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"Electronic News Futures"

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ABSTRACT

Congruent with the conference theme ***Journalism – Now, then and in the future***, it is appropriate to review briefly how far the techniques and tools of producing the electronic journalism product have come, look at a snap shot of some current technologies and applications, and speculate about what the potentialities of software applications and digital convergence might offer journalists and journalism educators of the future. The discrete roles of broadcast journalist, print journalist, editor and producer, once bounded by news product specificity, task differentiation and analogue technologies, have inexorably merged as have the digital technologies and applications now used to gather and produce the news. Five technologies transforming the broadcast news product are audio and video streaming, Third Voice, multimedia digital editing software, Wireless Application Protocol (WAP) with Cyberdisplay and immersive photography. Used in conjunction with established communication and information technologies (such as broadband access to the Internet and one of its applications, the World Wide Web), these technologies enable single operators to gather, produce and transmit an electronic news product globally in a matter of minutes. Other exciting technologies under development such as V2ML, Bluetooth, Intelligent Equipment and Virtual Vision offer the promise of even more streamlined electronic news production. The human resource, legal and ethical implications of the solo digital journalist-editor-producer are outlined and the ramifications for journalism education considered.

Key Words: digital media, broadcast journalism, online news, electronic media, multimedia, virtual vision.

In 1986 when Masterton and Patching's first edition of their seminal text "Now the news in detail: a guide to broadcast journalism in Australia" was published, the word Internet had not entered the journalism lexicon and certainly was not listed in their glossary of terms. Radio and television were separate domains with separate personnel, technologies and operating systems. The 'one-to-many' broadcast model of communication was the only form of non-print mass communication we knew. Over the past five years the digitisation of the broadcast product and the degree of equipment and transmission interconnectivity now possible have inexorably transformed the work of the electronic journalist-editor-producer, or 'Jeder' as we've named this intrepid new breed of broadcast warrior[1].

The Jeder will be expected to move effortlessly at warp speed between radio, television and online news gathering and presenting. At present because of Australia's cross-media ownership laws no synergy is possible between newspapers and television news (there is of course between magazines and commercial television programming, eg. PBL's lifestyle mags and programs). What is possible however, and becoming more prevalent, is for newspapers' Web sites to link to files of sound and vision of news events and for commercial television organisations, exemplified by Channel 9, to have extensive web sites where news video clips are cached.

In pursuit of even greater degrees of cross-media content usage and dissemination, the continued development of the Internet, available bandwidth and related hardware and software applications will of course be critical to the future of news and current affairs journalism. As Hearn et al (1998, p.xxi) notes,

> "The Internet is not just a tool for education and research, nor is it just a commercial network. Rather, its defining characteristic is the fact it underlies all society's activities, for example, finance and banking, regional development,

[1] Pearson in his Phd Oral Seminar March 1999 dubbed the "newest journalism" facilitated by the Internet as "Multi-Journalism", but this was not felt to adequately describe the extension in the roles and autonomy of the broadcast journalist of the future. The Internet is but one of the variables impact on journalists' work.

travel and tourism, health and medical services, government services, manufacturing, the media and cultural sectors, and education and training."

This paper is not concerned directly with the various technological determinism versus social constructivism debates, except to say that technological innovations in news gathering and production appear to be primarily driven by technological optimists (Hearn *ibid* p.23) who subscribe to the notion that the 'information revolution' is facilitating the optimisation of human capital through economies of scale (Shields & Samarajiva, 1994 p.361).

A critical inhibitor of the take up of Communication and Information Technologies (CITs) was the cost of training which had to be factored into the return on investment. Media organisations now however appear ready to absorb the cost of the implementation of CITs by reducing their costs in other areas. We have witnessed over the past few months the downsizing and centralisation of Australian commercial television news operations (Waters, 1999) and the acceleration of the introduction of new digital technologies by broadcasters in preparation for the launch of digital TV in metropolitan areas from January 1, 2001 and in regional areas between January 2001 and 2004 (*Television Broadcasting Services Digital Conversion Act 1998: Schedule 4*). The prime movers in the implementation of CITs are not just the commercial media organisations however (Collingwood 1999, pp.18-19), the Australian public broadcaster is just as keen to race down the information superhighway (Molnar & Wilson 1999, pp.6-7).

It is instructive to examine some of the CITs currently employed in electronic news gathering and production before turning our crystal ball to electronic news gathering futures. Implicit in our description of the broadcast news gathering and production process is the evergreen principle that images/vision will continue to drive content across the medium (Masterton & Patching 1986, p.103). What <u>has</u> changed is that media practitioners can now create their own vision from scratch or rapidly assemble a pastiche of virtual and recorded vision that can be manipulated in any number of ways.

The ‘Now’s’ of electronic newsgathering and producing

Roger Fidler, Director of Knight Ridder Information Design Laboratory in the US, said:

> “To be competitive with other forms of media, digital print media must combine the interactivity of personal computers and the compelling qualities of television without sacrificing the readability of using paper … they must be comfortable and convenient to use while lying in bed, riding on a subway, dining in a restaurant or sitting on a park bench.”
>
> (1994, pp.131–135).

Fidler’s 1994 prediction was an accurate prediction of things to come – the wireless, wafer-thin, solar powered laptop computer or personal digital assistant customised to deliver up to the second news reports wherever you may be. With the current level of convergence Fidler’s words are now applicable to all media products. Numerous technologies have evolved, each geared towards giving the media audience an electronic broadcast news product to peruse at their convenience. Five technologies transforming the broadcast news product deserve mention.

Audio & Video Streaming Technology

Audio and Video streaming capabilities are currently widely used. Audio and video formats are compressed to allow data to travel over a network using a CODEC (COder/DECoder). The information is compressed by replacing the original frames with more compact versions by using mathematical algorithms such as wavelet, fractal, and discrete cosine transform (DCT). Encoders are also based on standards such as MPEG-1 and H.263. An encoder is judged by the video output quality, such as the level of artifacts, or objects introduced to the picture by compression. Decoders, or players, decompress and play video.

This streaming technology has allowed media providers to broadcast live over the Internet. Current compression formats include Quicktime, Vivoplayer, Real, Microsoft Windows Media (also known as NetShow) and MPEG, however low bandwidth will limit the client's ability to receive data. A scalable technology will ensure an unbroken audio stream by scaling the amount of video data transmitted. The simplest technique is stream thinning, in which the server doesn't transmit every frame to the client. Encoding with a wavelet algorithm also allows the user to send less information per frame, losing image detail but preserving the frame rate.

The launch of broadband networks and optical fibre will soon overcome this limitation. For example, Singapore as part of its IT2000 vision, has set up Singapore One, a high-speed, high-capacity broadband technology giving citizens access to interactive content, delivered faster and more reliably through fibre optics. This creates endless opportunities for video-on-demand, distance learning, electronic commerce and video conferencing capabilities (http://regent.ncb.gov.sg/ncb/press/1997/pm.asp).

Third Voice – The electronic post-it pad

Unlike currently available Internet communication technology (email, chat, instant messaging or message boards), Third Voice enables 'inline' discussion forums, ie. interactive web site communication. Launched in May 1999, its main attraction lies in allowing users the freedom and ability to openly express ideas at any point in a Web page. Prior to this development, Web authors from across the world had the freedom to develop content, but the viewer only had two choices – to read or not to read the Web content.

Third Voice is a free browser companion service that allows users to express thoughts and opinions through inline notes on any Web page. A user simply downloads Third Voice, a free service tool from their Web site (http://www.thirdvoice.com). Sites with Third Voice capability carry tiny markers which indicate notes from other users. Clicking on a note allows the user to read the comment and add personal thoughts or email them.

Third Voice can be used in three broad levels: to optimise management of useful web material, to facilitate collaboration and dialogue with other users, and to share consumer information.

Multimedia Digital Editing

Multimedia technologies such as AVID, Adobe Premiere and MAYA are at the forefront of the manipulation of digitised images. They allow editors to digitally edit a video quickly and easily by quickly cutting, dragging, dropping and pasting scenes depicted in thumbnail format to produce a high quality product. They eliminate time-consuming searches via rewind, and fungus and tape degradation problems cannot occur. A major drawback is the high storage capacity necessary for digital video editing.

A recent example of the cost-saving and creative use of digitisation is the Singapore television series *Drive.* One episode featured a sequence that had been transformed from a static 16-mm film image of a car to a moving picture. The film-makers had enlarged the image using computer software and with digital colour grading (or enhancement) created a smooth pan which normally would have taken an expensive day to shoot with a crane.

Wireless Application Protocol & CyberDisplay

Wireless Application Protocol (WAP) is the de-facto world standard for wireless information and telephony services on digital mobile phones and other wireless terminals. To date 75 per cent of the handset manufacturers and carriers representing 100 million subscribers worldwide have committed to using WAP technology. According to the Strategis Group, by the year 2001 there will be over 530 million wireless subscribers around the world, with the number surpassing the one billion mark by 2005. Phones will have multimedia capabilities to retrieve email and 'push and pull' information from the Internet (*Wireless Internet Today*, 1999, p.1).

WAP specifications were jointly developed by global telecommunications experts to benefit the consumer. When this system is implemented globally, consumers will have fast and efficient access to information (including the WWW) via a wireless handset, enabling secure transactions through an easy to use interface (*Ibid,* p.15).

This will result in truly 'mobile' access to the Internet as subscribers are no longer restricted to access via bulky personal computers. Sceptics may argue that current mobile phones are palm-sized therefore screens can display only a few lines of text, however Kopin Corporation (Massachusetts) has developed the *CyberDisplay,* which is "smaller than a thumbnail and thinner than a grain of rice...the world's smallest high-performance, high-resolution active matrix liquid crystal display" (*Industry Week*, 1998, p.16).

CyberDisplay promises future mobile phone users the same amount of material as is available currently on personal computer monitors. With a lens and backlight, the *CyberDisplay* creates a virtual image equivalent to viewing a 50 centimetre, full-colour monitor from a distance of 1.5metres, with equal clarity in bright and dim light. Manufactured from single-crystalline silicon, the displays have a density of 1,700 lines per 2.5centimetres and an operating speed of 180 Hz.

In 2000 Kopin estimates that *CyberDisplay*-equipped phones will be capable of much the same functionality as laptop computers, while requiring only a tiny fraction of the power. Users will be able to view emails, spreadsheets, and Web sites, and even conduct real-time videoconferencing through their mobile phones.

Interactive Pictures – Immersive Photography

Interactive Pictures Corporation developed IPIX technology, which can seamlessly remap two opposing photographs into a single 360-degree digital image. The two 180-degree photographs of a scene or object can be shot with conventional or digital cameras fitted with a fish-eye lens. Using software to combine two 180-degree photographs, viewers use the mouse to navigate within the photograph and beyond its borders, left, right, up or

down (http://www.ipix.com). This replicates the vision achieved by video camera 'panning' using only two still digital images.

The possible broadcast uses of IPIX are exciting. Journalists can re-create a press conference, crime scene or sports venue for the viewer with this simple-to-use technology. IPIX Corporation cites the vision CNN created for use as a backdrop to the continuous live to air reportage of Princess Diana's car crash as a breakthrough moment for their technology. CNN used two still images of the Paris accident site to generate a 360-degree pan, which they ran for a full ten-minutes while anchors described the events.

The Future of electronic newsgathering and producing:

Four technological 'works in progress' that augur well for even more exciting applications to the news product are described below.

Video to Multiple Mark-up Language Presentations Systems (V2ML)

V2ML is still in the prototype stage of development by Kent Ridge Digital Labs (Singapore). This technology will be able to format across all digital equipment from mobile phones to palm tops to personal computers even though these types of equipment use different mark-up languages to store data.

With V2ML, duplication of audio, video and text data from one mark-up language to another is reduced, and layout, content selection and sequencing can be personalised. V2ML technology will have the ability to automatically transform a single source of content into different mark-up language presentations in a user-defined manner. This will greatly reduce the burden for content and service providers as there will no longer be a need to create duplicate sets of content to cater for different devices of different bandwidth requirement and audio, visual/text display capabilities (http://www.krdl.org.sg).

The software intelligently selects key frame images from the digitized video and delivers the integrated video contents (consisting of audio components, video images and text) to the targeted device in a user-defined fashion. It may be possible for the providers to customize the contents to suit the needs of users with hearing/vision impairment, or users with cellular phones may either listen to the news broadcast in audio form, or read the text on the phone screen.

An example of its use for a journalist-editor-producer would be, let's say, he/she requires a ten-minute package on Nelson Mandela. After keying in a few commands, eg. "sequence nelson mandela 10" the system will automatically shuttle through the video archive, pick up relevant images and quickly assemble a sequence of images with an overlay of audio. This eliminates the need for the Jeder to locate the images and edit them in sequence with a soundtrack.

Benefits of V2ML

Other attributes of V2ML will include the ability to:

- Watch broadband video content as web pages on the Internet in different markup languages (HTML, WML, etc) on different devices (desktop computer, palm-top, cellular phone, etc.) with different combinations of audio/visuals/text in a synchronous /asynchronous fashion;
- Provide personalized video content presentation optimized for different devices;
- Reduce the duplication of content to cater for different devices of different bandwidth requirement as well as audio, visual/text display capabilities that is convenient to content/service providers;
- Reach a wider audience on the Internet with information of video content that was previously on broadband network;
- Incur low processing overheads as pre-processing needs to be done only once for each video;

- Reduce drastically the time required for converting video to mark-up language presentations since pre-processing, with an optional feature to state preferred images, is fully automated;
- Provide a higher degree of interactivity and control to suit the user's pace in understanding the video content;
- No special software is needed at the user's end.

Features of V2ML

The features of V2ML useful for Jeders include the:

- Conversion of a full motion video into multiple Mark-up Language (HTML, WML, etc.) presentations targeted for different devices and users;
- Open architecture system that allows for evolving presentation formats;
- Extraction of key images of the video is done by the pre-processor based on patented video segmentation and key frame extraction technologies;
- Key images with higher rankings, based on a heuristic measure, are selected depending on the number of images required in a particular presentation;
- Option to allow for users to state their preferences for images, if any, during the pre-processing stage;
- Different combinations of audio/images/transcript can be presented in a synchronous/asynchronous manner, for example, synchronized text & visuals, text & audio, audio & visuals or text only presentations of video content;
- The ability to control the rate of display of visuals/text in the case of synchronized presentations.

Bluetooth

Bluetooth technology is the next generation beyond infra red remote control activation. Using Bluetooth digital video or audio equipment can be activated and de-activated remotely at a distance and functionality is not limited to the present linear infra red

positioning. The technology uses low-cost, short-range radio links between laptop computers, mobile phones and other portable devices.

Bluetooth has the potential to rapidly connect devices without the need for cabling and could possibly replace multiple cable connections with a simple link. The Bluetooth is set to become the industry standard (http://www.bluetooth.com/faq/default.asp).

The Bluetooth system currently operates on a radio frequency band of 2.4 Ghz ISM (Industrial, Scientific and Medical), which is license-free in nearly all countries. Although globally available, each country has a specific set of frequencies approved for transmission.

One possible broadcast news use for this technology is to transmit instant photos and video clips from any location by cordlessly connecting a digital camera to a mobile phone or any wire-bound connection and sending the image instantly to a receiver anywhere in the world. Possible applications include reporting in war zones or remote and dangerous locations.

Intelligent Equipment

With Intelligent Equipment (also called Intelligent Appliances) it is theoretically possible for any piece of electronic equipment or appliance to be connected via a network to the Internet. Echelon Corporation, one of the leaders in control networks, has installed Intelligent Equipment in over 3,500 companies with millions of nodes worldwide. This capability could be used to run Intelligent Studios/web sites so that the Jeder is able work solo in the field and run the studio remotely (http://www.echelon.com).

Virtual Vision

In 1995, the Boeing 777 was the first jet designed entirely by virtual reality, meaning that Boeing's computer-generated simulation of the craft - and the ability of designers to "walk" through it - was so real the company felt no need to build an actual full-scale mock-up. In a departure from normal practice, the US Federal Aviation Administration certified the resulting design months before the plane's first test flight (Villano 1999, p.13). Similarly, with virtual vision journalists are no longer restricted by the available vision - if they want to recreate a jailbreak for the news bulletin they can now do it.

The combination of the four technologies described could revolutionise journalism practice. A solo operator using IPIX could be on the ground with a digital still camera and mini-disc recorder with microphone to capture digitised images and audio of an event. Using Blue Tooth, they could instantly pump the data back digitally to the studio and Intelligent Equipment will operate the V2ML software remotely through the Internet via their media organisation's Web site. The Jeder uses the V2ML to add relevant images and a soundtrack to their 360-degree vision and drops in the recorded grabs where appropriate.

The news package could be streamed on the Web live, and viewers could add their comments and thoughts to the Website using Third Voice post-its. With Third Voice gone will be the days of primitive email and chat lines.

Equally the technologies will also facilitate the work of Jeders who stay in the studio. They will be able to operate equipment in the field by remote control to bring live audio-visuals, edit it quickly into broadcast packages and streamed on the Web site.

Implications of new technologies

The human resource and ethical implications of these new technologies are the most striking issues related to this electronic news future. Inevitably the implications may be

both negative and positive. For every new computer application it seems the jobs for software programmers grow and those for journalists, producers and editors shrink. Broadcast packages can be assembled faster, fewer field reporters and producers are needed, and technical support is minimised. There will be fewer journalists gathering and presenting the news because of shared content. Training and retraining cycles will be shortened and significant resources put into self-training programs delivered via the Internet to avoid the cost of human trainers.

There is no room for technophobia in the future of electronic newsgathering and journalists will be expected to interact with their audiences in ways they have not been required to previously and not just the ubiquitous emails. Besides the feedback enabled by Third Voice, audiences are getting up close and personal with media workers. For example at ABC612, the ABC radio station serving metropolitan Brisbane, presenters are expected to have the web camera focussed on them during their radio shifts. Listeners can log onto the ABC web site to see the presenter and their studio guests. Journalists who chose radio because they didn't want to become a 'face' or 'talent' and have been promoted to presenter are confronted with exactly that.

An alternative more optimistic view of human resource developments predicts that the new technologies will create multimedia jobs that do not even exist today. These won't be traditional media jobs, but they will call for the generic information management skills of media practitioners.

Ethical concerns include the heightened ability to alter and manipulate still and moving digital images and the potential to breach copyright and moral rights with the click of a mouse. In addition the lack of a brake on reporting in order to relay news in real time or with minimal delay can result in material being broadcast that is offensive or dangerous. And if, as has occurred in the past, film crews have shot current affairs footage of a location and misrepresented it as somewhere else, what then of the ability of journalists to create footage of a place that doesn't exist or an event that never happened?

Finally, the ethical debates media critics, journalists, journalism educators and more recently the regulatory bodies and the public (thanks to the 'Cash for Comment' inquiries) have been having about the potential for the misuse and abuse of news and current affair content will become more heated as the capabilities of the new applications are exploited.

Predicted changes in journalism practice as a consequence of CITs must be mirrored in the tertiary institutions currently educating journalists if universities want to continue to claim that they produce industry-ready journalism graduates. Tyler Smith (1999, pp.12-17) identified several practices and skills specific to digital broadcast production: greater discipline in production and post production planning; the formation and management of small creative teams; a high level of inter-personal communication skills for dealing with clients, and the ability to up-skill constantly. To that end journalism educators are faced with an ever-escalating funding battle to keep their programs up to date, either by replicating journalism practice in their institution or by placement of students in media organisations. This may require partnering or joint ventures between tertiary institutions and news organisations. The job of the Jeder Educator of the future is a challenging one. May the Force be with you.

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