme Court of Victoria

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