

INTERNET RADIO "BROADCASTING" IN SOUTH AFRICA

by

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Introduction

The lengths to which the Internet's influence has extended cannot be overemphasised. The introduction to the widely read *Cyberfutures* states the following: "We recently witnessed the coming of age of the Internet - the network of all the computer networks of the whole world. Now the World Wide Web is all the rage. We are communicating, working, shopping, learning and entertaining ourselves with computers. Some of us are even discovering carnal pleasures and God through the simple expedient of connecting our computers to the wide universe of cyberspace - the ether that lies inside and occupies the inbetweens of all computers. We are now getting a first taste of 'Cyberia' - the new civilisation emerging through our human-computer interface and mediation" [Sardar.1996:1].

This essay attempts to draw a line between radio broadcasting and the so-called "Cyberia" described in *Cyberfutures*, through investigating the response of South African radio stations to recent advances in computer/audio technology. In this regard, "radio broadcasting" refers to the culture of private and government-owned radio stations broadcasting to particular communities using radio waves, where the content of the broadcast is determined by the character of the station's audience and the function of that station within its particular community. In this regard, the station's function is determined through investigating its relative size (in terms of audience), programme content, audience demographics and the area to which it broadcasts. On its most basic level, the response of radio stations has manifested itself in their publishing web sites on the World Wide Web. This discussion therefore takes the form of an analysis of the various radio station web sites, in terms of the general appearance of the site and the audio content contained on it, in an attempt to determine in what way an Internet extension contributes to the particular station's function. As radio is a medium based on the distribution of sound, the most pertinent question here regards the web site's audio content. To that end, the essay further investigates the formats used to distribute music over the Internet.

The choice of radio stations for analysis is made in an attempt to accurately reflect the multi-cultural character of South Africa. In this way, one is able to determine the worth of Internet extensions of radio station's within the context of their socioeconomic function.

The media, radio and the Internet

The question regarding what constitutes a medium and what that entails is a difficult one. In chapter one of the book *The Media: An Introduction*, the editors ask the following questions: "Is 'the media' a collection of industries? Is it a collection of practices? Is it a collection of representations? Is it a collection of the products of economic and statutory regulations? Is it a collection of audience's understandings? Is it a means of delivering audiences to advertisers or is it a public service?". They further state that "The answer to all these questions is yes" [Briggs.1998:1]. The public arena referred to simply as "the media" is vast and complex. On its most basic level it is a process of communication which involves senders and receivers of messages which operate within a specific social context. Within the changing terms of these three variables and their relative social context the media is constantly redefined. Briggs and Cobley write: "the media are ... in a state of perpetual flux. As consumers of media we know very well that the media's content changes from day to day. Also media outlets are continually being bought, sold and created. Regulations change; so do technologies and audiences" [Briggs.1998:1]. It is in the influence of technological changes on the media that the emphasis of this discussion lies; most particularly where technological advances have impacted on the course taken by the medium of radio. One would be correct in assuming that the media have always been shaped to a large extent by the technologies available. The history of mass media may, in fact, be viewed as a history of technology, where social implications may be observed and studied at every stage.

The beginnings of radio are traced back to a prediction made by the English mathematical physicist James Clark Maxwell (1831-1879), who foretold the existence of radio waves as early as 1864; but it was not until 1888 that radio waves were discovered and shown to travel through space. This was demonstrated by the German physicist Heinrich Hertz (1857-1894). Further experiments at the outset of the discovery of radio waves were made by two Englishmen. Ernst Rutherford (1871-1937) succeeded in sending radio signals over a distance of three quarters of

a mile and Oliver Lodge (1851-1940) developed the basic principles of tuning. While these scientists and physicists were instrumental in the finding and exploration of radio waves, the founder of radio communication is traditionally accepted to be the Italian Guglielmo Marconi (1874-1937). On the twelfth of December 1901, he managed to send and receive radio messages in the form of dots and dashes across the Atlantic Ocean - from Poldhu in Cornwall, England, to St. John's in Newfoundland, Canada. Though a spoken message could not yet be sent, this was indeed a necessary first step towards radio broadcasting as we know it today [www.alpcom.it/hamradio/atlantic.html]. The next step came in the form of the development of the first vacuum tube in 1904, which was made by the English electrical engineer John Ambrose Fleming (1849-1945). The tube had two electrical parts and was known as a diode. In 1906 the American inventor Lee De Forest (1873-1961) added a third part to Fleming's vacuum tube which henceforth became known as a triode or an audion. It is the development of the vacuum tube which made radio program broadcasting possible [Doan.1984].

Marconi's communication device became known as the "wireless" and was initially used for signalling ships at sea. The American Navy called it a "radio telegraph" and from this came the word "radio". The first radio broadcast was heard on Christmas Eve in 1906. The dots and dashes heard by radio operators at sea were suddenly replaced by a woman singing and a violin playing, followed by the words "if you have heard this program, write to R. A. Fessden at Bandt Rock" [Doan.1984:53]. By 1920 a Westinghouse company engineer, Dr. Frank Conrad, had started a series of evening voice broadcasts. The response was such that an official of Westinghouse decided to build a broadcasting station in Pittsburgh, Pennsylvania. The station was KDKA and was licensed by the government [Doan.1984].

In 1922 the British Broadcasting Company went to air. At that time there were no government controls over programming. It was through the vision of John Reith, the company's first manager, that the philosophy of "public service broadcasting" developed. This philosophy was based on the pursuit of high programming

standards, aimed to serve all listeners in the community and resist sectional pressures. These ideals were achieved through a principle known as "mixed programming". The BBC started as a single network but by 1946 had established three networks: the highbrow Third Programme, the middlebrow Home Service, and the populist Light Programme, each of which embraced mixed programming and broadcast a variety of different programmes [Crisell.1998].

Andrew Crisell points out in *The Media*, "...mixed programming as public service only made sense while radio remained the primary medium of broadcasting" [Crisell.1998:116]. Soon after the general household appearance of television in the 1950s radio audiences began to decrease drastically. Fortunately, the transistor radio made its' first appearance in 1956. The transistor, developed at the Bell laboratories in 1947, enabled the development of a generation of radios that were cheaper, smaller and portable. It is this development that ensured the survival of radio as a medium, albeit in a secondary role. The development of the transistor, in fact, led to a change in the way radio was used. Listening to the radio was no longer a primary or static activity but was used as an accompaniment to other activities. People began to listen to the radio while driving or working in the garden and kitchen. Television as a medium has the advantage of vision, and therefore commands all the attention of the viewer. This makes television the more appropriate medium for mixed programming. Radio in its' secondary media role had to adopt a new kind of programming strategy that would exclude plays, comedy shows and special interest programmes demanding all the listener's attention. These were abandoned in favour of music and general news commentary involving weather and traffic updates and other programmes suitable for listening in the background. The role of radio has remained much the same in the past fifty years. Traditionally, we use radio as an accompaniment to other activities; whether it be while driving, cooking, studying or visiting with friends, the radio may always be playing in the background.

Historically, radio is defined in terms of the distance that radio broadcasts are

transmitted. In this regard, broadcasting reached progressively further. Initially radio was transmitted through radio waves. Then came dissemination through the use of satellite technology. More recently, cables are used to deliver radio broadcasts to the computers of Internet users worldwide. As the distance travelled by a broadcast becomes further and the broadcasting area increases, the number of potential listeners grows. Currently, radio makes use of satellite and Internet capabilities to reach the entire world. It is interesting to note that this has led to stations broadcasting to smaller target audiences. Previously, radio broadcasts reached a comparatively small area and aimed to serve all members of the communities which received the broadcast. This was the basis for the ideal of "mixed programming". However, as listeners worldwide are given a larger variety of radio stations to choose from, stations are forced to target a more specific audience.

The question is: in what way will the medium of radio respond to more recent technological developments. The extension of radio to the Internet not only broadens the audience base of the medium, but also allows the inclusion of visual elements. How will radio be affected by such these developments? Will its sociological role be redefined, as it was with the appearance of television? What is apparent is that the change of contemporary media under the influence of recent technological developments is particularly dramatic, and the implications far-reaching.

A recent example of the influence exerted by technological advances is visible in the changes that have occurred in the operations of the BBC in recent years. In June 1996, the BBC's director-general John Birt announced major restructuring of the corporation's management and production apparatus, designed to prepare for the coming digital era of multi-channel broadcasting. The changes took the form of merging television and radio news production in the name of bi-media, a process which had already begun in the early 1990s. This was viewed as a necessary response to a changing media environment; an environment which will soon preside over digitised television and radio services, disseminated via cable and satellite to

audiences all over the world, and the promise of hundreds of channels available to the average household [McNair.1998]. Arguments against this kind of development propose that the quality of media will be gravely affected. The content of the electronic media will deteriorate; where integrity will be substituted for fast, inexpensive entertainment and endless shopping. On the other hand, one should consider that the result will merely be a broadening of choice: there will simply be more radio and television channels to choose from. Hence, the issue is not to pass judgement upon the unstoppable current of technology; rather to determine to what extent existing media will be effected.

However, this discussion seeks to illuminate the extent to which the medium of radio has responded to the wide adoption of an Internet culture. In this regard a synopsis of the events contributing to the development of the Internet is necessary:

In 1964, Paul Baran's Rand Corporation released a report calling for a network-type technology which was sufficiently decentralised to make it able to withstand the loss of some of its' linked nodes. The idea was to enable the working of the whole system even in the event of its' losing some of its' parts, as, for example, in the event of a nuclear war. By 1969 this concept was conceived in the form of ARPANET. ARPA is the abbreviated name of the "Advanced Research Project Agency", established by the Eisenhower administration in 1957 in an attempt to compete with the Russian "Sputnik" equivalent [info.isoc.org/internet/history/brief.html]. By 1977, communication over a wide variety of computer networks was made possible through the development of "Internet Protocol", commonly referred to as IP. Two years later USENET entered its' first stages if development. It is now a network of thousands of so-called "news groups" to which Internet users subscribe, as one would in the past have joined a club. During the 1980's the growth of the Internet is nothing short of exponential. This is as a result of a number of factors, most particularly the proliferation of computers and the wide adoption of IP. It is then that the term "Internet" came to refer to an interconnected set of computer networks. In the last decade the development of

WAIS (Wide Area Information Servers) and the increased use and development of various protocols like "Gopher" and the "World Wide Web" have contributed to a more effective operation of the Internet environment [Kirshenblatt-Gimblett. 1996].

The significance of the Internet on media culture goes beyond its being merely a further leap in the speed of information transfer. The Internet influence is not limited to the structure and practice of media industries, but also contributes to shaping the very content produced and distributed. The Internet, in fact, may be said to constitute an entirely new medium. It facilitates an entirely new level of communication between people, and access to inconceivable quantities of information.

Furthermore, the Internet enjoys relative freedom from political constraints. By its very nature, it evades censorship and regulation like no other media in history has ever been able. In an article entitled *New Technologies and the Media*, Brian McNair aptly states that "the Internet provides a further, and to date the most radical dissolution of the barriers of time and space which have constrained human communication since we left the savannas and learnt to use language" [McNair. 1998:182].

Although the influence of the Internet cannot be overestimated, the assumption that the Internet provides access for anybody, anytime, anywhere is a gross miscalculation. Where it is not provided to users in the workplace or at institutions of learning, Internet access is an expensive luxury. Costs include the price of a computer, as well as any necessary attachments, for instance a modem and sound card. Beyond that one has to consider payment to Internet Providers and the telephone bills incurred for time spent on the Internet. Access is therefore limited to those who can afford computer, connection and telephone charges. Further miscalculation in this regard is the idea that computers are becoming less expensive. Though the price of computing does, indeed, fall by a half every two years, one must consider that generally, as the price of a model falls its production is

discontinued. New software is not designed to run on the lower specification models, and often consumers have no option other than to upgrade to the more expensive hardware [Sardar.1996].

According to the Internet Society's 1993 statistics, the United States account for 16,897,635 megabytes of information transferred, Europe for 1,435,735, Asia for 354,378, and Africa for 12,106 [Kirshenblatt-Gimblett.1996]. Nua Internet Surveys takes an "educated guess" which sets the number of Internet users worldwide at 201 million [www.nua.ie/surveys/how_many_online/index.html]. In calculating the effect of an Internet culture on radio one must obviously consider who makes use of the Internet. The profile of Internet users given by *Cyberfutures* states that most people on the Internet are white upper and middle class American and European men. The most dominant type of user is the university student, aged 18 to 35, well-educated and with an above average income [Sardar.1996].

The radio medium has responded to the Internet by making use of the increased exposure provided by "posting" web sites on the World Wide Web. A web site is the most basic form of Internet publishing. All Internet sites are programmed using HTML (Hyper-text Markup Language). A web site is a group of computer "pages" (or web pages) which are linked together and may be accessed using the correct Internet "address". Web sites are widely ranged in standard, from very simple sites, comparable to a few pages of a book, to extremely complex sites making use of audio, video, graphics and interactive capabilities. Their design is in accordance with the profile of the company/group in question, and in terms of how much money the company is prepared to spend (as with any form of marketing). Web sites range from relatively inexpensive to extremely expensive. The larger the size of the site, the more it costs to be published on the web; and the size of a site directly reflects its complexity, in terms of graphics and sound, for example. In the case of radio station web sites, a visitor may judge the relative profile and function of the station according to the general appearance of the site, and according to the information provided on it. Radio web sites are used by radio stations in various different ways

according to the particular function of the station. Generally sites are used to provide information, and for the purposes of advertising. In South Africa radio web sites may be divided into three categories, in terms of audio content: sites which have no online audio capabilities; sites which provide recordings ("clips") of recent broadcasts; and sites which have a live audio facility, where a visitor may listen to a live radio broadcast via an Internet connection.

Encoding music for Internet distribution

Where music over the Internet is concerned, there are a number of different formats - otherwise referred to as standards - in which audio may be encoded and distributed. Considerations in this regard include: the size of the sound file once it has been encoded, thus determining the time it will take to download the file from the relevant web site to the user's computer; the inclusion or exclusion of copyright protection (in the form of digital "water marking", for example); and the cost of the particular hardware or software required to encode and decode the music. The most popular and widely used formats are the MP3, RealAudio, Liquid Audio and MS Audio standards, and the fast growing a2b format. Other Internet audio formats include: QuickTime from Apple computers, Beatnik's *Beatnik*, MOD files, Live Update's *Crescendo Forte G2*, and Seer System's *Seer Music*. For the purposes of this discussion, the more generally used standards are most pertinent. All the standards presented here have versions compatible for Windows-based and Macintosh computers.

For years record companies have been struggling to agree on an audio format for the delivery of music over the Internet. The struggle has been due to difficulty in finding a format which ensures copyright protection, by making it possible to charge money for music downloaded from a record company's Internet site, or from an online music shop. In the meantime, Internet users have wholeheartedly adopted the controversial MP3 standard. This format compresses CD-quality music into smaller files a tenth of their original size, without affecting the audio quality. The

controversial nature of this format lies in its being easily distributed online, free from any copyright restrictions. According to an article entitled "Coinless JukeBox" published in TIME Magazine on May 7, 1999, 38 million dollars in CDS, records and cassettes is at risk each year [Quittner.1999]. By spending a little time at the site www.MP3.com, anyone can learn how to "rip" CDS ("Ripping" is the process by which audio tracks on a CD are converted to MP3 files stored on a computer) and set up their own audio stream. The freedom offered by MP3 is compounded by its being a so-called "open standard". This means that the MP3 standard is not company-based, and anyone is therefore free to write MP3 software. On an average day there are 200000 visits to the MP3 Web Site where thousands of songs, ranging in style from Classical to Alternative, are available to be downloaded to a visitor's computer for free. Although this offers an easy source of increased exposure to artists all around the world, the loss of revenue where copyright breaches are concerned cannot even begin to be estimated.

Technically, the MP3 format is an audio encoding scheme developed by "Fraunhofer Institute Integrierte Schaltungen" (Institute for Integrated Circuits) as part of the MPEG standard, which offers good sound quality at small file sizes (approximately 1 Megabyte per stereo minute of music). It was the first viable way to move high-quality audio around the Internet without having to struggle with long download times. MP3 files, once downloaded onto a user's computer, may be played back using a hardware MP3 player like Diamond Multimedia's "Rio". Most often, however, MP3 files are played back using software players, lately referred to as "jukeboxes", many of which can be downloaded for free from the World Wide Web. There are a large variety of jukeboxes available, varying in quality, appearance and ability. Jukeboxes should have the facilities to collect and organise the songs on a PC, and allow the creation of play lists detailing which songs should be played in which order, as specified by the user. Generally a jukebox should also have an encoding facility which enables the conversion of tracks on a CD to MP3 files stored on the hard drive of a computer. Furthermore, and perhaps most importantly in this regard, a jukebox should be able to play back audio information being streamed in real time from a live

media site. Of the better players is the "Musicmatch Jukebox" named by Walter Mossberg as "the most powerful jukebox program and easiest to use" [Mossberg.1999]. Others include the Winamp "Sonique" player and the "RealJukebox" from RealNetworks.

The function assumed by MP3 of a file format which moves recorded music around the Internet has left MP3 in the shadows where live audio streaming is concerned. However, in addition to literally hundreds of thousands of MP3 audio files available for download from the World Wide Web, there are number of MP3 streaming sites, for example www.pump100.com which streams dance music in real time. These sites are less conspicuous and may be found at a site like www.shoutcast.com.

The company which has been at the forefront of live streaming audio and video since the outset is without doubt RealNetworks. This company is based in Seattle in the United States. Its purpose is to develop software products and services designed to enable personal computers and other digital devices to send and receive real-time media using today's infrastructure. RealNetworks preside over the following impressive statistics: Since the release of the first RealPlayer (an early PC jukebox) in 1995, 72 million users have been registered. The average daily rate of download exceeds 175000. RealSystem software is used to deliver more than 85 percent of all streaming media content on Web pages [www.real.com/company]. By their own admission:" the RealNetworks family of Web sites is among the top audio and video destinations on the Web and ranks consistently in the 25 most popular sites anywhere on the Internet" [www.real.com/company/pr]. RealNetworks was, furthermore, ranked by PC magazine as 24th on its list of 100 most influential companies in the world. These statistics have held fast in spite of predictions made by Nathaniel Wice in an article entitled "RealNetworks faces Microsoft Onslaught". In this article, the supremacy of RealNetworks is compared to that of Netscape before Microsoft launched its' browser "jihad". The comparison is made in terms of the unveiling of Microsoft's "MS Audio" [Wice.1999].

Real Audio went from its' Version 1.0 introduced in April 1995, which was the World Wide Web's first streaming media format, and moved quickly through to achieve Version 5 before launching the latest "RealAudio G2". According to the August, 1999 edition of Keyboard magazine, the RealAudio G2 "represents new technology for decent-quality audio/video streaming at low bit rates" [Derrick.1999]. This format is part of the "RealSystem G2" which is the platform for RealNetworks' RealSystem MP. This is RealNetworks' attempt at a digital music solution which caters for the needs of consumers and providers, by giving easy access to music online while being able to trace streaming media destinations and charge money for them. In other words - listeners have the access and providers get paid. The latest player from RealNetworks is the RealJukebox. In Walter Mossberg's assessment of streaming media players, he called the RealJukebox "aggressive and intrusive" because it places its icons on the tool bars of computers to which it has been downloaded and attempts to "take control of" computer media-related issues [Mossberg.1999]. While this is true, any Internet navigation will reveal RealNetworks' obvious domination of streaming and live media on the Internet. Keyboard magazine comments that "[RealNetworks have] shown steady improvement in the quality of their codecs, and have solid partnerships in all sectors of the broadcast world" [Derrick.1999]. Thus, despite increasing competition in this field, RealNetworks is likely to survive.

Another company which, like RealNetworks, has been around since the conception of Internet streaming media, is Liquid Audio. It was formed in January 1996 and Liquid Audio products were first released to the public at the Audio Engineering Society Convention in November, 1996. This company provides software and services to musicians, record companies and music retailers to enable the digital delivery of music over the Internet. The services include the ability to stream audio, view graphics and text, and buy music online. An online consumer may listen to an audio stream preview with a Liquid Player and decide whether to buy a song or order a CD. Once the bought song has been downloaded onto the user's computer, the downloaded file may be played as often as required from the computer hard drive, but is encoded so that it may only be burned onto a CD once, thereby ensuring

copyright protection. The best feature of Liquid Audio, in fact, has been the company's consistent dedication to the secure delivery of music online and continual investigation of the latest encoding technologies. As a result, Liquid Audio has a solid base of industry support. Another format that uses a secure digital download technology is a2b music, developed by AT&T Labs. a2b encoded music can be either streamed or stored on a computer hard drive using the a2b music player, or another player that is compatible.

At this point it is relevant to mention the steps that have been taken to try to make secure delivery of music online possible. The SDMI (Secure Digital Music Initiative), for example, represents a collective of record, computer and Internet companies trying to create an open standard for digital distribution of audio with some form of built-in copyright protection [www.sdmi.org]. Although the support for SDMI is strong, an actual workable solution has not yet been found. Others that have tried include Music Exchange files at www.jriver.com/musicexchange, and MusicMarc at www.musicmarc.com.

It is from this platform that Microsoft and RealNetworks manoeuvre for dominance of the Internet media industry. In the article "Audio Toolbox" the authors comment on the differences between various audio formats: "you're probably best off evaluating functionality and support - how the secure delivery works, how popular the format is, what it costs to host the media, etc. - rather than the sound quality" [Derrick.1999]. If one listens to Internet audio on a reasonably fast connection, the sound quality difference between formats is negligible; the RealJukebox and Windows Media Player are both available on the World Wide Web and may be downloaded for free to a user's computer; and while RealNetworks currently claims dominance of Internet media streaming, one need hardly mention the power of Microsoft. It is therefore on the secure delivery front that the battle takes place. Microsoft's answer to RealNetworks' RealSystem G2 is Microsoft Media Technologies 4.0. This is a suite of tools for authoring, streaming and securely delivering audio and video over the Internet. The part specifically geared toward audio is MS Audio 4.0, which may be

played by the Windows Media Player. The latest version 6.4 plays all the more popular multi-media formats and through the combination of this media player and the Internet Explorer 5 browser one can access hundreds of radio stations world wide from within the browser. A radio tool bar allowing the control of “play”, “volume” and “radio station” appears directly below the address line of the Internet Explorer window.

These are the most prevalent formats used to stream audio over the Internet, whether it be streaming a song or audio “clip” from an Internet radio station or online shopping site, or streaming a live feed from a radio station broadcasting online. The decision facing a technician launching a live audio feed as to which format should be used is based on the criteria set out above. In short, the decision should be made on the basis of safety (copyright); cost, both to encode the media and to decode the media, reliability, and on the most widely used media. Most players now are able to deal with a variety of different formats. However, a site with audio specifies the preferred player, by providing the visitor with the option to download, for example, the RealPlayer or the Windows Media Player, if they wish to listen.

Radio web sites with no audio/audio “clips”

The radio demographics and lifestyle statistics provided by the web sites of radio stations offer a very good picture of the listeners most likely to tune into the various stations. This, in turn, offers a valuable reflection of the content of the station and of the radio station’s particular or varied function within the communities to which it broadcasts. In this regard, radio stations may be divided into three categories: stations that have a web site on the Internet, providing information pertaining to the station, but having no online audio content; stations having Internet web sites that provide audio recordings (known as audio “clips”) of recent programmes or features broadcast by the station, that may be downloaded to a visitor’s computer; and radio stations that provide a live audio streaming facility from their Internet web site.

The South African Broadcasting Corporation (SABC) is South Africa's national public service broadcaster; which has a radio network of 19 stations reaching an average daily adult audience of 20,834 million [www.sabc.co.za]. The radio stations are divided into 4 categories. The category encompassing the largest number of stations consists of stations broadcasting in indigenous South African languages. The other categories include international stations, national stations and stations that broadcast regionally.

The stations which broadcast in indigenous languages include: Ikwekwezi FM, Lesedi FM, Liqwalaqwala FM, Motswending FM, Munghana Lonene FM, Phalaphala FM, Thobela FM, Ukhozi FM and Umhlobo Wenene FM. All of these sites are linked to the SABC home page. With the exception of Ukhozi FM, they may also be approached through their link with HAL. HAL Interactive is an online media buying, sales and marketing system designed for media professionals so that they may keep their clients informed through the Internet. In this regard, the SABC has recently acquired the services of HAL and most of the branches of the corporation have, therefore, been extended to being accessible over the Internet; or, at the very least to have a site on the World Wide Web which provides information about the branch, which is regularly updated and maintained by the HAL staff. All these sites are based on the same basic formulae and have linked pages providing information about the station under the following titles: "overview", "ratecard", "listen", "programmes", "news", "team", "research", "views", and "hub stations". By clicking on "listen" one can listen to audio "clips" of recent programmes and features that have been encoded in the RealAudio format and may be played back using the RealPlayer. The option to download the player is also given. Ukhozi FM does not follow this formulae nor is it maintained by HAL interactive. The Ukhozi FM site, in fact, is comparatively simple, presiding over only one page of HTML script (without any links to other pages) and offering no audio "clips" at all. By comparison, the other indigenous language sites are very informative; and given the combination of well-presented information and the option to listen to recent broadcasts, regularly updated, one can get a very accurate picture of the station by visiting its site. Here follows a brief description of

each of the stations visited:

- Ikwewezi FM targets an audience of primarily Nguni speakers between the ages of 16 and 34. The audience statistics presented on the site reflect a wide variety of listeners, ranging from the younger, more progressive listener to those that are more traditionally bound. The web site states: “the key elements of Ikwewezi FM’s distinctiveness are localism, relevance, information, interactivity and companionship, while recognising the diversity of its community” [www.hal.co.za/newhal/stations/037]. This station broadcasts from Johannesburg and its stronghold broadcast areas include Mpumalanga and Gauteng. Ikwewezi’s programming includes a mixture of broadcasts relating to news and current affairs, drama serials and sport.
- Lesedi FM was formerly known as “Sesotho Stereo”. By its own definition it is a black radio station with an audience of 3 million people. It broadcasts to areas in the Free-State, Gauteng, Mpumalanga, the North West Province, the Eastern Cape, KwaZulu-Natal and the Northern Province. Programming includes morning and evening drive shows, children’s programmes, hourly news bulletins and talks shows [www.hal.co.za/newhal/stations/033].
- Liqwalaqwala FM broadcasts from Nelspruit to Mpumalanga, and reaches parts of Gauteng, KwaZulu-Natal, and the Northern and North-West Provinces. It broadcasts mainly in Siswati. The web site states: “Ligwalagwala’s audience is in a cultural transition, from a purely traditional to a Western way of living” [www.hal.co.za/newhal/stations/038]. As a result, the station caters for a large variety of listeners. Programming is therefore of a wide variety. Ligwalagwala, furthermore, has realized that listener participation in programmes is highly appreciated and supported. Programmes like the morning and afternoon drive shows are filled with public announcements and music. Religious programmes and women’s programmes allow listeners to participate in issues that affect their daily lives.

- Motswending FM caters mainly for the younger, Setswana-speaking listener that has a particular interest in issues pertaining to community and development. Programming includes youth-orientated music programmes and talk shows addressing current affairs. The station is well received in the whole North West Province, the Gauteng province, the South Western parts of the Northern Province, central Free State the Northern Cape and in the western parts of Mpumalanga. It is stated on the “overview” of the Motswending web page that: “The average listener is young, modern and rejects the traditional way of living” [www.hal.co.za/newhal/stations/034].
- Munghana Lonene FM broadcasts in Xitsonga from the Northern Province to areas in Gauteng, the North-West Province and Mpumalanga. Its broadcasts consist mainly of music programmes, but also include educational and woman’s programmes, news, current affairs and sport.
- Phalaphala FM broadcasts in Tshivenda from Pietersburg to the Northern Province, parts of Gauteng, the North-West Province and Mpumalanga. The majority of the listeners are Sotho-speaking and between the ages of 16 and 34. This station emphasises issues pertaining to both education and entertainment. Programming, therefore, tends towards music, news, educational programmes, drama serials and discussions on community-based issues [www.hal.co.za/newhal/stations/039].
- Thobela FM reaches the 16-49 year age group and serves metro, urban and rural Northern Sotho-understanding audiences. Its main broadcasting area is in the Northern Province. Programming includes drama serials, music, community programmes, news and current affairs [www.hal.co.za/newhal/stations/035].
- Ukhozi FM was previously known as “Radio Zulu” and is acknowledged as the largest radio station on South Africa. This stations extensive audience lies primarily in Natal [www.sabc.co.za/macnet/sabckzn/pages/uintro.html].
- Finally, Umhlobo Wenene FM broadcasts in Xhosa from Port Elizabeth. It is

the second largest African language station in South Africa and broadcasts in 7 of the 9 South African provinces, and is the only station which broadcasts in all of the major South African metro poles. Programming is of a varied content due to the diversity of listeners, and ranges from contemporary music programmes to religious programmes and drama serials [www.hal.co.za/newhal/stations/032].

Upon browsing the various web pages for indigenous language radio stations, it quickly becomes clear that these stations have a number of characteristics in common. Firstly, there is often a clear distinction between two very different types of listener: the younger, urbanised and educated listener intent on upward mobility and self-empowerment; and the older listener firmly bound by traditional links. In this case, the distinction goes beyond the traditionally expected chasm between the ideas and ideals of an older generation versus those of a younger generation. In South Africa one must consider that the older generation's fate was determined by the oppression of apartheid, while the younger generation are entirely free from those restrictions. In the most extreme scenario one must consider the older traditionalists rooted to their ancestral and cultural heritage, and the younger urbanised persons systematically adopting Western culture and its ideals. The only link between these persons is the language with which they communicate. In catering for all listeners, the SABC indigenous stations adopt a varied programme schedule. For the younger listener contemporary music programmes and hourly news and sports updates are more conducive to the secondary which radio most often plays in this listener's life. For the older traditionalist and rural listener, programming takes on a more primary role in the form of talk shows, woman's educational programmes, drama serials and discussions relating to community issues.

It must be noted, in terms of stations broadcasting in indigenous languages especially, that South Africa, as a third world country, relies heavily upon radio to reach rural areas. In South Africa only 40 out of every 1000 of the population own televisions, whereas 445 out of every thousand have radios [Teer-Tomaselli.1996].

Radios are relatively inexpensive and are available almost anywhere. Radios, furthermore, can be run on batteries or may be wound up in the case of “wind-up” radios and don’t necessarily require electricity. This is important when considering that a great many rural areas are not supplied by electricity. Battery power, furthermore, is relatively inexpensive. There is a high rate of illiteracy among the rural population and newspapers and magazines are poorly distributed in those areas. For this reason only 5 percent of the rural population read newspapers. Radio broadcasts may be received in all 11 official languages. This fact, combined with the accessibility of radio, makes it one of the most important media in South Africa. One naturally wonders what role a web site fulfills for stations broadcasting in indigenous languages, whose audience base comprises a generally uneducated rural population. The answer is two-fold: the web sites provide valuable information to potential advertisers; and are a means of contact to the young, educated urbanised persons who have moved away from their rural roots and wish to have contact with their mother language.

The second division of radio stations is that of SABC stations broadcasting nationally. These include: Radio Five, Radio 2000, Radio Metro, Radio Sonder Grense and SAFM. It is interesting to note that on the web sites of these stations, only Radio Five and Radio Metro have any form of streaming audio facility. Radio 2000, Radio Sonder Grense and SAFM have very primitive web pages containing very little information and no online audio. These sites are very disappointing, in fact, especially when compared to the well presented and informative sites of the indigenous language stations, with the exception of Ukhozi FM. In this regard, Radio Metro is a good example of a station which presents audio “clips” of recent programmes.

- Radio Metro reaches the major metropolitan areas of South Africa, including Durban, Cape Town, Port Elizabeth and Gauteng. The Radio Metro web page describes its listeners as “Black South Africans in metropolitan settings throughout the country” [www.sabc.co.za]. The programming includes contemporary music (80 percent of which consists of rhythm and blues), talk shows, sports and women-related issues. News is presented every hour. Radio

metro is otherwise known as "Metro FM", and under that name has a live feed which is available at www.live-radio.net. The Radio Metro site from the SABC does not offer a live streaming audio facility but recent shows and features can be played using the RealPlayer [www.sabc.co.za].

In the case of Radio Metro, the need for a web site extension is more obvious. This station's listeners will have access to Internet facilities and most likely welcome the new technology.

Radio Good Hope and Radio Lotus fall into the third category listed under SABC radio stations; representing stations that broadcast regionally.

- Radio Good Hope broadcasts in the Cape Town greater metropolitan area and has an audience of approximately 500 000. Its target audience are English and Afrikaans speaking men and woman between the ages of 16 and 34. Programming mainly consists of contemporary music, and includes hourly news reports and information relating to local sports and community-orientated activities [www.goodhopefm.co.za].
- Radio Lotus broadcasts from Durban and reaches the whole of KwaZulu-Natal, Gauteng and the Western Cape. It is roughly the same size as Good Hope FM and reportedly reaches 500 000 listeners, generally of Indian origin. As such, it addresses a listening base of five languages: Hindi, Tamil, Telugu, Urdu and Gujarati; and three religious groups: Hinduism, Islam and Christianity. All the music played on Radio Lotus is in one of the five major Indian languages. The stations programming also includes news and current affairs, sports updates and discussions on religious issues [www.sabc.co.za/macnet/sabckzn/pages/lothm.html].

Unusually, neither of these regional stations have online audio facilities. Their web sites are very simple and seem to be posted simply for the sake of doing so, as they are not even particularly informative.

Radio web sites with a live broadcasting facility

Here follows a look at five stations in South Africa that have extended their Internet facilities to include a live Internet broadcast; and an investigation of the content and appearance of the sites from which the broadcast is sent.

Impact Radio is a Christian Contemporary Music (CCM) station broadcasting from Waterkloof Glen in Pretoria to the greater Pretoria area 24 hours a day. The station format consists of approximately 80 percent music and 20 percent talk. The style of music played ranges from slow to medium-fast contemporary music - mostly in the form of Christian "Praise and Worship" ballads. The remaining air time is spent on various talk shows, phone-ins, magazine programmes and news and sport updates. The mission statement of the station reads as follows: "To reach the greater Pretoria area with the gospel of Jesus Christ, targeting all sectors of the community. Using this medium to assist in discipling people in all aspects of life in order to uplift, encourage and develop people to become all that God intended them to be" [www.impact-radio.co.za/format.html].

The Impact Radio web site was launched in October 1996. According to the web page statistics presented on the site in October 1999, there had been over 49000 visits to the site up to that time. The site, as it appeared in November 1999, consisted of the home page and eleven linked pages. These pages provide information on the station disc jockeys, schedule and latest station news as well as a scanned recent newsletter and club card information. A comments facility is provided, whereby a listener may e-mail the station. For the first time visitor, pages relating to the function of the station, mission statement, and technical details are provided. Pages are further used for promotional advertising of the station. In this regard there are pages entitled "Advertising", "Outside Broadcast Unit" and "Contact Details".

Although the web site sounds extensive, it is, in fact, very simple and a little disappointing. The information given on the linked pages is only of the bare minimum,

and one seldom has to scroll because the page is so short. Obviously one doesn't judge a page by its length, but in this case the length and quality are on equal footing. All the pages are set against a pitch black background with coloured text. On the home page, the title "Impact Radio" takes the form of a reflection in shades of light blue and beige. The colours of the image clash with the links listed in bright yellow down the left margin of the page. Besides the title, the only other graphics are of a small RealPlayer G2 icon and the icon of "The Counter.com" (a company which tracks the number of site visitors). The remaining area is left open, leaving too much empty screen space. There is no continuity within the rest of the site. The only common element among all the linked pages is the black background. Text on the pages differ in size, font, and general impression of colour, whether bright or dull. The only graphics are of the titles of the linked pages, a scanned newspaper article and scanned photographs of the station disc jockeys.

The amateur appearance of this site is not in line with the "high-tech" quality that one would expect from a radio web site that broadcasts online. However, this station rates among the few in South Africa that offer this facility. A user is able to listen to live broadcasts made from Pretoria, online using the RealPlayer G2 from RealNetworks. One must wonder what purpose is served by online broadcasting for Impact Radio? It is a station with a comparatively small audience of 65000, and broadcasts to a limited area. Furthermore, one cannot imagine that the station would significantly increase its audience to justify the time and expense required to properly maintain a Web site and online broadcast. The answer most likely lies in the station's Christian conscience, and desire to expose as many people as possible to Christianity.

By comparison, the web site of Classic FM is exactly what one would expect, in terms of the audience statistics and the station's particularly "classical" image. According to the demographic profile provided by the site in August, 1999, Classic FM attracts an audience of 100000 listeners. The bulk of the audience are between the ages of 25 and 64, very well educated, and hold positions of middle or top management. Sixty one percent of this audience has a monthly household income that exceeds R10 000-

00. Although this figure seems extremely high, it is in keeping with the educational level attained by most Classic FM listeners.

Classic FM's programme schedule consists of a well-balanced mixture of various classical genres. The format is designed to cater for the seasoned classical music lover, and the listener perhaps not schooled in classical music, but open to new kinds of music. Talk is limited to news, weather, sport, traffic updates and financial headlines in "The Classic Breakfast" between six and ten o'clock on weekday mornings; and "The Classic Drive" between three o'clock and six-thirty on weekday afternoons - provided for the benefit of professionals either on their way to work or returning home. Featured programmes appear in the form of "People of Note" and "Musician of the Week", which consists of an hour long interview with various well known South African musicians. Other programmes include "Mike's Movies and Musicals" presented by Mike Mills, the "Classic Countdown", "Concert Hour", and "Nocturne" [www.classicfm.co.za/programmes].

The Classic FM web site is very well put together. White, red and grey text is set against a cream coloured background throughout the site, and the format of all the linked pages is standardised. From the home page there are two lists of linked pages: down the left margin, and below the page. These are fixed, and the accessed page is scrolled within them. The links to the left provide information for the habitual Classic FM listener, with links to "classic requests", where a user may e-mail requests to the station, and the "Camerata Classica" listener's club page. The links below provide more technical information about the station. These links include "advertising", "training", "coverage", "technical", and "who's where" [www.classicfm.co.za].

Quasi pencil-drawn animated caricatures appear throughout the pages, where the particular drawing complements or comments on the relevance of the page. For example: a conductor, pianist or listener respectively conducting, playing or tapping a foot. The only other graphic is of a car radio on the home page, which serves as a link for listening to a live streamed broadcast over the Internet. A user is given the option

to listen using either the Windows Media Player or the Windows Media Radio. A link is provided to the relevant Microsoft web sites where these players may be downloaded for free. Where the listening option is provided, there is also a link entitled "Webcast hints" which gives a list of questions and answers of common streaming connection problems. "Webcast hints" also includes helpful configuration tips of the Windows Media Player.

In the case of Classic FM, the use of an Internet streaming facility is self-evident. The station's audience profile suggests a listener that very likely has Internet facilities. It is for this reason also that Classic FM broadcasts via satellite to DSTV (Digital Satellite Television). Similarly, the audience is likely to make use of satellite television. By tripling the possibility of receiving the broadcast, Classic FM is sure to significantly increase its audience and thereby attract more potential advertisers.

OFM is an independent station which was sold as "Radio Oranje" by the SABC in 1996. It is run from the OFM building at the Waterfront of Bloemfontein, and broadcasts to a relatively large area, reaching Welkom, Kroonstad, Klerksdorp, Kimberly, Potchefstroom and Bethlehem. Programming is made up of "only the best of Adult Contemporary, Golden Oldie and Easy FM sounds" [www.ofm.co.za/station]. Broadcasts also include news, sports and traffic updates, and talk shows. OFM describes itself as "a radio station which serves one of the wealthiest and most loyal listening audiences in South Africa" [www.ofm.co.za/station]. Listeners are predominantly between the ages of 25 and 49.

Between the 21st of July 1999 and the 15th of November 1999, the OFM web site was accessed 17197 times [www.ofm.co.za]. The page is set against a light beige background with a light grey watermark pattern, with bold brown titles and either black or brown text. Due to a considerable amount of graphics appearing on the page, the home page has a reasonably long download time. The graphics are very professionally done; consisting of antique-looking radios, gramophones, microphones and jukeboxes, using the same palette of colours for all. Only one animated picture

appears on the home page: a stick figure on a bicycle trailing a banner with the writing "OFM Classic". Linked pages are listed as follows: "The Station", "The Deal", "The Team", "The Footprint", "The Sounds", "Programme Schedule", and "Promotional Guidelines". All these pages provide information for prospective advertisers or users that have not been exposed to the station before. In addition to these pages, 'scattered' links (appearing within the text) provide information for the habitual listener. Links entitled "OFM Afrikaans Music Database", "OFM's Millennium Countdown Clock", "OFM Blokraai Wedstryd", "OFM Surf Report", "OFM Newsmakers", and "OFM Classic Results", provide information on community-based activities hosted by the station. As virtually all listeners are bilingual, an Afrikaans version of the web site is available. "The Sounds" provides the link to the live Internet feed, with detailed instructions on how to download and configure the RealPlayer. At the time of researching this article, OFM was having difficulty with enabling live broadcast via Netscape. Broadcasts via Internet Explorer were successful, however. Between the 14th of October 1999, and the 15th of November 1999, "The Sounds" page was accessed 1239 times.

The function of a web site and live Internet broadcast for OFM is perhaps less obvious than for a more prominent station like Classic FM, for example. However, the comparatively small size of OFM, rather than making the station's management neglect the marketing function of a web site, as one would expect, justifies a more aggressive adoption of all means available for expansion. Upon visiting the web site, one is immediately struck by the energy, enthusiasm and general community consciousness with which this station is run. It is for this reason that OFM is one of the fastest growing commercial radio stations in the country [www.ofm.co.za].

Radio 5, otherwise known as "5FM Stereo", is a commercial, English-medium radio station which broadcasts to major metropolitan areas nationally, targeting an affluent market between the ages of 16 and 34. The format is made up of a selected mixture of Contemporary Hit Radio (POP). This station prides itself on its selection of disc jockeys, and as such states that "programming is predominantly personality driven".

An audience profile provided on the 5FM Web site reads as follows: "The sophisticated up-market and affluent nature of this audience is manifested in the fact that they have substantial spending power and considerable ownership of luxury items. They are fashion conscious, well-educated and they maintain a trendy lifestyle" [www.5fm.co.za]. It is in keeping with the station's upmarket and fashionable image that 5FM maintains and constantly updates an extensive Web site which provides a live online streaming facility.

The 5FM web site is set against a blue background which is graded dark to light from left to right. The 5FM icon and linked page graphics are arranged on the horizontal top margin of the page. This margin and the bottom horizontal margin, reserved for an advertising banner, remain static while the accessed page scrolls within. The 5FM icon is a moving graphic of a large "5" which spins around slowly and changes shading as it does so, roughly in the style of the "Cool 3D" animated graphics program. The icons of the linked pages are in the form of Java "applets", where the graphics are altered with the mouse's movement over them. In this case, the colour of the graphic is changed. The eight links are listed as follows: "the crew", "time schedules", "make contact", "technical stuff", "promos and compos", "top 40", "audio", and "irc chat". The home page is used to list recent occurrences, publications and competition entries. Information provided on the linked pages is well presented and in keeping with the general impression and style of the site.

This web site makes extensive use of interactive possibilities. The relevance of this fact should be underlined. Often companies/organisations don't make use of all the possibilities presented by the Internet medium. They are content to approach their web page design as they would a promotional flyer, or an article in a magazine. It is the interactive possibilities provided by the Internet that sets it apart from any other medium. In this regard, the 5FM Web site not only makes use of a contact by e-mail option, but has its own "IRC Chatline" where visitors to the Site are able to communicate with one another online.

The "audio" page provides four listening options, listed as follows: "5FM live Internet

broadcast"; "5FM TDK Session"; "Derek "The Bandit" LIVE IN THE MIX"; and "5FM TECH TALK". The second, third and fourth options are audio "clips" of recent features which are regularly updated. All the audio is encoded using Windows Media and may be played back using the Windows Media Player. A link to a web site where the player may be downloaded is provided on the "audio" web page.

"East Coast Radio has established itself as being the heartbeat of KwaZulu Natal. The province wakes up to it, it drives its cars with it, shops with it, relaxes with it and lives with its very existence" [www.ecr.co.za]. The station's audience is divided equally into black, white and Indian listeners, predominantly between the ages of 16 and 49, reflecting the upper income KwaZulu-Natal lifestyle and attitude. The daily average listenership is approximately 421000. It may be described as a station that plays adult contemporary music but the emphasis of East Coast Radio lies in its community orientated approach to radio broadcasting. Programme content is therefore dominated by regular news, weather, surf and traffic updates.

The East Coast Radio web site is in keeping with the station's spirit of community awareness. The site is designed in the colours red, yellow and white. Throughout the site, the East Coast Radio icon and a large moving banner scrolling the times of daily shows, remains static at the top of the page while linked pages alter below. Links listed beside the station icon take the form of "drop down" menus, and they include: "kzn today" which drops down to include pages pertaining to the news, weather, sports, surfing and angling; "jocks" which provides linked pages of all the station's disc jockeys; "music" listing the station's top twenty songs; "vote" where a listener or site visitor is able to vote in various competitions; and "for advertisers" which provides station information for advertising purposes. The site's home page is divided into three columns, which provide information regarding various station events. Within these columns are links to further relevant pages. For example, a link is provided to a page listing details regarding the daily "storytime" features of the previous week.

The graphics on the site are limited to scanned photographs, and the overall colouring

of the pages is relatively simple. However, the site is extremely well designed, and creates an impression of wholesome efficiency. A simple style is maintained throughout the web site, which has an extensive number of pages, and all pages have an almost negligible download time as a result of the absence of any “flashy” detail. The site does make use of some interactive web site possibilities whereby a user may log on to cast a vote in a competition that the station is running, or may e-mail a dedication of a song to the appropriate disc jockey. A live feed is available from the site using Quick Time media. In this case one may link to the page from which the feed is available by clicking on one of the station icons in the title. On that page the Quick Time 4 player is available to be downloaded. Furthermore, the page is able to detect whether or not the user’s computer has Quick Time the Quick Time 4 player.

Conclusion

The broadening of an Internet culture has had no direct impact on the medium of traditional radio broadcasting in South Africa. The programming content, sociological contexts and functions of the stations investigated have remained entirely unaffected. The Internet, in fact, is regarded by the radio medium as a further marketing tool for attracting listeners and advertisers. In this regard, the Internet sites investigated provide information, whether in the form of text or sound. Where a station makes a live broadcast available, it is perhaps warranted by the station's having an audience that works or studies by means of a computer, where the live feed allows listeners to tune in while working. More often, however, a live feed is used as a further marketing tool aimed at increasing the station's profile in terms of its use of the latest technologies. Furthermore, the use of interactive means on the radio Internet sites are a mere extension of the traditional uses of the telephone and postal services - the convenience has been greatly improved in terms of speed, but the content and function have remained the same. The possibility for moving visual accompaniment to a radio broadcast has been ignored. It should be noted, however, that this essay dealt only with the use of the Internet for traditional South African radio stations. Radio stations intended only for Internet broadcasting target a very specific audience, as for example the MP3 streaming sites which broadcast only one particular kind of music. An investigation of these Internet-based radio stations would likely reveal an entirely new medium which has broken with the old foundations of radio and is shaped by existing technologies.

Radio is an integral part of the South African lifestyle. It is the medium which excludes no human sector on the basis of culture, language or education. The Internet, on the other hand, is a medium belonging to educated South Africans, generally of an upper income bracket. Though there has been much debate regarding the impact of a world Internet medium on existing media, one may safely assume that the relative differences between the target audiences of radio and Internet, in the South African context, render any debate in this regard null and void. The Internet will have no direct

impact on traditional South African radio in the foreseeable future, barring its use as a means for increased exposure.

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