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JMM – The International Journal on Media Management

Editorial

Dear Reader

Welcome to a new issue of JMM – The International Journal on Media Management.

In this issue we have a distinguished group of authors, whose collected articles mainly cluster around the challenges arising from new digital media for the content industry. Through new services, technologies, and devices, innovative business models and products are required and the potentialities imbedded in the change have to be exploited.

Robert G. Picard leads off this issue with an analysis of business models of online content services, especially how they have changed through changes of technology and audience demand and how current business models resulted from these changes. In his article he explores the implications of these business models for multimedia and other content producers and possible prospects for the future.

In their article, Hsiang Iris Chyi and George Sylvie analyze the development of online newspapers and how they take advantage of the possibilities the online medium offers. Based on a survey with 14 online newspaper-practitioners they show that while most newspapers hope to complement print and

online products, these possibilities are not part of every newspaper's strategy. Most of them are testing several models of earning revenues to become an economically viable medium.

David Nicholas and Paul Huntington assess the use of newspaper website logfiles. The goal was to determine the most appropriate method for evaluating the use of these logfiles and to establish what types of analysis could be drawn. For this, the logfiles of The Times/The Sunday Times Web were examined. Based on these findings the study lays a foundation and identifies new classifications on which more detailed cross-classifications and modeling can be based.

Technology-driven innovations in the area of transport media and new devices pose a challenge for both media companies as well as their customers. The main questions for the media industry is how these new technologies can be exploited, e.g. through new content-oriented products or new services based on these technologies. Joachim Rawolle and Thomas Hess concern themselves with an analysis of attributes of digital contents and an assessment of different combinations of target devices and transport media. Based on this, they deliver a discussion of two emerging concepts.

The influence of corporate culture on the achievement of strategic aims in two leading international broadcasting companies – BBC and CNN – is investigated by Lucy Küng. The article aims to explore how cultural beliefs support the organizations strategic goal is assessed and to uncover senior managers' unconscious assumptions concerning organization mission, the competitive environment and acceptable strategic responses. The author concludes that culture can act as a restraint to strategic plans and that culture in general is a valuable strategic asset for media organizations.

This issue again concludes with our calendar of events. We hope you find our collection of articles interesting. We look forward to continuing to deliver strong, peer reviewed content to you and to develop our relationships with the (new) media community. You are always welcome to contribute your research or your feedback to the JMM and to take the opportunity to share your ideas with this community. Since we are a journal focused on the possibilities of new media, you will find all our content online under

www.mediajournal.org.

*Beat F. Schmid
Peter Glotz
Peter Gomez
Dörte Wittig*

Changing Business Models of Online Content Services

Their Implications for Multimedia and Other Content Producers

by Robert G. Picard,

Turku School of Economics and Business Administration, Finland

This article focuses on the business models for online content services and how they have changed during the past two decades as technology changes and audience demand have affected operations. It explores how the current business models emerged, how new developments are affecting those models, and the implications of the changes to producers of multimedia and other content producers.

It will explore the bases and problems of four major failed business models, how they evolved into the primary models existing today, and the prospects for the future.

Such business models are important in understanding the context and strategies of the major online content service providers and how producers of content are and hope to be able to co-ordinate or integrate their operations to gain benefits from the strengths and opportunities provided by these operators.

Major operators are useful for the development of independent producers of multimedia and other content because they can help to provide access to the distribution systems and entry points that are necessary for commercially viable operations.

This article discusses the underlying economics of these systems, how and why current business models are employed, and how independent producers are crucial to the success of the new business models.

Influences on Demand for Information and Communication Technology

To begin, it is useful to undertake a broad perspective regarding the nature of modern electronic communication capabilities. Although the term “revolution” is often applied to contemporary developments in information and communications technology (ICT), the technologies should not be confused as being part of a content revolution. The revolution is in software, equipment, and infrastructure and in their capabilities for presentation and dissemination but not in the substance of the content itself.

This is an important element in understanding the nature of demand for the products and services associated with new technology because it comes to the core of the question of who will use the technology, for what purposes, and at what price.

If one looks past all the marketing and excitement surrounding the technologies, new ICT based technologies cannot revolutionise content because they provide no real new communications capabilities. They are not affecting communications in such fundamental ways as did the arrival of the printing press, telegraph and telephone, photography and motion pictures, and broadcasting, which provided the abilities to move text, sound, and images with or without terrestrial lines.

If one carefully considers the combination of computers and telecommunications, it becomes clear that the convergence itself is not producing any revolutionary change in communication. Rather, its primary effect is increasing the speed and flexibility of communication. The most revolutionary aspect of the technology is that it creates new economies of scope and integration that change the economics of content distribution. New technologies permit the combination and integration of the other existing means of communications and allow readers/viewers/listeners more control and choice. It provides different methods for participating in and receiving communication. These changes, and particularly the interactive possibilities that permit users to select materials and the forms of that material, create a significantly different relationship than exists between users and traditional media. But, given the existing technologies and the technologies currently in development for media and multimedia, that interactivity is fairly limited to making more effective use and personal choices based on already existing content forms or combinations of those forms.

This is not designed to give the impression that these developments are unimportant. The combination of existing content modes creates new methods of presenting content, the new technologies provide flexibility of use, and they shift control over communications. All of these factors provide significant advantages to users. And where there are advantages, there are consumers willing to spend time and money.

However, the demand for the products and services providing these advantages must be understood as a part of, and an extension of, demand for existing content products and services. That demand is within those who communicate and receive communications using existing means. New methods of

accessing, using, and combining that content must increase value to these users and help simplify their search for and access to the content.

It is ignorance or misunderstanding of this essential demand element that has made it so difficult for so many firms to find ways to profitably exploit the potential of the new ICT technologies and associated products and services. Many believe the rhetoric that new and unique products and services are being created that will significantly alter the behaviour of individuals and transform society. In reality, most of these products and services are just creating faster, easier, and more flexible means for consumers to do what they are already doing.

Coming from the business perspective, it is important to understand that this demand and a variety of forces from within and outside the ICT industry must be harnessed in order to create sustainable products or services.

The success or failure of new communications technology is not dependent upon whether it is innovative, useful, or desirable but rather on questions of whether it can find a means of obtain-

ing and maintaining sufficient usage and turnover so that it is not rejected by users, entrepreneurs, or financiers (Picard, 1998). The competing interests of a variety of factors play significant roles in the process, and the area in which their interests converge is relatively small (Figure 1). When those interests do converge or can be accommodated, the likelihood of success of a new application or technology increases. When all interests intersect the degree of risk is low, but for each interest that diverges the risk of failure increases.

This means that the technologies and their associated applications will succeed only if the market believes that they create value that is currently absent today. Further, these new products and services must be able to fulfil needs of businesses and consumers that cannot be fulfilled by alternatives that are less costly or disruptive to current business operations and consumer behaviour.

It is exactly this problem that makes many sectors of the ICT industries so risky and has forced entrepreneurs and those with high-risk capital to fund most new communications technolo-

gies and applications. This has been especially true for developments involving Internet and multimedia, where limited patience for results has caused the rapid movement of financial resources from certain products or services to others that are perceived as having more potential to create sufficient demand to make the product or service viable.

There is no single formula for creating a successful arrangement within the interests, and different firms and technologies seek different models for transferring the potential of technologies into successful business enterprises.

Basic to these, however, is the issue of creation of content that is of interest to users. Advances in the development of interactive and multimedia technologies are increasing the number of producers and the availability of content and are forcing traditional information and publishing industries to develop new understanding of their roles in creating, processing and storing content (European Commission. The Content Challenge, 1998).

The development of electronic publishing, which is often based on content generated through traditional publishing, has created a growing sector of economic activity and pushed traditional content providers to enhance their competitiveness and survivability in the face of new entrants from audiovisual, multimedia and other sectors (European Commission, Electronic Publishing in Europe, 1997, and European Commission, Strategic Developments for the European Publishing Industry Towards the Year 2000, 1996).

European publishing industries have some advantages over multimedia and other new content producers because they are parts of mature industries that do not face the developmental and resource problems of European communications firms in audiovisual production, multimedia, information tech-

Figure 1:
Convergence of Interests
in Communication
Technologies

nologies and telecommunications (European Commission, Competitiveness of the European Union Publishing Industries, 1999, and European Commission, *The Digital Age*, 1998).

As publishers and multimedia producers have moved online in Europe and worldwide, a variety of different arrangements to co-ordinate the needs of content producers, content organisers, technology providers, and the others have been attempted. If one looks at the arrangements carefully and combines issues of investment and operational capital, there are clear models that have been adopted across sectors of the ICT industries at different times. This article focuses on the models that have been employed in the online content sector.

The Nature of Business Models

The term business model is often confused with that of strategy, such as company strategies, product strategies, general marketing strategies, or pricing strategies. Strategies are the means employed by firms to meet their goals (Grieve Smith, 1990; Karlöf, 1989). A business model is much more fundamental, however. Business models are understood and created by stepping back from the business activity itself to look at its bases and the underlying characteristics that make commerce in the product or service possible. A business model involves the conception of how the business operates, its underlying foundations, and the exchange activities and financial flows upon which it can be successful.

Business models have been described as the architecture for the product, service, and information flows, including a description of the various business activities and their roles. They include a description of the potential benefits for the various business actors and the sources of revenues (Timmers, 1998).

In terms of modern communications, business models need to account for the vital resources of production and distribution technologies, content creation or acquisition, and recovery of costs for creating, assembling and presenting the content.

A business model then embraces the concept of the value chain, that is, the value that is added to a product or service in each step of its acquisition, transformation, management, marketing and sales, and distribution. The value chain concept for products and services is now well established in business literature in which it was widely embraced after its exploration by Porter (1985). This value chain concept is particularly important in understanding market behaviour because it places the emphasis on the value created for the customer who ultimately makes consumption decisions.

The issues of value chains and value added are especially salient in European settings where value-added taxes rather than sales taxes are the traditional methods used by government to raise revenue. As a result, many European firms have an advantage in identifying and comprehending the elements of value chains over firms in nations and regions where value-added taxes are not present. Despite that advantage, however, even many European businessmen and women are unable to identify the value added by their activities. This is problematic because if one cannot articulate that value, one cannot properly manage and market a product or service.

Understanding the business model under which a firm or product operates or will operate is especially important when new products or services are developed or the industry in which one operates is in a state of significant change. As the environment in which a firm or industry changes, the factors that support a business model change

simultaneously. As a result, business models that may once have been successful may become less successful and be abandoned. Business models that seem appropriate for new products or services may not produce the support and structures necessary as the business milieu changes and may then be altered or abandoned in favour of other models.

Some individuals make the mistake of assuming that failed or abandoned business models can never again be successful. This is not always the case if the conditions in which they failed are no longer present or resistance to some elements disappears. Situations may then arise in which such a model may be reintroduced successfully for the same or a different product or service.

Business Models of Online Content Services

We may now focus on the business models of the major online content service providers, i.e., those firms that provide users access to content of interest including news, information and entertainment, leisure activity, and other materials.

In this discussion we are not focusing on Internet service providers but rather those firms who make their business in organising materials and providing access to content. This includes firms such as AOL.com (America Online), Yahoo!®, MSN™, Netscape Netcenter™, Excite.comSM, CompuServe.com, digitalcity.com and scores of similar organisers.

In terms of usage, these content organisers provide the most visited sites on the World Wide Web. If one considers the top 10 web sites receiving the most visitors during a recent measurement period, all but one – Microsoft's home site – are general online content organisers (see Table 1).

Table 1: Most Accessed Web Sites

Rank	Site
1	Yahoo.com
2	Netscape.com
3	aol.com
4	Microsoft.com
5	Excite.com
6	Geocities.com
7	Infoseek.com
8	Lycos.com
9	msn.com
10	altavista.digital.com

Bold face indicates

general online content sites

Source: Relevant Knowledge, March-April 1998 period, unique visitors, 12 and older

Today, these sites no longer provide mere organisation of and access to information sources but are broad service portals that provide free e-mail, messaging services, voice mail, user customisation, online shopping, notification services, software downloads, chat lines, and access to a wide variety of online communities and content.

It is useful to consider the evolution of general online content providers and the various business models that have been used during their history in attempts to recoup investments in development and operations. These provide a means for understanding the con-

straints faced by these firms and why they increasingly need relationships with content producers.

One can divide the history of online content service providers into periods coinciding with four abandoned business models, a model in current use, and an emerging model evolving from the existing model. These models can be labelled 1) the videotext model; 2) the paid Internet model; 3) the free web model; 4) the ad push model; 5) the portal and personal portals model; and 6) the digital portal model.

Each was made possible by particular developments in technology, had different financial bases, and produced different results, as outlined in Figure 2. The importance of the technological developments that made the services possible cannot be diminished because these were very often the results of significant financial investments involving agencies and firms other than the content services whose purposes were not always similar.

Four Failed or Abandoned Business Models

Videotext

Videotext indicates the initial attempts to use television screens as a means of conveying text-based content to a

wide audience. Efforts to create videotext as a commercially viable activity emerged in the 1970s and were led primarily by newspaper companies in North America.

The impetus for creating this new content service resulted from newspapers' change to ICT for phototypesetting. Because the new processes associated with the technology captured keystrokes, it was now possible to reuse or easily alter content prepared for the newspaper for use in a videotext operation. Supporting this use was the development of cable television systems that could be used for easy and inexpensive distribution of the content.

The concept of videotext was particularly attractive because it would allow publishers to update materials and convey breaking news during the times between printed newspaper editions.

Because most of the infrastructure and content creation and formatting costs were already covered by revenue from the newspaper operations, the financial costs of this secondary use and distribution of the content were relatively low. This permitted publishers to offer videotext at a low price or to provide it free as promotional costs for the newspaper itself. Some television channels produced similar content offerings, reusing material prepared for magazine

Figure 11: Business Models for Online Content Services

	Videotext	Paid Internet	Free Web	Internet/ Web Ad Push	Portals and Personal Portals	Digital Portals
Made Possible By	Change in production method of print media and cable systems	U.S. military-industrial complex investments	European nuclear science community investments	Additional use of internet service subscription lists and ad placement on web pages	Changes in server and software capabilities	Digitalisation of audio and video media and telecommunication improvements
Financial Bases	Secondary use of available material for a small fee or a promotion for newspaper	Telephony style pay-for-use	Costs paid by content providers	Direct mail style advertiser payment and advertisement in speciality publications	Newspaper and magazine style advertiser payment	Cable and satellite service subscriptions/pay-per-view
Result	Audience rejected	Audience rejected	Audience accepted; commercial content providers and content organisers rejected	Audience, services, and many advertisers have rejected	Audience and advertisers are accepting	Audiences, advertisers, content providers and online services indicate support

and newspaper program listings and marketing efforts in what became the initial forms of text TV that are now more common in Europe than in North America.

Implementation and improvements of videotext created the idea of aggregating information and providing limited interactivity. Innovative publishers and broadcasters began to see themselves in broader terms as content producers with both traditional and online distribution. In addition to news, many videotext operators began adding material such as listings of local organisations so users could select pages for the organisations in which they were interested. Sports news and information were placed on certain pages for users to select and once they reached the index for the sports news, they could then select the stories in which they were interested. Even timetables for trains and airports were added to some text sites.

Although the producers of videotext had strong technological development and cost advantages in producing and distributing the material, the consumers – either as audiences receiving it free or purchasers of the service – were generally uninterested. When tested or implemented, use among the public was relatively low and only occasional. This may have been because the amount of content and interactivity was limited or because it duplicated content that already available. Whatever the reasons, it became difficult for many producers to justify even their relatively low expenditures given the performance in the marketplace.

As a result, most content providers abandoned the videotext model. It still exists in a few locations where acceptance was higher or where it plays a larger role in the marketing strategies of the content producers. Videotext as a precursor of Internet-based content providers, however, provided the un-

derstanding that a free access business model for a service that only offered limited improvement on the availability of information existing elsewhere would produce small audiences that were financially unjustifiable as promotion for the providers of that information.

Paid Internet

When videotext did not produce results desirable to content providers, they did not abandon the prospect of additional use of existing materials. Rather, they began to seek methods through which costs could be recovered from individual users and perhaps generate profits. This possibility would only be viable with a pre-existing infrastructure, and it soon became clear that the Internet was the most attractive alternative for distribution of the materials.

The existence of the Internet and the software required for its operation had been funded by the United States government as a communications system between the Pentagon, military contractors, and scientists working on military projects at universities in the late 1960s. The U.S. Department of Defense Advanced Research Projects Agency (ARPA) created the ARPAnet – the first nation-wide computer communications network (Cringely, 1992) – to communicate and co-ordinate activities because research, development, and manufacturing were well distributed in different geographic locations. By the 1970s the system had spawned the Internet to link sites not engaged in military projects, primarily universities.

The existence of this system and its potential for commercial use were used to change the system to allow wider use and access. Content producers discovered by the last half of the 1980s that they could make their materials accessible through the dial-up services using traditional telecommunications and

the Internet and charge a fee for access to the content. Many of the producers who originally considered videotext and numerous others moved to provide material to users in this manner. Consumers would pay either flat fees for access or pay per actual usage typically charged against a pre-existing account set up for the customer. A variety of content providers began to develop services in this environment including the Times Mirror, New York Times and Dow Jones. All three began offering direct dial-up and Internet accessible services for a fee.

The market, however, did not look so kindly on the development. General audiences, who could wait a few hours to receive the information in print, did not embrace the idea of paying more to get information just a bit earlier and were often unhappy with the complicated processes required to access the information. The greatest market success was not for general information providers but for specialised data providers such as those creating and distributing financial and technical information.

This can be seen in the fact that today the paid Internet content creators are typically limited to speciality online services such as those providing detailed and real-time financial information. Examples of these services include Financial Times Interactive Data, Dow Jones Interactive and Bloomberg Professional.

As a result, general content providers soon began abandoning the model based on providing content through the telephone and Internet and recovering the costs from audiences. Perhaps the most ambitious failure was the electronic service Viewtron that was established by Knight-Ridder Inc., one of the largest newspaper companies in the U.S. In the three years the service operated, it managed to attract only 50,000 subscribers at a cost of \$50

million. Other services such as those provided by the New York Times and Times Mirror have also dropped fee-based services for general information.

A variety of online companies such as AOL, CompuServe, and Prodigy began in this environment, aggregating access to content from other sources for a monthly fee. The value provided to consumers by these companies was increased usability and ready access to multiple information sources. Despite increasing number of subscribers, they too were unable to recover sufficient costs and began seeking additional means to cover the costs of their operations.

Free Web

Although general content providers rejected the paid Internet model, the benefits of Internet distribution remained attractive. But some complicated processes that audiences disliked and difficulties in displaying content still remained. These problems were removed by the creation of the World Wide Web and associated software and browsers. These technological developments were not the result of the content or ICT industry investing to solve the problem but also came from governmental investments. In this case, the technology resulted from efforts by the European nuclear science community to improve its ability to convey data, graphic displays, and other materials to researchers throughout Europe and the world.

Work for the European Centre for Nuclear Research in Geneva, and especially the efforts of Tim Berners-Lee of the United Kingdom, produced the World Wide Web and introduced it as a workable alternative by the early 1990s (Pavlik, 1996). The widespread distribution of browsers in standard software packages for new computers, as well as their availability in retail stores, rapidly made the web the pri-

mary online use of general consumers.

With this infrastructure and acceptance in place, increasing numbers of content providers began moving to the web. Many new types of content providers began moving rapidly onto the web, exponentially expanding material available each year. These materials were generally provided free of charge as promotional materials for commercial firms or as special interest materials provided by individuals or organisations.

Media and other content providers soon grasped the utility of the web in providing advantages for distribution and creating a system in which individuals could access materials they produced. Some began operations to reuse existing materials again – as they had under the earlier videotext model – but this time with the advantages of true graphic capabilities. Other firms developed means to organise materials in a way that reduced the frustrations of users seeking content.

Time Magazine became one of the first major publications to successfully exploit this possibility. It made itself available at no cost through America Online in 1993 and within 6 months more than 1.5 million users had visited the site. In 1994 the New York Times launched its free service @Times. Revenue for the sites came from fees paid by content aggregators such as AOL who incorporated the sites within their portals.

Users of content accepted these free information services. Because the material was free of charge, the lack of cost made use the equivalent of obtaining material from free television or radio and this appealed to consumers. The model of operation, however, did not provide means for the commercial content creators' and aggregators' firms to recover sufficient costs for providing material or organising content from

the users so they soon rejected the model as unworkable.

Internet/Web Ad Push

The desire to find a mechanism to find a non-user revenue stream led some content providers, Internet service providers, and content organisers to attempt to use lists of subscribers and users, combined with demographic, lifestyle, and other profile information obtained through registration, as a means of attracting advertising that could be targeted to specific users. In other cases they attempted to find advertisers for products and services related to web pages on which particular content was organised.

In both cases, the firms "pushed" advertising toward audiences that would be most interested in the products or services offered.

The first process made secondary use of subscription lists and information and created an advertising system based on direct mail models in marketing through printed materials. The second process followed a system based on advertising in speciality publications.

Although the model created a revenue stream to support operations, audiences were unhappy with content and service providers who used such systems because they say it as an intrusion on their mailboxes or felt they were confronted with too many advertisements when they reached sites. Internet service providers and content organisers did not want advertisers not associated with them to use their system.

Many advertisers saw negatives in the intrusiveness of individually directed ads. In addition, they questioned the effectiveness of the model particularly because it was difficult to measure the effectiveness of mere exposure to the limited advertising messages on many sites.

The Current and Emerging Business Models

Portals and Personal Portals

Content organisers needing to gain the advantage of the advertising revenue stream but also to control advertising exposure soon moved to the current business model based on portals. In this system users of web browsers are brought to an organising interface and advertisements. As users move to information of interest, additional or related advertising appears. As providers have attempted to differentiate themselves and increase satisfaction with portals, personalisation of portals has developed.

The current revenue model is based on newspaper- and magazine-style advertising in which readers are brought into contact with advertisers' messages while making other use of the pages. In most portals only a single ad appears on each page and because of its limited size it is designed to "pull" or attract users to click through the ad to gain additional information from the advertiser.

The current model is attractive to many of the major players because user resistance is not strong and a regular advertising stream is being produced. A variety of arrangements are found in payment terms for portal web advertising, the most common being based on page views, flat rates, or click throughs. Where advertisers engaging in direct electronic commerce are involved, revenue splits, transaction fees, and customer acquisition fees are becoming common payment terms as well.

For its improvement on other models, however, the current model is still not producing profit for portal operators. The major players are expending large amount of risk capital obtained through stock offerings in hopes of creating strong brands that can survive until the current technology and appli-

cations are surpassed by improvements that create a new environment and hopefully profitable business model.

This strategy is based on the fact that portals create value by organising access to content in a way that creates a brand for the portal that attracts returning users.

A side effect of this strategy is that portals rarely create significant content. Content creation is expensive and difficult so portal operators primarily make deals with those who have content to enhance its availability to the wide audience of users that the portals provide or to create additional revenue streams or brand identification for the content creators.

Digital portals

The current hope for portal providers, backed by significant investments and new competition from telecommunication firms, is the development of multipurpose digital portals. Digital portals, which are not yet widely available because bandwidth and compression technologies are still being improved and installed in many locations, allow the combination of the aspects of current content portals with digitalisation of video and audio.

Although related to the contemporary portal model, the digital portal model makes it possible to provide services that provide new and additional revenue to portal operators and content creators. Under this concept video and audio can be pulled over telecommunications lines and accessed using Internet-based applications. It is believed that fully digital portals provide the best means for searching, selecting, purchasing, and using content by organising access to the available materials in a commercially viable manner.

A user of such a system could utilise a portal to view broadcast channels world-wide, to obtain pay-per-view ser-

vices, to view potential non-broadcast channels, to search video clip archives, to use a variety of multimedia materials, to seek additional information about the content, to chat with others while viewing a programme, and to determine the language in which the content is received.

The ability to recoup costs by obtaining revenue not only from an advertising stream but also from users through pay-for-view and premium services makes this attractive to a variety of players.

The major content organisers in operation today are hoping to use this new environment and business model to capitalise on strong online portal brands created during operations under the current model. The telecommunication firms planning to enter the market are hoping to capitalise on the brand recognition they already have as well.

This new environment is attractive because it will require only limited new technology investments for content providers and organisers because it builds upon existing systems and operations. Similarly, the consumer costs for acquiring new hardware and software and telecommunications services will be limited, but should not be ignored because the number of users willing to do so is unclear.

Thus, the development of digital portals faces constraints. Content aggregators and suppliers will have to upgrade facilities and equipment and make investments in organising video and audio content so both financial and temporal constraints will affect the pace of this development. The greatest constraint will occur with consumers, however, who will be required to purchase or upgrade computing resources used to process and store video content, as well as paying higher prices for telecommunications lines, and added costs for use of video content.

If consumers are willing to make such expenditures the digital portals will become a kind of kiosk or corner store for online communication. They can use the new portals to access online news, to view magazines, to make purchases of goods, to purchase or rent a video or audio product they do not wish to own and have it downloaded online, to use education and training materials, to obtain cultural materials, and to play games.

The digital portal model will provide more opportunities for content providers and aggregators to gain income from audiences/consumers. Whether these new revenue opportunities are sufficient to make this a viable business model has yet to be proven.

Implications of Online Content Organisers for Multimedia Producers

The experiences of content producers and aggregators during these changes in business models provide lessons that can be used today by multimedia and other content producers. They also provide opportunities that can be pursued.

Perhaps the most intriguing opportunities arise from the improvements of portals and the new business model that may support them. They are important to producers of content, especially multimedia producers. The emerging model would seem to provide significant opportunities for independent producers. When multimedia, audio-visual, and audio producers make materials available in the new model they can do so at no cost (sponsored by the company or advertisers), as pay-for-use, or as direct sales.

Digital portals become especially important in this regard in that they reduce marketing costs for the producer. The largest potential audiences and highest number of users for multimedia products are more likely to be

gained by portal click-through than by independent click-through or information or product seeking in retail stores. Online use can provide samples of the materials even if full access is not provided.

Portal operators will be willing to deal with independent producers because their own brands are enhanced by availability and the operators will not have to bear the cost and risk of content production. Portal operators need to provide a variety of choices to enhance their relationships with consumers, so they need to have access to a wide variety of materials from producers. Thus, the same types of relationships that exist between portal content organisers and text-based and graphic content providers today are likely to be transferred to multimedia providers. When multimedia providers offer materials for a fee, it is likely that digital portal operators will use similar types of transaction or customer-based fee arrangements that are now becoming common in e-commerce.

The new digital portal environment further reduces the previous advantages of company size in content production by reducing traditionally needed marketing, sales, warehousing, and distribution operations. It increases the competitiveness of independent and small producers by providing easier access to the marketing and distribution systems needed, by providing direct sales mechanisms, and by reducing the need for warehousing because of reducing the number of physical copies of products that must be produced for retail sales.

As portals continue to develop, the need for video, audio, multimedia, and related materials by their operators will induce them to work directly with producers to gain access to materials. Some relationships will be based on barter and others will be based on a variety of compensation methods. The beginnings of these types of relation-

ships can be seen among some content aggregators and content providers, and aggregators and e-commerce firms. In the future it evolve into ownership interests as is now common between major cable television service providers and cable content producers.

Content providers, however, need not see the portal and digital portal developments and business models as the only online opportunities. Although traditional information and general content producers and aggregators abandoned the previous business models, there are elements that can still be used by multimedia and other content producers. As noted earlier, business models can be reintroduced or used differently by different products and services. Although the failed or abandoned models discussed above may not have proved successful for major general content providers or aggregators, they can still be useful for other types of content producers.

The paid Internet model in which users paid for access, for example, may not have been suitable for general products but it may be a model that can be used for some educational or unique entertainment products in multimedia or other forms. The improved abilities to collect for pay-per-use and subscription services that exist in the contemporary e-commerce environment enhance this possibility. These methods also give producers the advantages of cost saving by reducing or eliminating the need for physical production and distribution and stocking requirements of retail establishments.

The free web model presents opportunities for introducing and marketing multimedia and other content that may ultimately require purchase through pay-per-use or direct sale transactions with physical or digital distribution of a product. The use of web sites for sales promotion can be enhanced, as many software companies are already doing, with free

samples of multimedia and other content and the opportunities to select paid use of full services or electronic purchasing of the product.

Multimedia producers, then, can benefit significantly from the further development of online content services as well as some of their earlier activities. To do so, however, they need to become increasingly familiar with the business practices and strategies of the existing and emerging content organisers and to begin developing alliances to provide that material and gain access to portals from which new customers and financing will emerge.

References

Cringely, Robert X. (1993). *Accidental Empires: How the Boys of Silicon Valley Make their Millions, Battle Foreign Competition, and Still Can't Get a Date*. New York: HarperCollins.

European Commission (1999). *Competitiveness of the European Union Publishing Industries. Report by Media Group, Turku School of Economics and Business Administration (Finland)*. European Commission, DG III.

European Commission (1997). *The Content Challenge: Electronic Publishing and the New Content Industries. Report by Techno-Z FH Forschung & Entwicklung (Austria)*. Brussels: European Commission, DG XIII/E (October).

European Commission (1998). *The Digital Age: European Audiovisual Policy*. European Commission, DG X.

European Commission (1997). *Electronic Publishing in Europe: Competitiveness, Employment and Skills. Report by IDATE (France)*. Brussels: European Commission, DG XIII/E (October).

European Commission (1996). *Strategic Developments for the European Publishing Industry Towards the Year 2000: Europe's Multimedia Challenge (Executive Summary)*. European Commission: DG XIII/E.

Grieve Smith, John (1990). *Business Strategy*. Cambridge, Mass.: Blackwell.

Karlöf, Bengt (1989). *Business Strategy: A Guide to Concepts and Models*. London: Macmillan.

Pavlik, John (1996). *New Media and the Information Superhighway*. Boston: Allyn and Bacon.

Picard, Robert G. (1998) "Interacting Forces in the Development of Communication Technologies: Business Interests and New Media Products and Services," *European Media Management Review* (No. 1), pp. 16-22.

Porter, Michael (1985). *Competitive Advantage*. New York: The Free Press.

Relevant Knowledge, Web Access, March-April 1998 period.

Timmers, Paul (1998). "Business Models for Electronic Markets," *Electronic Markets*, Vol. 8, No. 2, pp. 3-8.

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Online Newspapers in the U.S.

Perceptions of Markets, Products, Revenue, and Competition

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The diffusion of the Internet during the recent past has created a substantial online newspaper industry. As of April 2000, more than 4,400 newspapers provided online services worldwide, of which 3,161 were based in North America,¹ 634 in Europe, 269 in South America, and 214 in Asia (Editor & Publisher Interactive 2000). The economic potential and theoretical implications make the emergence and continuing growth of the online newspaper industry worthy of media researchers' attention.

Despite the dramatic growth in the number of online newspapers, it is not clear whether this medium will become an economically viable business, and if so, how. Practically, U.S. online newspapers – as are other media in the United States – are economic institutions, engaged in the production and dissemination of content and operated by private parties for the purpose of generating profit (Picard 1989). Despite their behavior being subject to economic principles, online newspaper economics is complex. The convergence of the print newspaper and the Internet creates a new medium that must deal with two sets of market factors simultaneously. Confusion exists as to how online newspapers define a market between the local and the global, how they position themselves in the market, how they define the relationship between online and print products, and how they define competition and develop market strategies.

To answer these questions, we conducted a series of in-depth interviews to gain practical insights from online professionals. While market research tends to focus on user demographics, online publishers' viewpoints are of equal, if not more, importance in understanding online newspaper economics because a market consists of both consumers and suppliers and online practitioners are constantly experimenting with this new medium.

Online Newspaper Economics

Media economics is an integrated system, requiring patient examination of its key parts. Media economists suggest that markets, products, revenue and competition are interrelated in any media industry – each affecting and being affected by the other. The economics of “online newspapers” – news-oriented Web sites affiliated with a print newspaper – is particularly complex because online and print markets are often interrelated: 1) While the Internet's boundary-transcending capacity enables online newspapers to operate globally, news – often provided by their print counterparts – is primarily local; 2) Newspaper publishers often need to consider the potential impact of their online offerings on the print product when developing market strategies. 3) Online competition is hard to define and online and print products may compete for revenue sources. Therefore, no discussion of online newspapers would be complete

without placing these issues – markets, products, revenue and competition – in context.

Multiple Market Definitions

Online newspapers operate in “markets” – with readers and advertisers as consumers and newspapers as suppliers. But “market” is not a simple concept. Despite increased media coverage of online publishing, fundamental issues such as market definitions have received scant attention.

Because Internet access has no pure geographic limits, any information posted on the Web is available to a practically global audience. Technically, online newspapers are able to seek markets on a number of geographic levels – local, regional, national, or global – i.e., serving multiple audiences and competing with multiple media within multiple geographic areas (Chyi and Sylvie 1998). This is very different from print newspaper markets that are almost always confined by geography, as illustrated by Rosse's umbrella model of newspaper markets (Picard 1989, 30). Media economists suggest that dealing with the complexity of media markets requires simultaneous consideration of multiple market definitions (Bates 1993). This study investigates how online newspapers define their markets in practice.

Relationship between Print and Online Products

Defining online markets requires examining the relationship between a newspaper's online and print products because online newspapers do not exist in a vacuum. The print edition often serves as the primary content provider for the online edition and similar or identical information often is published in two formats. So one must consider a newspaper's online and print products as substitute goods (Chyi and Sylvie 1998). Martin and Hansen (1998) also suggested:

The best asset [newspapers' managers] have for recommending their online services is the quality of the newspapers they publish each day. The Wall Street Journal's online news service's success in attracting subscribers may very well be because of the reputation the newspaper has across the country. As more newspapers provide online news services, there may be an assumption by those using the services that the material found online is exactly what would have been found on the same day in that news organization's newspaper (Peterson 1997; 106-107).

In spite of content-sharing, ideally, online newspapers – as a distinct medium – are technically capable of producing interactive, multimedia content such as online forums, searchable news archives, links to related stories, frequent updates, and webcasting. However, many online newspapers are accused of producing shovelware – moving whatever is published in the newspaper onto the Web without significantly repackaging the content for the online medium. Various constraints (e.g. lack of money and staff) seem to limit many online newspapers' capability to develop original content. An Editor & Publisher survey showed more than two-thirds of news Web sites reported that less than 20 percent of their content came from outside sources (Fitzgerald 1997). Another U.S. survey of 131 online newspapers showed about half the sites say that none of the material in their online news sites was written by online staff members. The average percentage of material written by online journalists was 13 percent – suggesting a rather heavy “recycling” of material from the print edition (Tankard and Ban 1998). A more recent survey found 22 percent of newspapers had less than 5 percent original content (Middleberg + Associates 1999), adding to the evidence of shovelware production. We will further examine this phenomenon by focusing on practitioners' perceptions of this issue and their responses to the criticism.

Revenue

Most online newspapers started as experimental projects with the ultimate goal of becoming economically viable. To do so, online newspapers have experimented with various revenue models such as subscriptions, advertising, pay-per-use, sponsorships, Web site development, serving as ISPs (Internet service providers), and e-commerce. We attempted to see how they utilize different models and how national, metro, and community online newspapers differ in their revenue-generating capacity.

Competition

Economic theories suggest that the type of competition depends on the number of firms in a given market. For example, the U.S. daily newspaper industry is largely characterized by monopoly because of the dominance of one-newspaper cities, as are most local cable markets. Further, the industrial organization model suggests that market structure affects market conduct, which, in turn, affects market performance (Albarran 1996, 29). Compared with traditional media, however, online companies may find the market structure difficult to define due to the nature of the medium. Blurring market boundaries and technological change make the nature of competition – intermedia or intramedia – “fuzzy” (Lacy 1993, 55). How online publishers perceive market competition may shed light in this area.

The Study

We chose to conduct in-depth interviews because they lend themselves to open conversation and diverse perspectives. Such qualitative data reveal what online practitioners consider when defining markets for their products.

Since the market is a geography-sensitive concept, we selected 14 U.S. online newspapers operating at different geo-

graphic levels – including online editions of The Wall Street Journal, USA TODAY, The New York Times, The Christian Science Monitor, The Los Angeles Times, The Houston Chronicle, The San Francisco Chronicle (the Web site is operated by the San Francisco Gate), The San Jose Mercury News (the Web edition is called the Mercury Center), The Fort Worth Star-Telegram, The San Antonio Express News, The Austin American-Statesman (the Web site is called Austin360), The Galveston County Daily News (Texas), The Columbia Daily Tribune (Missouri) and The Half Moon Bay Review (California). Among them, four were affiliated with national newspapers, seven with metro dailies (circulation over 150,000), two with small dailies (circulation under 30,000) and one with a weekly. Circulation of their print editions ranged from more than 1.5 million to about 6,000, with a median of 260,256.

In-depth interviews were conducted between Nov. 19, 1998 and Feb. 28, 1999.² Because of the subject matter, the interviewee had to be familiar with the business side of his or her online newspaper operation. So the participants were either general managers or marketing professionals.³ Many were opinion leaders in the industry because of their reputations and influence in the online world.

Market Definitions – Where Is the Market?

Technologically, the Internet enables every newspaper to operate at multiple geographic levels such as local, metro, regional, national, and global. While the medium is global, news almost always is local. To better understand how online newspapers define their markets between these two extremes, the 14 participants were asked how they geographically define the market for their online product – Do they define themselves as a local, metro, regional, national, or global publication?

Their response indicated a geographic market definition has at least four different dimensions: 1) Content-oriented: Some online newspapers define themselves by the nature of their editorial content. So an online newspaper providing local coverage is a local publication while a great amount of national/international news makes a national/international online newspaper. 2) Advertising-oriented: Some define themselves by looking at the type of advertisers they have. So if most advertisers want to reach local/national audiences, the Web site is then a local/national online newspaper. 3) Marketing-oriented: Some online newspapers define their geographic markets according to where they usually promote the product. 4) Audience-oriented: An online newspaper's geographic market also may be defined by looking at the geographic distribution of its online users, i.e., where they reside.

Although perceiving geographic markets differently, all 14 participants realized the Internet is a global medium with a worldwide capacity. Online newspapers of larger sizes tend to define themselves as a global publication. All four national online newspapers have some international audience (USA TODAY's audience is 25 percent international; the others have 5 to 10 percent). Asked about the geographic distribution of these international users, they explicitly mentioned English-speaking countries such as Canada, the UK, and Australia as well as Japan and Germany.

While these national newspapers feature national and international news, none differentiated national and international audiences by providing different content. The Wall Street Journal Interactive Edition has links to the Asian Wall Street Journal and European Wall Street Journal but every visitor has access to the same content.⁴ USA TODAY has not paid particular attention to international users because

"USA TODAY is about USA news" and targets a younger demographic of people interested in USA news, said Allegra Young, Director of Strategy of USATODAY.com. Jason Krebs, Managing Director at The New York Times on the Web, said the goal in the short term still is "national." The Christian Science Monitor also primarily targets readers within the print edition's market and hasn't done things exclusively for international audiences. In terms of advertising, the Wall Street Journal Interactive Edition can target advertising by geography and has many advertisers desperate to reach people in Europe and Asia. In general, these national newspapers have strong brand names that contribute to their visibility in the global market, but pursuing business opportunities overseas does not seem like a primary, short-term goal.

In contrast, the seven larger metro online newspapers have a variety of opinions regarding geographic market definitions. The Los Angeles Times and the San Jose Mercury Center have great ambitions toward national and international markets. The former has 10-15 percent of its audience outside the U.S., while Mercury Center has about 70 percent of its audience outside its print market area and a large percent of that is international, especially Asian. Both identified the key to market expansion as intensive coverage of a specialty in their geographic area (e.g. the entertainment business in Los Angeles, or the hi-tech industry in Silicon Valley) which has great national and international appeal. The Los Angeles Times was beta-testing possibly translating the site into Japanese, French and Spanish versions. Mercury Center considered itself unique among most newspapers because its coverage of the Silicon Valley "puts us in the same category as the New York Times and the Washington Post," said Doug Edwards, Mercury Center's Brand Group Manager. But since the Mercury News also is a local newspaper, it has to serve two

distinct audiences simultaneously: a local audience who wants its daily newspaper online and a national/international audience looking for information about Silicon Valley business and technology. In February 1999, they launched another Web site (siliconvalley.com) providing technology and business news to better serve multiple audiences with multiple products. Mercury Center also is regionally active because its parent company Knight Ridder owns several newspapers in the Bay Area market. Among the 14 online newspapers, only the San Jose Mercury Center had plans for markets at every single geographic level. As to how it prioritized multiple markets, Mercury Center's short-term emphasis still is local because "it pays all the bills."

The "specialty/niche" principle seemed to apply, to a lesser extent, to the online newspapers in Houston and San Francisco (although the representative of the San Francisco Gate, which hosts the online edition of The San Francisco Chronicle, said, "We don't consider ourselves as an online newspaper."). Joycelyn Marek, Vice President of Marketing and Electronic Products at The Houston Chronicle, said its coverage of space (NASA is in Houston) and the oil and gas industry has some regional or even national impact. The San Francisco Gate has 30 percent of its traffic coming from outside California despite the very little marketing attention it gives to national and international audiences because of the lack of national and international promotional channels. Its long-distance audiences include those interested in San Francisco as one of the greatest cities in the world, those who lived there or have relatives there, and sports fans. But overall, the Houston Chronicle and the San Francisco Gate – together with the Fort Worth Star-Telegram, the San Antonio Express-News, and Austin360 – focus on either the metro or the regional level. They find people very in-

terested in local information – their specialty. Ben Smylie, General Manager of Austin360, said, the bigger the market focus, “the less barrier to entry there is for everybody to compete with us. We’d rather spend big dollars to get the big numbers of local eyeballs.”

Smaller online newspapers also noticed they had some audiences from outside the print edition’s market and expressed an interest in pursuing that market, but whether such opportunities exist is not clear. The Galveston County Daily News has one-third of its online users coming from outside Galveston. For business’ sake, the paper wants to attract those readers from outside its immediate coverage area. But, from a journalism perspective, “we will continue to cover roughly the same area as our printed newspaper [because] that’s our franchise,” said Greg Mefford, Online Services Editor of Galveston Daily News. While seeking partnerships with outside companies which provide content with a more national scope, the Columbia Daily Tribune still targeted readers within the print edition’s market because as an independent, family-owned newspaper, “[Our] thinking is very, very local.” Eric Rice at The Half Moon Bay Review said the Web site can help sell Half Moon Bay as a place to visit but could not sell much about the newspaper. For potential online advertisers, “If you can attract the world, that’s great. But you’re not going to do it with Half Moon Bay Review.”

So while larger online newspapers seem to have greater ambition and more confidence in seeking business opportunities at larger geographic levels, most online newspapers operate within the geographic boundaries defined by their print counterparts. Most mention the ability to find an audience-appealing specialty in their own area as key to a broader audience base. While online newspapers define their markets at different geographic levels

from different perspectives with different strategies involved, when dealing with a geographic market definition, they have to consider the market relationship between the online and the print products.

Relationship between Print and Online Products – Competitive or Complementary?

From the newspaper company’s standpoint, offering free content online can be a concern in that it may erode the print edition’s subscription base – “cannibalization.” None of the 14 participants reported significant cannibalization effects preventing them from publishing online, although many said the print newspaper administration worried about it. Participants at the Los Angeles Times, the San Francisco Gate, the Houston Chronicle, Austin360, and the Galveston County Daily News agreed that things can work in both directions: Giving away free content online may erode print subscriptions, yet the Web site also serves as a marketing tool to promote the print edition. For example, the Web site exposes the paper’s content to a new market. The online edition, by utilizing interactive features, can improve the relationship between readers and the paper. Cross-references between print and online make “perfect marriage between the print and the Web site,” said Bonnie Bradshaw, Public Relations/Marketing Manager of the Fort Worth Star-Telegram. By providing print subscribers free access to online news archives, the Houston Chronicle official said, “We’re redefining what it means to subscribe, not to the paper, but to the Chronicle.”

Several participants report an increase in print subscriptions and a few attribute the increase directly to their Web presence. The Wall Street Journal Interactive Edition is a paid service that charges non-subscribers \$49 a year. Reading online is thus less expensive

than subscribing to the print Asian Wall Street Journal in places such as Japan, which had 6,000 print subscribers. But print circulation still has increased. The New York Times, the Christian Science Monitor, the Galveston County Daily News and the Half Moon Bay Review said they have increased print subscriptions because more people come to their sites to sign up for the print edition.

As to why cannibalization is negligible, officials argue that online and print products have different readerships and constitute different reading experiences, and online products may not have everything – for example, display ads that many readers want. But, in terms of different readership, in most cases, online and print readerships have some overlap. About one-third of the Wall Street Journal online users also are print subscribers. USA TODAY has a 7 to 15 percent overlap. The San Jose Mercury Center official said, “a large percentage” of online users also read the print edition. The Austin American-Statesman had 82 percent duplication.

Overall, these online newspapers don’t think they compete with their print counterparts. The Christian Science Monitor representative said, “The purpose is to spread the news – so people can get it whatever the best way is.” Most think, or at least hope, the relationship between print and online products is complementary.

Shovelware Production – Why or Why Not?

Online newspapers perceive “shovelware” in different ways. Some see it as having the print newspaper serve as the primary content provider for the online edition. Therefore, shovelware means most content in the newspaper is published online. Some participants also take the term “shovelware” to imply minimal repackaging of content in

the print edition for the online medium by adding links, multimedia components, etc.

Most of these newspapers publish most of the editorial content in the print edition online. The New York Times, the Christian Science Monitor, the Los Angeles Times and the Fort Worth Star-Telegram have at least 90 percent of the paper's content online. The Houston Chronicle representative said virtually all the articles in print are available online but "I'm not embarrassed by that because the shovelware stuff is what people read; they want the news, the sports, the weather, the horse scores and the classifieds." In contrast, the USA TODAY representative said 90 percent of its online content is unique. Constant updating and the additional space online make the print version just one snapshot in time.

Many of these online newspapers emphasized the importance of repackaging (or "re-purposing") content for the online medium. They add links, visual graphics, video or audio components, or offer more sidebar stories. Ben Smylie at Austin360 said, "We decide what to do based on the new medium rather than the old medium." Many sites offered interactive services such as search engines, auto, job, real estate databases, news archives, and interactive mapping. A few also developed unique content exclusively for the online product.

While many sites tried to discover what constitutes a new online reading experience that would work for their product, the Christian Science Monitor took a unique approach by serving clickable image maps that maintained the exact look of each page in the print newspaper. Users can click on the image to view individual stories in a frame. By doing this, they preserve the editorial judgment instead of having some stories lost "just depending on where someone clicks." At this stage, most online news-

papers still are experimenting to provide better online reading experiences.

Revenue Models – Where Is the Money?

Participants unanimously agreed that advertising – including banners, classifieds, sponsorship of parts of the site, and sponsorship of the email version of the site – would be the primary revenue driver for online newspapers. Some believed classified advertising, which lends itself to database search, was especially suitable for online newspapers. In terms of banner ads, some charged advertisers on a CPM (cost per thousand) basis. Others charged a flat rate. Also, some smaller online newspapers – such as the Columbia Daily Tribune and the Half Moon Bay Review – had no ads online.

Many participants mentioned sponsorships (or "revenue sharing") as a potential revenue driver. Basically, this meant that online newspapers sold ads to be placed on content pages provided by third parties. For example, real estate agencies could provide a mortgage calculator or "how to buy a house" information that could be linked to the newspaper's real estate pages. David Thompson, Director of Online Services/Content Development of The Columbia Daily Tribune mentioned several options for revenue sharing: (1) The newspaper pays a fee to the third-party content provider and keeps all the revenue for ads placed on those pages. (2) The newspaper and the third-party provider rotate their ads on the supplemental pages (every other ad belongs to the newspaper). The newspaper and the third-party provider keep the revenue for their own ads. (3) The third-party provider pays a small fee to the newspaper for a link from the newspaper and owns all the ads spaces on the supplemental pages. Sponsorships also allow the newspaper to publish more content and help the newspaper create a more "progressive" image in readers' minds.

In terms of the subscription model, the Wall Street Journal Interactive Edition provides a well-known, successful example by charging print subscribers and non-subscribers different annual rates for its specialized financial news services. As of January 1999, it had 265,000 subscribers, which accounted for about 50 percent of the total revenue. However, USA TODAY, with about one million unique visitors on a daily basis, did not think the subscription model would work for most online newspapers because "who would pay for it when it is free on Yahoo!?" The Christian Science Monitor was experimenting with a subscription model by their "Monitor Extra" product – a personalized edition which can be delivered via email, with or without graphics, plus free access to the archive.

The New York Times once charged international users a monthly subscription fee. The San Antonio Express-News and the San Jose Mercury Center also started as fee-based sites, but all abandoned the subscription model in 1998 because the small audience base may severely limit advertising chances.

Online newspapers also saw opportunities in partnerships and e-commerce. The Los Angeles Times had several "verticals" under its umbrella brand, such as cars.com for autos. A number of online newspapers had similar operations because such verticals provided business opportunities. Some online newspapers shared with advertisers revenues generated by customers coming from their news sites. The San Jose Mercury Center planned to sell directly from its Web site.

Some online newspapers generated revenue by creating Web sites for customers or serving as an Internet Service Provider (ISP). About 8 to 10 percent of the San Antonio Express-News's online users subscribe to their ISP services. Some online newspapers – such as the Half Moon Bay Review – simply operate

as a public service without identifying themselves as a business. Overall, many online newspapers tried a combination of ways to make money. The San Jose Mercury Center representative said, "We haven't ruled out anything except pornography."

Competition in the Online Market – Competing with Whom?

Asked their primary competitor, many participants found the question difficult for two reasons. In the broadest sense, they compete with every medium (online and traditional) or even every daily activity for people's time. On the other hand, many said they could not think of any direct competitor in the market that produces exactly the same content as they do. Neil Budde, Vice President of www.wsj.com, said, "There are sites that do bits and pieces of what we do, but no one is doing everything we are doing."

While national newspapers tended to take other national online players as their competitors, most metro online newspapers reported themselves as the top-ranking sites within their geographic area. When pressed, participants tended to cite "city guide" sites (such as Sidewalk, Digital Cities, and CitySearch) or major search engines' local versions (such as Yahoo!), or online newspapers covering adjacent areas as their competitors.

Smaller online newspapers, characterized by highly specialized coverage, reported very few competitors within their geographic market. The Columbia Daily Tribune official, e.g., said they primarily compete with local targeted tabloids that have Web sites.

As for their advantages and disadvantages in market competition, most national newspapers consider their strength to be quality news and information while metro and community newspapers listed their specialty in lo-

cal coverage. The New York Times official mentioned the lack of distribution in another channel (other than the newspaper) that some of the competitors such as CNN and NBC have. The Christian Science Monitor representative said it didn't have as much money as other national online newspapers do.

In general, competition in cyberspace is difficult to define. Most online newspapers have no direct competitors thanks to the specialized nature of their products, while every single user has access to whatever is online. Therefore, an online newspaper competes with nobody and everybody at the same time.

Strategic Implications

National, metro, and community online newspapers seem to have fairly different perceptions of markets, products, revenue and competition. Having the most resources, national newspapers tend to view this online venture from an economic standpoint. Their strong brand names easily increase their visibility, not only in the U.S. market but also on a global scale. But how they should pursue business opportunities will be determined by factors such as available resources, awareness and strategies. They didn't really worry about cannibalization. They produced high quality news and information and were confident in facing market competition and finding revenue models that would work.

Metro online newspapers, on the other hand, have different views. "Specialty" was repeated over and over again by this group. The ability to find a niche within their market area determined the likelihood of market expansion for metro online newspapers. They provided many examples demonstrating the importance of a unique specialty. Some are extremely ambitious in pursuing business opportunities in the

national or international market because their product appealed to a larger audience.

"Localism" was another buzzword among metro online newspapers. Many focused on their local market, which has great potential in advertising and e-commerce. No one believed in the subscription model. Only a few expressed concerns about cannibalization. They had mixed opinions about shovelware production. They face competition from city guide sites and search engines. Metro online newspapers seem to have considerable potential in profitability.

In comparison, smaller dailies and weeklies were more restricted in terms of market size and resource availability, which may affect their market-expanding and revenue-making capacity. Sometimes local publishers can't see beyond their neighborhood. But since many small U.S. newspapers are owned by newspaper groups and so are their online editions, their online presence usually served as part of a greater strategy. Because of highly specialized content, competition is minimal. Revenue sources included classified upcharges, creating Web sites for clients, and serving as ISPs in their community. Some provided non-profit services.

Overall, all online newspapers have noticed some part of their online readership is active at the international level, but the global market is not part of everyone's strategy. This is partly because many online operations (especially smaller ones) hire from within and, as a result, their staffers perpetuate and are stuck in the "local" mentality. Also, obviously, global marketing requires time and effort, but the global audience may not be large or consistent enough to warrant the effort (or at least that's how some online managers may think). This may explain why larger newspapers tend to have more interest in pursuing a long-distance

online market than smaller ones. They have more resources, and their audiences also tend to be more cosmopolitan – residing in cities that have a particular global impact. In addition, larger newspapers may attract more innovative, risk-taking employees (by virtue of the fact that they pay them more and have more resources to provide) who have the right mentality for taking on a global venture. For so long, newspapers have positioned themselves (and rightly so) as local products; that mentality is a hard tradition to break, but online publishing may require it.

Because no significant cannibalization effect was found, most participants perceived the market relationship between the print and online products optimistically. However, you can interpret the absence of cannibalization differently – that the print newspaper still may have more stories in it than does the online version, or that the online product is unappealing and thus unable to make an impact on print readership. Online newspapers need to examine product demand carefully.

The online world is characterized by a sense of uncertainty – many participants could not answer questions concerning geographic markets, shovelware, and competition without first defining these terms – in their own ways. And it is interesting to see how their definitions affect how they think and do in the market.

This study carries major management implications. First, a market must be exactly, precisely defined. As suggested (Chyi and Sylvie, 1998), industry executives need to define an online market's particular dimensions – local or long-distance, information or advertising – before they market their product.

Defining a market is not an easy task, of course, and this is made doubly difficult by the Internet's nature. Audi-

ences are difficult to measure in this medium and even when site users volunteer information, it does not necessarily indicate the quality or nature of their Web experience. Online newspaper managers will have to develop innovative audience metrics that more accurately reflect the site's role in customer usage.

Market definition carries with it a responsibility on the part of the manager to make decisions about intent – i.e., whom does the site intend to serve vs. who actually uses the site? Often the two are not the same, meaning that site managers – particularly those with unique content – will have to view markets on a number of geographic levels. This may be more true for metro online newspapers, but smaller publications – even though restricted by size and resources – have to train themselves to look beyond the town limits. In other words, “local” may be the intent, but Internet markets go beyond managerial intentions, regardless of whether the manager wants them to do so. Smart, profitable decision-making requires that managers understand the medium.

A second implication concerns the cannibalization, the perception of which we found to be almost non-existent. In one way, that is good because it means managers believe the two products are different. However, newspapers are a unique brand because of the journalistic credibility they bring to the table. Withholding more, in-depth content from the Web site may seem like protecting the print franchise, but it also comes off to the audience as “commercial” and even mercenary, making the newspaper seem as if it's more concerned with making profits than informing the community. Even if that's the reality, it's not a perception that management wants to encourage. Nothing is more sacred than the integrity of the journalism brand inherent in newspapers because it connotes the

idea of credibility, something that even non-news sites that carry news can ever completely offer a reader.

This carries a third implication, particularly regarding shovelware and original content. While limited resources constrain most online newspapers, our findings indicate that shovelware has practical meanings for managers; the negative connotation doesn't carry in practice. What this will mean for readers is hard to say except that anything that facilitates production – and shovelware does – will be commonly used. This may mean the print product gets put online more easily, but it does not necessarily imply quality content. What kind of content is suitable for the online medium? A fundamental questions like this requires more thinking and begs further speculation as to the power of online newspapers to manipulate demand. Nationally, there's dubious evidence that such ability exists: The most visited sites generally are not news sites. As long as online newspapers compete with sites with no natural geographic boundaries and as long as shovelware persists, this is likely to remain the case. At first glance, online newspapers that lack original content do not appear to be engaging in successfully strategic behavior, given the geographic boundaries of the Internet. Instead, it appears that most newspapers are relying on the brand preference established by their print versions, hoping that the print newspaper's credibility and desirability will transfer to the new medium. Some newspapers – especially those with greater resources – have recognized this folly and moved to the portal model, in which their site serves as a gateway to other, more community-based (audience-relevant) material, most of which cannot be defined as “news.” It remains to be seen whether most newspapers – especially smaller ones with fewer resources – will migrate to this model. Much depends on whether top management is

committed to developing a unique site and what influence – if any – there is from competitors.

Finally – and perhaps most importantly – profit implications of our interviews seem to point toward the fact that revenue models will be “locally” driven. “Local” in this case means that each newspaper seems to be finding its own way toward profitability or failure. Indeed, even the word “model” seems to be mis-used, since it implies that a profit mechanism can successfully be used elsewhere. Although we saw different newspapers use different schemes, there seemed to be an experimental mentality in most cases, since few were truly profitable.

However, such “local” thinking – while comfortable for newspaper managers in that it extends their traditional beliefs that newspapers are “local” products – may be financially fatal. For while the medium is global and the market is not, managers should nonetheless exercise caution. The Internet has begun to change the way consumers do business. E-commerce means transactions (and, thus, behavior) occur in cyberspace. Newspapers must adapt accordingly – in terms of how they view electronic revenue.

But as this study indicates, the business models still are in the experimental phase, thanks in large part to the continually changing nature of the Internet. As a result, longer-range studies of strategic behavior by online newspapers must be performed if we’re to get an accurate sense of the predominant model. For example, although this study briefly touched on it, there needs to be an improved understanding of the role of competition in determining content of online newspapers. As alluded to earlier, many participants had difficulty determining their primary competitor because they actually compete with every medium (online and traditional) and because no

direct competitor in the market produced exactly the same content. It seems appropriate then, that future studies reflect on the widest range of views on competition. As Young (2000) suggested, alternative views of competition – such as the Austrian school that views competition as a “continually changing process of entrepreneurial rivalry” (p. 40) – may need to be examined if the highly entrepreneurial online newspaper market is to ever be properly classified. To date, we have no established idea as to the nature of interaction among competing online newspapers, much less how those newspapers compete with other Web sites. Until we do, strategic implications – like competition in cyberspace – will be difficult to ascertain, partly because of ongoing technological innovation and partly because audiences still are deciding the role (and their expectations) of the Internet in their leisure activities.

As it stands now, advertising and sponsorships may work, but audiences may demand more and more interactivity, rendering such mechanisms useless in terms of revenue production. Until they prove more adept at manipulating demand, online newspapers will have to learn to be more sensitive as to how their readers consume the product and must be ready to develop new “micro-models” of revenue production, ultimately based on readers’ online behaviors. These models may revolve around reader purchases of items or services they read about, or they may involve reader-generated activities, such as auctions. In any case, newspaper managers must be sensitive to reader behaviors, because they are likely to change.

The bottom line is that perception – while it may be everything in online newspapers – changes. And managers’ perceptions must change with the behaviors of those they seek to serve.

¹ Includes sites on BBS, Microsoft Network, AOL, Prodigy and Gopher services

² Six were face-to-face interviews; six were over the telephone; two were via email because of the participants’ preferences (multiple correspondences were conducted to clarify unclear responses). Each face-to-face and telephone interview took approximately 30 to 45 minutes to complete. Interviews were audio-taped and transcribed.

³ Participants are: Neil Budde, Vice President & Editor, www.wsj.com; Allegra Young, Director of Strategy, www.usatoday.com; Jason Krebs, Managing Director, www.nytimes.com; Denise Mallett, Product Manager, www.csmonitor.com; Stan Holt, General Manager, www.latimes.com; Joycelyn Marek, Vice President of Marketing and Electronic Products, www.chron.com; Ted Russell, Marketing Director, www.sfgate.com; Doug Edwards, Brand Group Manager, www.mercurycenter.com; Bonnie Bradshaw, Public Relations/Marketing Manager, www.star-telegram.com; Ian Murdock, Manager, www.expressnews.com; Ben Smylie, General Manager, www.austin360.com; Greg Mefford, Online Services Editor, www.galvnews.com; David Thompson, Director of Online Services/Content Development, www.showmenews.com; Eric Rice, Editor, hmbreview.com.

⁴ But Dow Jones owns a stake in a Beijing-based online company (www.sohu.com) which offers a Chinese-language version of the Wall Street Journal news.)

References

- Albarran, Alan B. (1996) *Media Economics: Understanding Markets, Industries and Concepts*. Ames: Iowa State University Press.
- Bates, Benjamin J. (1993) 'Concentration in local television markets', *The Journal of Media Economics* 6(3): pp. 3-22.
- Chyi, Hsiang Iris and Sylvie, George (1998) 'Competing with whom? Where? And how? A structural analysis of the electronic newspaper market', *The Journal of Media Economics* 11(2), pp: 1-18.
- Editor & Publisher Interactive (2000) 'MediaInfo links: Online media directory', <http://emedia1.mediainfo.com/emedia/statistics.htm>, accessed 25 April 2000.
- Fitzgerald, Mark (1997) '68% of news Web sites generate own content: Results of new survey announced at conference', *Editor & Publisher Interaction Conference Daily News*, <http://www.mediainfo.com/ephome/Interactive97/stories/021597c3.html>, accessed 16 February 2000.
- Lacy, Stephen (1993) 'Understanding & serving readers: The problem of fuzzy market structure', *Newspaper Research Journal* 14(2): pp. 55-67.
- Martin, Shannon E. and Hansen, Kathleen A. (1998) *Newspapers of Record in a Digital Age*. Westport, CT: Praeger.
- Middleberg + Associates (1999) 'Key findings of fifth annual "media in cyberspace study"', <http://www.middleberg.com/Keyfindings.htm>, accessed 23 April 1999.
- Picard, Robert G. (1989) *Media Economics: Concepts and Issues*. Newbury Park, CA: Sage.

Tankard, Jr., James W. and Ban, Hyun (1998) 'Online newspapers: Living up to their potential?', Paper presented at the mid-winter conference of the Association for Education in Journalism and Mass Communication, Dallas, Texas.

Young, D.P.T. (2000). 'Modeling media markets: How important is market structure?', *The Journal of Media Economics* 13(1): pp. 27-44.

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Evaluating the use of newspaper web sites logs

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Introduction

Web sites proliferate, Web users increase by leaps and bounds and the Web becomes an ever more important medium for information, communication, advertising and, now, business. Not surprisingly Web site owners are becoming increasingly interested in obtaining information on who is using their sites, how they use their sites and how long they spend reading their pages. Possibly information 'use' data has never been so important – and certainly never had as much financial worth. It was only ever a tiny minority of people who were interested in the transactional logs of OPACs (online public access catalogues) and those of the traditional commercial online hosts, like FT Profile. People need Web site use information for a number of reasons: to assist marketing departments in their planning; to satisfy their sponsors and advertisers – and attract new ones; to demonstrate to their own organisations that the – often huge – investment is worthwhile; and to help them develop and improve their site. Fortunately, much that is done on the web is logged on an ongoing and routine manner. And to help in the analysis there are number of software packages on sale that provide the data in a processed and packaged form. In addition some sites also have subscriber databases that provide

them with additional data, and some others enlist the help of cookies in an attempt to make the data capture more precise.

Aims, objectives and rationale

"Treasure troves of valuable information" are how Gutzman (1999) describes web logs. However, journalists and information scientists have not been in the forefront of their use and evaluation. There have been very few papers published on the topic in the professional literature. This paper, and the research it reports on, attempts to fill this vacuum. To this end the logs from a Web site that had a large amount of traffic and a wide range of users was obtained. These were the logs of The Times/Sunday Times web sites. These two newspapers are British broadsheets of high reputation and published by News International. Our interest in these particular sites lay with the fact that they attracted a very large, heterogeneous and popular audience. Nearly one million people subscribed to The Times/Sunday Times sites at the time of the study.

In the case of use studies of commercial online systems and OPACs it has proved possible to measure user activity in terms of:

- the number of sessions conducted by a user – a session being the online activity that occurs in the period of time when a user logs on and then logs off. A session might consist of a

single search of a single database, a number of searches conducted in a single database or a number of searches conducted in a variety of databases;

- the number of individual searches conducted – traditionally a new search has been spotted by a switch to a different database or by the introduction of new terms;
- the number of screens displayed or viewed during a session or search;
- the amount of time spent on a session, search or screen display.

Unfortunately, the Web is quite unlike an OPAC or commercial online system, like Dialog, and if we take the same metrics to the Web we run into a lot of problems. The problems arise from the imprecision of the recording apparatus (only very limited data is furnished), the anonymity of the user (it is almost impossible to pin down a search to an individual) and the lack of searching discipline engendered by a non-fee paying and easy-going searching environment. However, despite the problems the data generated by Web logs is in great demand, as it is the only convenient/routine method of determining whether – and who uses a site.

In an attempt to obtain activity data of a range and quality on a par with that produced for commercial hosts and OPACs the authors have experimented with the web logs of two national newspapers – those of The Times and Sunday Times. These experiments were conducted to provide the owners of these sites with data that would enable them to understand their new customer base.

Summarising then the primary objectives of the study were to:

- establish the kinds of analysis that can be profitably undertaken on Web newspaper logs;
- determine the nature of use of one of the country's most popular newspaper Web sites.

¹ Based upon research conducted for News International, the owners of The Times/Sunday Times, during the period August 1998 – August 1999.

Background

At the time of the investigation The Times offered its online readers an almost exact replica of its daily hardcopy paper, so that each news item contained the same text in both versions, and all items in the newspaper were included on the Web site (See Table 1). In addition the site contained a very substantial reference service, plus an archive housing back copies since January 1996, and also a student supplement "4-D". The Sunday Times site, contained an exact replica of the hardcopy paper as well, and it could be reached via The Times site, and vice versa. Once registered you could access both newspaper sites.

Literature Review

We have obtained most of what we know about Web logs from the less objective research of software vendors, or from the comparative and individual software product reviews produced by the technology press. Much of the interest and debate emanates from Web enthusiasts, however, this does not mean that it is not informed. Stout (1997) in his seminal book lays the foundation for the subject of Web site statistics. He defines the four different types of logs produced and describes the structure of the two most widely used formats, the common log format, and the extended log format. Stout pays particular attention to the analysis of Web logs and the variety of measures that maybe undertaken, explaining visits, tracking users and how to redesign Web sites using information gained from an analysis of the web log. Extensive comparisons are made between several software packages and analysis services. The main products reviewed were WebTrends, Market Focus, net.Analysis, and the log analysis services evaluated include NetCount and I/Pro.

Williams (1999), amongst others, points to the frustrations posed by logs:

Table 1: The Times British news contents page.

"it's a marketers dream and worst nightmare to be able to watch your customers every move, but possessing only limited tools to influence them". In fact much of the literature is concerned with the problems and pitfalls associated with Web log analysis. Gutzman (1999) in fact believes that the problems are so great that he regards "hit counters to be dead and deservedly so". In his defence he points out that a third of all traffic is made up by Spiders. Zawitz (1998) makes the very important point that server logs and their measures were designed originally to measure and manage server traffic and not to analyse the use/effectiveness of Web sites. As a result often misquoted or misunderstood measures such as hits, are used to compare sites when in reality they are not measuring like with like. Fieber (1998), highlights another problem area – that of caching, and assesses the effect that browser caching has on the accuracy (under-reporting) of Web server log data, by comparing video taped user sessions with the data recorded in the log. The results showed that, depending on the length of the session, between 32 per cent and 55 per cent of transactions were cached and as a result were not recorded in the Web log. Fieber also points out that the default

common log format only logs data the HTTP protocol provides, and that the "opaque nature of the client" and "stateless nature of the protocol" regarding caching leads to unreliable reports being produced by analysis software. Krishnamurthy (1998) of AT&T Research Laboratories investigated discrepancies in the results of log analysis software by comparing them with their own measurement of hits, etc. It was shown that errors were introduced to the log file either at the time of writing the file, or through errors such as embedded "new-line" characters in URL's, or unrecognised control characters. When offending lines were corrected or removed one of the logs they processed was reduced by five per cent in size. He also attempted to resolve the fact that a single page can be represented by more than one URL.

Backman and Rubin (1997), evaluated a range of eight software products to assess their worth to the two main interested parties – web administrators, who require structural or content analysis and marketers/advertisers, who were looking into demographics and patterns of usage – including entry, exit and path statistics. In their comparisons of the software they expected to see some differences in the

metrics because of the different definitions and default settings for variables, but they did not expect to find differences in the numbers of hits. This research again called into doubt the absolute accuracy of the products. In fact Rahmel (1997) recommends that the best option is to build a custom parsing application, though he claims this to be the most expensive option. This was a recommendation taken up by the authors.

Rubin and Reimundez (1998) noted that, although changes are being made to software, improvements could still be made in error reporting and user demographics. Demographics in the packages do not relate to the user, but come from WhoIs, a service based on DNS and IP contact information registered with Internic, the domain main registry service. So that if nearly all your users seem to live in Vienna, VA, this is probably because AOL's headquarters are registered there. Nevertheless they still claim that with "web servers' current configurations and high end log analysis software, you can learn more about a virtual user than about a shopper physically present in a store."

Stone (1999) sounds a more optimistic note, saying "while server logs can't identify users by name or e-mail address they can provide information that will drive changes in the site content, marketing strategies and inventory." Stone cites cases of companies big and small which having analysed their web server logs that have made changes to their sites or the marketing strategy. For example 3Com found that 40 per cent of visitors to their site were from overseas, 3Com then launched an international marketing campaign, something it had never done before. It included targeted mailings, buying international adverts aimed at visitors' 'areas of interest' and the launching of native language Web sites.

Methods Sampling

Four month's worth of logs was obtained from News International and they covered the period January – April 1998. The logs were supplied on four CD-ROM disks. The enormous size of these logs can be gauged by the fact that The Times/Sunday Times web log generated up to 174 million lines a day. In addition personal details of the million or so subscribers were provided on a Dat tape². Data from this file were aggregated to retain anonymity.

Because of its sheer volume this data were sampled in a number of ways:

- For data obtained from the subscriber's database the full sample was used, except in the case of age data, where a 25% sample was used.
- For log file use (as measured by page impressions and time online) and user (as determined by IP address) analysis was based on a random 1 in 10 lines of the processed log files for seven randomly selected days from April, May and June. This sample included six daily editions and one Sunday edition.
- In addition, a follow up analysis of users was made. 300 users were randomly selected from one day's log file, and all the use related to these users were analysed. The 300 users generated 4,330 lines of use and an approximate download of 14 pages per user.

Working definitions

The definitions used by the project for the key metrics were:

- A user was a login from an external client to the server identified by a – not necessarily unique – IP number (address).
- Use was the activity of downloading files from a server and is measured by the number of pages viewed on screen.

- The time to view a page was calculated by the lapse in time between one page and another. Clearly no view time can be calculated for the last page visited nor for those users that enter the site and leave having only viewed one page. The problem arises because nobody logs off from the Web.

- Session continuity was determined by an active hyperlinking between pages on the site. A page session was assumed to be over if the user remained on a single page for 5 minutes or over, the next page downloaded then started the new page session.

Results

Characteristics of subscribers

The Times/Sunday Times subscriber's database contained 966,346 entries in 1998. Double log-ins (i.e. people who have forgotten their password) reduce that figure a little. Also there were a number of bogus entries that were deleted – Micky Mouse and Tony Blair figured more than once. Plainly, too, not everybody who registered went on to use the service – although the probability must be high that they did, and not everyone who used the web sites were registered users – work colleagues or family members might have used the registered user's password.

The average Times/Sunday Times subscriber turned out to be 38 years old (Table 2). A study of journalists conducted by the authors came up with a very similar figure (Nicholas et al, 1998). Men (38) turned out to be slightly older than women (35), the difference is significant at the 1% significance level: few signs of teenage surfers here.

² At the time of our survey users of the Web sites had to register their personal details before they could use them.

Table 2: Subscribers by gender and age

	N	Mean Age
All	937871	37.60
Women	213179	35.22
Men	724691	38.29

Over three-quarters of subscribers were men, with women forming a much higher proportion (28%) of US subscribers (Table 3). According to their e-mail addresses – not a foolproof method of course, the vast majority (66%) of subscribers were from commercial organisations. Net providers – the majority of whom, one would suspect, were home users, accounted for 17% of registered users, and educational establishments 14% (Table 4). There were some geographical differences with commercial organisations figuring very highly in the EU (80%), academic establishments in the UK (18%) and Net providers in the US (24%).

As mentioned previously registry entitled users to access both The Times and Sunday Times Web sites. It was quite common for Times people to switch to The Sunday Times site, especially on a Sunday and Monday, and very common for Sunday Times users to switch to The Times site during the working week. Most of the analyses furnished below refer to The Times' site, unless stated otherwise.

Table 3: Subscribers by gender and country of origin

	GENDER		Total
	Male	Female	
US	180253 72.2%	69264 27.8%	249517 100.0%
UK	327573 79.2%	86038 20.8%	413611 100.0%
Other EU	63820 78.6%	17325 21.4%	81145 100.0%
Can,Aust, NZ	68939 76.6%	21036 23.4%	89975 100.0%
Main Asia	22474 77.7%	6449 22.3%	28923 100.0%
Other	80850 80.9%	19095 19.1%	99945 100.0%
Total	743909 77.2%	219207 22.8%	963116 100.0%

Volume and pattern of traffic.

The volume of traffic can be measured in terms of both the number of users (identified by an IP address) visiting the site and the amount of use these people made of the site as determined by pages downloaded. Very high volumes of use were recorded. Of course, the very fact that the sites attracted one million subscribers speaks legions. So too does the fact that The Times site attracted 75,000 visitors per day, who downloaded more than 165,000 pages a day. These are big numbers but, interestingly, still relatively small by hard copy standards. On the whole data tends to be very volatile. In more detail:

■ Monthly page impressions averaged just over 4.9 million pages. Monthly

totals were quite variable, swinging up and down by as much as 10% (Table 5). Over the survey period totals fell by 5.3%. Figures for The Sunday Times were about 10% of those for The Times (Table 6).

■ Day of the week appears to be a significant³ search characteristic, with some days being significantly more busy than others (Table 5, last column). Overall midweek was the busiest for the number of pages downloaded and Saturday the quietest (interestingly the busiest day for the hard-copy paper). However, this can change from month to month and is plainly connected with the importance of the news for that day.

³ The hypothesis of no association is rejected at the 1% significance level.

Table 4: Subscribers by type of organisation and country of origin

	Type of User						Total
	Education	Commercial	Govern.	Military	Net Provider	Non-Commercial	
US	13.0%	59.6%	.8%	.4%	23.8%	2.3%	100%
UK	17.7%	69.7%	.9%	.2%	10.4%	1.1%	100%
Other EU	3.2%	80.0%	.1%	.4%	12.0%	3.5%	100%
Can,Aust, NZ	8.4%	63.3%	3.7%	.1%	22.8%	1.7%	100%
Main Asian	13.4%	62.9%	.7%	.0%	22.4%	.6%	100%
Other	7.9%	63.3%	1.2%	.1%	25.3%	1.8%	100%
Total	14.0%	65.7%	1.1%	.2%	17.2%	1.6%	100%

For The Times Weekends were especially quiet with use down one third on that for mid-week.

■ For The Sunday Times, not surprisingly, Sunday use was heavy although Monday was in fact the site's busiest day of the week and Saturday was easily the quietest day. Numbers of visitors varied enormously, too, from month to month and day to day, although the distributions sometimes differed from those of pages downloaded.

■ Use varied enormously during the day. Table 7 relates this to the country of the user. The first peak was reached at 3am GMT and this can be attributed to use from the Americans, mainland Asian, and Australian users. Asian block countries' main use occurred at between 2 am and 7am. Use then peaked again at 12am GMT. UK use was heaviest between 8am and 1pm GMT. Other European users appeared an hour earlier than those in the UK – at 7am – and then their use fell off after 12am GMT. There is a subsequent increase in US traffic from about 1 to 6pm GMT. It seems that, the world over, most Internet traffic on this major UK newspaper, whatever the time zone, occurred in the mornings. First the day dawns in the Asian countries and California, then Europe and finally the Eastern States of America. We all think local time and news is only current in the mornings.

■ Half a percent of use was accounted for by users who visited the site and left without spending any time at the site at all. These “bouncers” who viewed only one page accounted for 5% of all users. The idea of grouping users by their pattern of use is believed to be particularly important and is an area that is being further researched. Arguably this may prove to be a qualitative metric on a site in so much as a site with a relatively high proportion of ‘bouncers’ would suggest that users are voting with their feet and not taking time to go beyond the one page.

Table 5: Pages downloaded by month and day of the week: The Times

Count	Month				Average for day
	March	April	May	June	
Monday	628482	702830	760749	906888	166608.2
Tuesday	804226	726702	770219	743230	190273.5
Wednesday	794114	920844	776362	761657	191351.6
Thursday	793869	726753	764760	774869	191265.7
Friday	749314	644679	879870	710308	175539.5
Saturday	714094	439973	556357	425648	125651.3
Sunday	566786	466296	708724	461954	122431.2
Total	5050885	4628077	5217041	4784554	

Table 6: Pages downloaded by month and day of the week: The Sunday Times

Count	Month				Average for day
	March	April	May		
Monday	106899	71206	63691		20049.32
Tuesday	71675	72331	57028		18275.80
Wednesday	71965	87463	55727		17907.17
Thursday	67137	69430	54296		17351.12
Friday	62301	58994	69175		15872.61
Saturday	38277	41450	67788		12292.83
Sunday	88039	85618	42535		18016.08
Total	506293	486492	410240		

Table 7: Country of origin of user by time of day site visited

% within COUNTRC	Country						Total
	US	UK	Main Asia	Aus, Can, NZ	Other European	Other	
.00	1.7	.7	1.4	2.7	.3	.9	1.5
1.00	2.8	1.0	3.6	4.3	.4	1.4	2.5
2.00	3.8	.7	6.5	6.1	.4	2.6	3.3
3.00	5.4	1.0	13.8	9.0	.3	3.4	4.8
4.00	4.3	1.1	9.4	8.9	.5	4.2	4.1
5.00	3.9	1.3	7.5	7.9	2.0	5.6	3.9
6.00	3.2	1.6	8.1	6.6	5.8	7.2	3.7
7.00	3.5	3.8	5.5	4.6	7.9	6.9	4.1
8.00	3.6	7.3	4.6	4.2	9.9	6.1	4.8
9.00	3.2	9.4	6.0	3.4	9.4	6.4	4.9
10.00	2.9	9.8	4.0	3.1	8.6	6.3	4.7
11.00	3.7	9.3	4.2	3.8	9.0	6.4	5.1
12.00	4.7	10.8	3.6	3.5	6.8	5.1	5.8
13.00	5.1	8.2	3.1	3.1	5.0	4.6	5.3
14.00	5.3	6.0	3.2	3.7	4.8	3.9	5.1
15.00	5.5	5.6	5.0	3.4	5.1	5.3	5.3
16.00	5.6	5.3	3.2	3.3	4.4	4.1	5.1
17.00	5.6	4.2	1.8	2.7	3.1	4.8	4.8
18.00	5.0	3.0	1.2	2.3	3.7	2.6	4.1
19.00	5.2	2.4	.7	2.5	3.7	3.3	4.1
20.00	4.6	2.3	.1	2.6	3.3	2.3	3.7
21.00	4.1	2.1	.4	2.9	2.4	2.5	3.4
22.00	3.9	1.6	.7	2.7	1.8	2.0	3.1
23.00	3.4	1.5	2.5	3.0	1.4	2.1	2.8
Number of pages	55254	16102	3353	7752	6023	4016	92500

Table 8: Time spent reading a page (minutes)

	All Countries	US	UK
7.00	.8635	.7997	.2347
8.00	.8126	.8760	.7045
9.00	1.2388	1.5066	.7270
10.00	.7053	.2905	.8216
11.00	.7965	.8597	.6452
12.00	.8573	.6774	1.0384
13.00	2.0668	2.6467	1.2692
14.00	1.6324	1.8563	1.1834
15.00	1.1265	1.2543	.7965
16.00	.9591	.8774	1.0145
17.00	1.1714	1.3436	.4386
18.00	1.3557	1.2495	1.1296
19.00	.5965	.7108	.4887
20.00	.7866	.7289	1.2012
21.00	1.1555	1.6964	.4370
22.00	1.7905	1.9667	.5508
23.00	1.1113	1.1775	.4551

Table 9: Heavy, medium and light users (Col %)

	User Percent	Use Percent
Heavy	4.3	24.5
Moderate	14.5	23.5
Light	81.1	51.9
Men	100.0	100.0

■ Session – a session was said to have ended if the user had remained on the same page for over 5 minutes. On this basis each user or IP address roughly completed 2.35 sessions. The largest number of sessions conducted within the day by an IP address was 31 sessions (possibly, not all by the same user) and suggests a shared use of connected computer. About 23% of users completed 3 sessions or more and 41% of users completed 2 or more sessions. However, most users (59%) completed just 1 session. Users coming via net providers (possibly home users) were more likely to complete just the single session. 79% of these users completed 1 session, which com-

pares to a figure of 46% of commercial users who completed no more than a single session. Repeat sessions in a day may also prove to be a qualitative metric in that returnees indicate more than just casual use and suggests that these users may have a good working knowledge of the site. Again this is an area for future research; in particular the idea of comparing sites by the percentage number of returnees.

■ Two IP numbers recorded sessions lasting longer than 15 hours. About 13% of users undertook sessions that lasted longer than one and a half hours. These users did not necessarily spend all their time on the site – they might have visited other sites during their log-in time or simply left their machine on when they went to a meeting etc. The distribution of session time is skewed and a robust M-Estimator of the mean was calculated at approximately 15 minutes.

■ Page viewing. In relating hour of use to the average number of minutes that UK users took to view a page, we find this peaked at 1.27 minutes between 1 and 2 o'clock. Table 8 refers.

■ User categorisation. The huge differences between the number of pages downloaded by visitors to the site and the huge numbers of visitors involved made a form of user classification inevitable – although no standard/industry classification currently exists. A variety of classifications were tried during the project and there is much development work still to do. For this study users were either classified as light, moderate or heavy users. Light users downloaded less than about 10 pages in a day; moderate users between 11 pages and 150 pages, and heavy users over 150 pages in a day. On this basis light users accounted for the vast majority of users (88%) and a smaller, but still significant, proportion of pages downloaded (65%). Table 9 refers. Heavy users, although only accounting for 4.3% of users, accounted for 25% of use. Future research will examine how web sites can be compared by user categorisation. In particular this research may indicate certain types of users by cross classifying type of user by time of day and geographical location.

The three different types of user differed in the frequency of their visits to the site. Light users were least likely to make repeat visits during the week – 85% of light users only made a single visit during the working week, meaning that light users not only make little use of the site when they are there but also make few visits to the site. Heavy users often visited every day – 43% of heavy users made visits on all the weekdays examined and 71% of heavy users made visits on 3 or more of the weekdays examined. An earlier exploratory study indicated that heavy users were likely to be consistent repeat users over the long term, while both moderate and light users were less site loyal and, furthermore, their site use decayed fairly rapidly over a two week period and then subsequently increased. This research is ongoing and will be reported in a future paper.

Table 10: Geographical location of users according to various criteria

Table 11: Type of user's organisation by various criteria

Table 12: Type of user's organisation by country

Table 13: Subject of pages viewed by country of origin of user (Row %)

% within COUNTRC	Page viewed							
	News	Sport	SundayTimes	Foriegn News	Business	Opinion	Feat	Other
US	15.4%	9.1%	10.6%	9.4%	3.1%	2.6%	2.5%	47.3%
UK	15.0%	9.8%	6.1%	5.8%	4.3%	2.2%	2.8%	54.1%
Main Asian	13.7%	15.5%	9.8%	8.5%	2.7%	2.4%	2.0%	45.3%
Aus, Can, NZ	16.9%	11.6%	11.3%	7.1%	1.9%	3.1%	2.2%	45.8%
Other Eurpean	15.0%	13.1%	10.8%	8.0%	2.9%	2.4%	2.2%	45.4%
Other	13.0%	11.7%	9.9%	10.1%	2.9%	1.8%	1.8%	48.9%
Total	15.3%	10.1%	9.8%	8.5%	3.2%	2.5%	2.5%	48.2%

Geographical origin of users/use

There are various ways of determining the geographical origin of users and use. We can use the postal address given by users when they registered, their e-mail address, and the IP address of users. These definitions of location are problematical: the IP address in particular is a crude measure as some users will be registered users of an ISP in another country for economic or other reasons. However, whatever metric is used The Times and Sunday Times web sites attracted a truly global audience. The comparison between the hard copy and Web versions of the papers could not be more marked. The former is read almost wholly exclusively in the UK, whereas in the case of the Web product the UK audience is a minority one. The key features of the geographical analysis are that:

- 57% of registered Times users were foreign; however, the proportion rose dramatically to 84% when the IP address of users was taken into account. The geographical distribution of users for The Sunday Times was very similar. The percentages change little if we calculate geographical distribution according to page impressions downloaded (Table 10).

- The United States appears to be the biggest source of users/use, accounting for around 60% of both users and use (Table 10). And this despite the fact that the US accounted for only 26% of the registered users – the majority (48%) of registered users gave their address as Britain. An analysis of the email addresses furnished by the registered users showed that a significant proportion (37%) of British subscribers had US mail addresses (the opposite hardly ever occurred). This is also likely to have been the case with IP addresses too, so the US's share of use/users is likely to be inflated, and is more likely to be around 40%.
- Leaving the UK and US aside, users and use were distributed widely and evenly over the rest of the world. Canada and Australia, with their large ex-pat communities were the only individual countries to figure significantly (i.e. meriting more than a few % points). Europe (outside the UK) accounted for just 7% of both Times' users and use.
- The geographical distribution of users varied according to the day of the week. The UK presence was most marked on a Wednesday and Thursday (22% of users on those days were British). The US presence increased at the weekend: 64% of users at the

weekend were registered in the US compared to 59% on weekdays. UK registered users were most in evidence during the weekdays: 16.8% compared to 12% of weekend users.

Type of user (organisation)

Whatever metric employed most Times' users came from commercial organisations. On past experience it might have been expected that academic institutions would have figured most prominently, but plainly times are changing. Two-thirds of Times subscribers and 45% of IP addresses came from commercial organisations (Table 11). The difference between the two figures suggests that at least some businesses preferred to use a net provider rather than register as their own IP address. The picture for The Sunday Times was very similar.

Net providers were the next most important source of users. Net providers accounted for 17% of subscribers, and between a quarter and a third of users and use. Most home users would fall into this category. This view is probably borne out by the fact that The Sunday Times, which saw its' use peak at a weekend, had a higher proportion of Net provider users. Net users made up 40% of users at the weekend and 27% on weekends. Academic institutions

were the third largest source of users, accounting for 14% of subscribers and about a fifth of users/use. Their relatively lowly place could be due to traditional dominance of The Guardian in this market or, maybe, the result of The Telegraph's active targeting of this group?

The organisational origin of the user varies significantly⁴ according to the geographical location of the user (Table 12). Thus the UK (42%) and Japan (43%) had a higher proportion of academic institutions among their users; and the US had a higher proportion of businesses amongst its (68%).

Pages/subjects used

Perhaps the most interesting characteristic of use from an information science perspective is the subjects that users seek. The Times site did not have a search engine at the time, so we have to determine subject interest from the names of pages the user downloads. Because of the large number of pages involved – The Times site contained approximately 540 at the time of the survey, related pages were grouped. Thus all sports pages were counted together. The metrics employed for this analysis were IP addresses for establishing the number of users of a page, pages downloaded as an indication of use and average time spent reading a page as an

indicator of the depth of use. The key features of this analysis were that:

- Use is not evenly distributed. Regarding the number of pages downloaded just seven subjects on The Times web site accounted for half (52%) of all content pages downloaded. Not surprisingly, News pages were the most popular (accounting for 15.3% of all pages viewed). News was followed by sports pages (10.1% of pages) and then came accessing The Sunday Times from The Times site (9.8%). Generally features pages and opinions were very lightly used and each accounted for just 2.5% of pages used. Future research will look at grouping users by the type of pages viewed and cross classifying users by grouping, time and country. A country analysis of individual page use shows that the Australians, as befits their stereotype, are especially interested in the sports pages and the Canadians and British particularly interested in the general news pages (Table 13). American users were least interested in business pages but were more likely to spend time reading the foreign news pages and the opinions page.
- On average a Times page took 1.05 minutes to read. The fact that people print or download pages for use later would suggest that these figures might underestimate the amount of

time people spend actually reading the information.

- A more detailed analysis of time spent on a page shows that users spent more time reading some pages than others. Rolling news is a case in point – read for 2.10 minutes on average in The Times (Table 14). Suggesting, perhaps, that currency is high on the user's agenda of what they want from a web site. In comparison, the business pages are consumed fairly rapidly – 0.90 minutes on average. Other Europeans tend to take more time to read some pages – this is the case with features, opinion and all sport. UK users take longer to read the Rolling News.
- Page use varies quite considerably according to the day of the week⁵ (table 15). Thus Friday sees the greatest use of the news pages (21.1%), Tuesday sees the highest use of sports pages (12.8%), and on Thursday the use of foreign news pages peaks (12.7%).

Conclusions

The use distributions that have been described above are quite unlike any that we have witnessed during many years of evaluating online use – admittedly in a pre-Web world. This can be variously attributed to the method of recording the data, the global nature of the audience, the imprecision of the measurement of use/user, the novel na-

Table 14: subject of pages viewed by country and time spent on a page (Minutes)

	All Countries	US	UK	Other European
News	1.0618	.9625	1.0208	1.1596
All Sport	1.4937	1.4970	.9028	1.8945
Foreign news	1.1135	1.2351	.9192	.8935
Business	.8975	.8330	.7063	1.5198
Features	1.4129	1.5902	1.0246	2.7750
Opinion	1.0054	.9658	.5448	2.1709
Puzzle	.7674	1.0144	.4333	.4450
Rolling News	2.1035	1.7433	3.7540	1.3400
Other	.7049	.8239	.5921	.3471

⁴ The hypothesis of no association is rejected at the 1% significance level.

ture of web searching and the vast numbers of new recruits that have been drawn to the web's ranks. What really stood out though were the huge volume of use (due no doubt to people surfing about), its volatility, and the international and twenty-four hour nature of use.

It has to be admitted that the data is hardly problem free, and is rather less robust than that obtained from commercial online hosts – although that data also has its flaws. But where web log data has considerable attraction is in its sheer volume, availability, and internationality. Also, probably for the very first time, journalists and information professionals can obtain an insight into how the general public interacts with a genuinely popular information system.

The web logs and subscriber databases provide us with data in breathtaking volumes and on an endless basis, but, not as they stand, a complete picture of the information seeking behaviour of web users. Web logs enable us to follow the progress of packs of users rather than individuals and describe the broad outlines of their information fingerprints. It is a large but fuzzy picture. To get a much clearer picture it is necessary to find out why people search in the ways described by the logs, how satisfied are they with what they found, and how accurate a portrayal are the

maps drawn by the logs. This is what the authors will be doing in a study of health logs, funded by the Department of Health⁶.

The web is not short of users but is short on metrics in particular metrics, that say something about the quality of a site. This investigative study has identified two possible new metrics: a classification of users by volume of use and by their repeat use of a site. Clearly this is an area for future research. However both metrics appear to give an indication of user satisfaction and lend themselves both to a between site and an over time comparison. This study has laid the ground and identified new classifications on which more detailed cross-classifications and modelling can be based.

Ironically, the real worry about the logs is that their ready availability and hypnotic numbers will be used wholesale to fill in gaps in our knowledge of the hard copy environment. And this will be done without any recognition that this is as dangerous as making assumptions about the digital environment on the back of data pertaining exclusively to the hard copy world.

Recommendations

Currently most newspapers in the UK rely too heavily (and naively) on proprietary software to give them a picture

of the users of their site. Generally this software is insufficiently understood by the people that operate it (particularly in regard to the filters that are being adopted), really only provides very broad-brush pictures of use and invariably produces overwhelming quantities of data that are rapidly archived. As this article has illustrated it is possible to produce data of a kind that could prove invaluable in understanding and tracking newspapers' cyber readers. But we need to go much further than the base data and start producing bespoke analyses.

⁵ The hypothesis of no association is rejected at the 1% significance level.

⁶ The Web, the kiosk, digital TV and the changing and evolving face of consumer health information provision: a national impact study. 2000-2001. [Department of Health]

Table 15: Subject of pages viewed by day of the week (Row %)

% within Day	Page viewed							
	News	Sport	SundayTimes	Foreign News	Business	Opinion	Features	Other
Mon	14.1%	12.0%	20.6%	7.6%	2.5%	2.9%	1.3%	39.1%
Tues	14.9%	12.8%	4.8%	11.1%	3.4%	2.5%	2.8%	47.6%
Wed	17.2%	11.5%	3.8%	6.3%	4.2%	2.3%	3.6%	51.2%
Thurs	16.6%	8.7%	3.3%	12.7%	4.6%	2.7%	3.0%	48.3%
Fri	21.1%	9.9%	1.4%	11.0%	3.5%	2.8%	4.5%	45.7%
Sat	16.1%	12.3%	1.0%	6.0%	4.0%	2.7%	.4%	57.4%
Sun	4.8%	3.3%	37.6%	2.3%	1.4%	1.1%	.4%	49.2%
Total	15.4%	10.3%	9.5%	8.6%	3.5%	2.5%	2.5%	47.7%

References

Backman D., and Rubin J. (1997) "Web Log Analysis – Finding a Recipe for Success"

<http://www.nwc.com/811/811cn2.html>
(visited 8/7 /99)

Fieber J. (1999) "Browser Caching and Web Log Analysis"

<http://ella.slis.indiana.edu/~jffieber/papers/bcwa/bcwa.html>
(visited 9/9/99)

Gutzman A. (1999) "Analysing Traffic on Your E-commerce Site"

http://www.ecommerce.internet.com/solution/techno_advisor/article/0,1281,9561-186011,00.html
(visited 17/10/99)

Krishnamurthy B., Rexford J. (1998)

"Software Issues in Characterising Web Server Logs"

<http://www.w3.org/1998/11/05/WC-workshop/Papers/bala2.html> (18/9/99)

Nicholas, D. and Huntington, P. (1999) Who uses web newspapers, how much and for what? In: NetMedia99: the Internet conference for journalists; conference held at City University, July 1999. CD-ROM. London: Department of Journalism, City University, 1999.

Randall N. (1998) "Web Site Analysis Tools: The Results are In"

<http://zdnet.com/pcmags/features/webanalysis2/index.html> (visited 2/8/99)

Rubin J., Reimundez R. (1998)

"Log-Analysis Tools – Site Server is on the right track"

<http://www.nwc.com/917/917r1.html>
(visited 20/11/99)

Sterne J. (1999) "Every Click They Take"

Inc Magazine. Issue : Technology # 3, 1999, Page 117, <http://www.inc.com/incmagazine/archieves/17991171.html>
(visited 17/10/99)

Stone M. (1999) "Server Logs Help Shape Web Strategies"

http://www.net2b.com/cgi-bin/print_articles.pl/article/940
(visited 17/10/99)

Stout R. (1997) *Web Site Stats: Tracking Hits, and Analysing Traffic*, 1st Edition. Osborne McGraw/Hill

Williams D. (1999) "Data Plays a Key Role in Net Success"

www.adage.com/interactive/articles/19990802/article3.html
(visited 17/10/99)

Zawitz M. (1998) "Web Statistics – Measuring User Activity"

<http://www.ojp.usdoj.gov/bjs/pub/ascii/wsmua.txt> (visited 9/10/99)

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New Digital Media and Devices

An Analysis for the Media Industry

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1. Introduction

Customers and media companies are confronted with technology-driven innovations in the area of transport media as well as new devices. Typical characteristics of these technologies are digital storage and transmission of content from a technical perspective and a higher degree of interactivity from the users' perspective (see Schreiber 1997, 19).

For the media industry the question arises, how these new technologies can be exploited. The traditional emphasis of the media business has been the creation, bundling and distribution of information and entertainment (see Schumann and Hess 2000, 1). Recently, new content-oriented products have emerged by serving existing contents to new target devices, (re-)using device-specific variants of existing contents or by creating original contents for exclusive usage on a determined target device. In the future, new services based on applications, communication or transactions become possible, which fundamentally amplify the scope of activities for the media industry.

The main goal of this paper is to analyse this area of interest in a systematic way. Section 2 starts with a short overview of major technological trends (for details, see Rawolle and Hess 2000). Section 3 works out attributes of digital contents that can be used to evaluate the given technologies. Based on these findings, different combinations of target device and transport media are assessed. Additionally, section 4 provides a deeper discussion of two major upcoming concepts, eBooks and mobile commerce.

2. New Media and Devices at a Glance

Based on a simplified version of the general communication model (see Shannon and Weaver 1949), we distinguish between transport media and end devices. Further, end devices are subdivided into stationary and mobile devices. Transport media technologies belong to one of two categories: online (i.e. network-based) and offline (i.e. portable storage) media (see fig. 1).

2.1. Transport Media

All kinds of public networks are usually based on a backbone-infrastructure and different access technologies ("last mile"). For the media industry, especially the Internet and TV-cable are relevant wired networks, because both can be used for the distribution of digital contents. The Internet offers a proven technology for duplex communications (although with low bandwidth at the moment), whereas TV-cable is capable of broadband transmission via Digital Video Broadcasting (DVB) but lacks an integrated feedback channel and is therefore best suited for broadcast-oriented distribution. However, new Internet access technologies like ADSL, powerline or wireless local loop will increase bandwidth for Internet users in the future. As well, the integration of feedback capabilities in TV-networks is being worked on.

As a second example of online media, wireless networks allow the transmission of contents without having a physical link. Traditionally, the media industry have used terrestrial broadcast or satellites, which are both constrained to simplex transmission from sender to receiver. In contrast, mobile communication technologies like the Global System for Mobile Communication (GSM) support two-way transmission of data and can be used for Internet access via Wireless Application Protocol (WAP), but provide significantly lower bandwidth at present. This is likely to change within the next few years, when new technologies like the General Radio Packet Service (GPRS) or the Universal Mobile Telecommunication System (UMTS) will improve bandwidth dramatically.

Offline media (i.e. portable storage media) like Compact Discs (CDs) or Digital Versatile Discs (DVD) can be used to distribute digital contents through traditional retailers. DVDs offer up to 27 times more capacity than ordinary CDs and are therefore capable of storing

Figure 1: Transport media and reproduction devices

Figure 2: Relevant categories of media/device combinations

movies or large quantities of music in conjunction with powerful compression mechanisms.

2.2. End Devices

As mentioned above, end devices can be divided into stationary and mobile devices. Desktop personal computers (Desktop PCs) and television sets (TV sets) can be considered the most important examples of stationary devices. Since the discussion of the potential convergence (see for example Stipp 1999; Bienert 1999) of TV and PC in one enclosing type of device has not been settled yet, this paper will, based on the status quo, cover both types of appliances.

Desktop PCs have been developed from data-centric terminals to universal communication devices with sophisticated multimedia and interaction capabilities over the last decade. Because of the wide spread implementation of Internet-technology and drives for different storage media, the PC has become a very interesting target device for the media industry.

Another approach is digital TV. At present, users of digital TV need supplementary Set-Top-Boxes that prepare digital contents for ordinary television sets. Besides technical differences (less information processing and

storage capabilities, less interactivity, higher quality for replaying video and audio contents) the main distinction between PCs and TV sets is user behaviour. Whereas PCs are typically used for information-based purposes (retrieval and processing) in an interactive way, the TV is usually utilised in a more passive and also entertainment-oriented manner (see Blödorn et al. 2000, 173). At present, consumers spend a greater share of their daily media budget on watching TV than using the PC-based Internet (see ARD 1999, 68-85).

Particularly because of the technological progress in the reduction of electronic components, mobile devices have been made possible over the last century. These can be divided into multipurpose and special purpose devices. Multipurpose equipment like notebooks or subnotebooks have similar reproduction and processing capabilities like desktop PCs. They can be connected to the Internet via ordinary telephone modem or other access technologies. Personal digital assistants (PDAs) are considerably less powerful than notebooks. In contrast to (sub-)notebooks they are typically used under mobile circumstances. Many of the available PDAs will be capable of accessing the Internet by mobile communication technologies within the next few years.

Next to multipurpose devices there are highly specialised appliances like eBooks for reading (see section 4.1.), mp3-player for music, and a set of recently announced Internet-Appliances that focus on Web-access and mobile phones for speech-oriented interpersonal communication. Mobile phones are increasingly used for Internet access via WAP (see section 4.2.). Therefore, the media industry has shown considerable interest in mobile phones as a new target device recently. Following the announcements of the relevant manufacturers, mobile phones and PDAs will probably merge into one device (see Luxa 1999, 173). Some of these products might even support mp3 for audio replay.

2.3. Bundling of Transport Media and Devices

From the technologies described above, numerous combinations of transport media and end device may be constructed. In order to reduce this complexity, this paper will abstract from available products and constitutes a number of generalised media/device packages. To achieve this, a nine-field matrix is established that opposes devices and transport media (see fig. 2). Devices are divided into mobile and stationary (TV-based vs. PC-based) appliances as mentioned above. With regard to transport media, we differ between

online media and offline media. Since bandwidth of networks is a very important feature for the media industry, we further distinguish between narrow-band and broadband networks.

The resulting categories will be described further:

(1) Mobile Information Devices (MID):

This category pools available mobile devices with online capabilities. Typical examples of MIDs are WAP-compliant mobile phones and PDAs, that access the Internet over low bandwidth mobile communication networks. Usually, these appliances are restricted in terms of processing power, memory, display capabilities and input facilities. This is mainly due to constraints in size and battery lifetime (see WAP Forum 1998, 9).

(2) Mobile Information Devices 3rd

Generation (MID 3G): Technological advances are expected to lead to substantial improvements in both mobile transmission technology and end device capabilities. The resulting infrastructure and services are called 3rd Generation applications. However, considerable constraints because of size and batteries will remain in most products.

(3) Online Multimedia PC: One of the most popular platforms to access the Internet are stationary desktop PCs coupled with ordinary modems or ISDN connections. Transmission of data is clearly the bottleneck of this configuration, because multimedia capabilities of modern PCs are typically on a convenient level.

(4) Broadband Multimedia PC: Just as mobile transmission, wired-based networks are very likely to offer broadband capacities in the near future. Therefore, private as well as corporate users will be able to access the Internet with substantially higher bandwidth. An additional technical option is to receive television via TV-cable.

(5) Offline Multimedia PC: Desktop PCs with CD-ROM or DVD-drives serve to utilise the adequate offline media. In this case, physical storage media has to be transported to the end-user beforehand.

(6) Online Digital TV: Digital TV sets differ from their PC-based counterparts with regard to information processing and storage capabilities as well as input devices. Their main focus is to receive broadcast-oriented contents, although feedback channels are possible from a technical standpoint. Though still limited, some manufacturers additionally support access to the Internet.

(7) Offline Digital TV: As well as PC-based end devices, television sets support being connected with DVD-drives. DVDs offer significant advantages over analogue video-tapes and are therefore expected to replace the latter within the next few years (see Sedman 1998, 58).

3. Evaluation of New Media and Devices

In order to evaluate the new media technologies described above, we first define a list of relevant technical and non-technical requirements of digital media-products. Based on this collection of requirements the different categories (MIDs, MID 3Gs, Online Multimedia PCs etc.) will be appraised.

3.1. Technical Requirements

Technical requirements either affect the available transport media, the addressed end device or both (see fig. 1). Following this criteria, we will start by examining requirements relevant to the transport media. Three important aspects dominate in this area: The access mechanism, the number of simultaneous recipients and the support of feedback channels in case of transmission media. With regard to access mechanisms a distinction between push and pull mechanisms has to be made. Pull-oriented access is character-

ised by the data transmission being triggered by the end user (which is typical for web applications or video-on-demand), whereas push-oriented transmission is triggered by the sender. Push-services can be time-scheduled (e.g. television broadcast) or event-based (e.g. e-mail newsletter). Furthermore, push-services can address one or more recipients¹, respectively a distinction between broadcast-oriented (e.g. television, radio) and unicast-oriented services (e.g. web applications) has to be made (see Kauffels 1994, 22). In addition to this, feedback channels for transferring data from the user to the service provider is critical for interactive applications like information retrieval or online-shopping. Today, the Internet infrastructure primarily supports unicast transmissions with decent feedback channel mechanisms (IPMI 1997, 3), whereas the main focus of the digital TV-infrastructure is broadcasting with limited feedback abilities (but considerable higher bandwidth). However, both technologies are being worked on to support unicast and broadcast transfer mode as well as adequate feedback channels in the future.

Next, we will consider device-specific requirements, which mainly affect reproduction, storage capabilities and input facilities. Displaying and synchronising different kinds of media types is a basic demand with regard to reproduction. At this point, a distinction between static (time-invariant) and dynamic (time-variant) media types has to be made (see Grauer and Merten 1996, 9). On the one hand, typical examples of static media types are text, graphics and pictures. On the other hand, video and audio belong to the category of dynamic media types. Not all kinds of devices support all media types. Especially MIDs do not fully support video and audio contents, which is due to their limitations in display size, missing speakers or weak in-

¹ Pull-services typically address only one end-user (the one who triggered the transmission).

formation processing characteristics. Next, storage capabilities enable asynchronous download and consumption of contents in case of online-media usage. Typically, end devices with roots in information technology (like PCs, PDAs and Notebooks) possess sufficient persistent storage capacity. In contrast, most of the entertainment electronics lack comparable characteristics. However, this is very likely to change in the future. Another important aspect of end devices are input facilities. Typically, PC-based end devices possess the most advanced mechanisms for user input (keyboard, mouse, joystick etc.). In contrast, mobile or TV-based devices usually lack sophisticated input facilities.

Following, requirements that affect both end device and transport media capabilities are considered: volume of data and speed of distribution. The volume of data being transferred has to be handled by both the transport media and the end device. With regard to static media types like text-oriented contents, the number of chars is a good indicator of volume. Examples for short text messages are news headlines, stock market information, weather forecast etc. These can be handled by MIDs with small displays and limited bandwidth. Dynamic media types typically demand more bandwidth, depending on the technical quality of the content. For a given quality of service the length of time is a good measurement of volume. In cases where speed of distribution is not an issue, bandwidth can be substituted by local storage. In contrast, time-critical information like stock market news or sport results have to be transferred to the customer as soon as possible. Obviously, transmission media like the Internet or digital TV have a natural advantage over storage media like CD-ROM or DVD. As well, mobile devices benefit from the fact that the respective customer can be reached wherever he or she is located at a given point of time, even in transit.

3.2. Non-technical Requirements

Following fig. 1, non-technical requirements can be viewed from the end-users' perspective (user behaviour) and from the perspective of the media industry (business model).

End users have certain usage patterns and behaviours that are closely correlated to end devices and transport media. Numerous criteria to describe usage patterns exist (see Noelle-Neumann et al. 1999). In this paper, we will concentrate on aspects that are especially important for the appropriate selection of content and services for specific target devices. As we have exemplarily mentioned above, PC-usage differs from TV-usage in terms of user activity (active vs. passive) and purpose (information and entertainment). Another important aspect has to be considered in view of user attention. For example, MIDs are typically being used in mobile circumstances and are therefore not suited for complex content difficult to understand.

One of the most important viewpoints of business models is revenue generation (see Bailer 1997). In this regard, we distinguish between user-generated revenues, advertisement-generated revenues and sales on commission. Traditional business models of the media industry heavily rely on the first and second variant (see Schumann and Hess 2000, 20), but commissions will become more important in Online-based activities (see Zerdick et al. 1999, 165). The ability and flexibility to generate income with a combination of the given sources depend on technical preconditions and user behaviour. For example, advertisements have to be bundled to editorial contents either in time (like commercials on TV) or in placement (like banners on the Internet). However, some devices are not suited for these kinds of bundling. E.g., users presumably will not accept

text-based banners or commercials on WAP-based mobile phones due to small displays and low bandwidth.

3.3. General Survey

Subsequently, new devices and transport media will be judged against the requirements of digital products as defined above. Table 1 shows a matrix that opposes demands and technical approaches.

A short column-by-column discussion of this matrix will follow in order to clarify some of the propositions that have been made above.

Mobile Information Devices (MID)

The available mobile end devices are not very well suited for digital media distribution due to a number of reasons. First, small displays and low-quality reproduction of text and pictures restrict potential uses. Typically, video and audio is not supported at all.

Equally, low bandwidth constrains content providers to very small, mainly text-based information with low demand in terms of typographic and other design oriented aspects. Advertising is difficult for the same reasons, so that most services will have to be based on user payments or commissions (see below).

MIDs are especially well suited for short, up-to-date contents like stock information, sports news, traffic conditions, train delays and the like. For example, these can be distributed via push-mode effectively, because the potential accessibleness is high. Equally, pull-oriented information services for WAP-enabled devices are possible (e.g. timetables, hotel and restaurant recommendations, directions etc.). However, these applications cannot heavily rely on interaction, since user input and hyperlink-based navigation systems are difficult to use because of the lack of adequate input facilities.

Table 1: Evaluation of different categories of new media technology

		Category	1)	2)	3)	4)	5)	6)	7)
Requirement			Mobile Information Device	Mobile Information Device 3G	Online Multimedia PC	Broadband Multimedia PC	Offline Multimedia PC	Online Digital TV	Offline Digital TV
access mechanism	pull		0	+	++	++		0	
	push		++	++	+	+	(not relevant)	++	(not relevant)
simultaneous recipients	unicast		++	++	++	++		0	
	broadcast		--	0	-	0		++	
feedback channel	supported		++	++	++	++	--	-	--
reproduction	text		-	0	+	+	+	0	0
	pictures		--	0	++	++	++	+	+
	audio		--	0	+	++	++	++	++
	video		--	-	0	+	++	++	++
storage capabilities	supported		-	0	++	++	(not relevant)	0	(not relevant)
input facilities	keyboard		0	0	++	++	++	0	0
	mouse, joystick		--	--	++	++	++	-	-
	pen		0	0	-	-	-	-	-
volume of data	low		++	++	+	+	-	++	-
	high		--	-	0	+	+	++	+
speed of distribution	low		++	++	++	++	++	++	++
	high		++	++	+	+	--	+	--
purpose	information		++	++	++	++	++	0	0
	entertainment		-	0	+	++	++	++	++
activity	passive		0	+	0	+	+	++	++
	active		0	+	++	++	++	0	0
user attention	low		++	++	++	++	++	++	++
	high		-	-	+	+	+	0	0
business model	advertisements		-	0	+	+	-	++	0
	recipient payment		+	+	-	0	++	+	++
	commissions		0	+	++	++	--	0	--

Legend: ++ strong support -- weak support

To sum up, most of the traditional contents produced by the media industry are not suited for mobile devices. Therefore, it can be expected that for the purpose of a device compliant selection and configuration of contents predominantly new, specific contents will have to be created. Hence, the provision of online-services for MID3s will entail technical and organisational consequences for many media companies.

Mobile Information Devices 3rd Generation (MID 3G)

Following announcements of the manufacturers, mobile devices of the next generation will be characterised by

significant improvements in terms of bandwidth and a functional convergence between mobile phones and PDAs. The broad support of the WAP-Standard enables contents to be distributed in a unicast-oriented manner via push or pull-access. Also, information processing and reproduction capabilities will be enhanced. Nevertheless, sophisticated technical input and output facilities comparable to those of stationary devices will not be widely implemented in mobile devices any time soon.

A specific problem in content creation will emerge from the multiple variants of possible mobile end devices. From

today's perspective it seems likely that products of diverse manufacturers will differ considerable in hardware (e.g. display size). Consequently, the implementation of user interfaces might cause problems greater than those in the area of (incompatible) HTML-browsers.

Online Multimedia PC

Typical characteristics of available desktop-PCs are advanced reproduction, storage and interaction capabilities in relation to low bandwidth access to the Internet. For this reason, the distribution of high volume and high quality dynamic media (especially video) is difficult. Static media types

like text and pictures are easier to publish from a technical point of view, however, users are often not willing to read long and complex contents on screen. Therefore, printer-friendly versions (e.g. PDF) of high volume contents are widely spread.

With regard to access mechanisms, pull-oriented mechanisms prevail in the area of web-services. Video-broadcasting (for example live events) is still a problem, although an Internet infrastructure for broadcasting applications already exists, but is rarely used (so called Internet-MBone). In general, Internet-based broadcasting services assume high server and bandwidth capacities and cause inefficient backbone load.

One of the most important advances of PC-based devices are multiple input facilities like keyboard, mouse or joystick. Therefore, online multimedia PCs are one of the most promising platforms for application-based, transactional or communication-oriented services. A common feature of these new services is interactivity. That means, that in contrast to traditional media products the user actively employs the product instead of passive consumption.

The question of how to refinance online-services is still unsettled. Advertising and sponsoring become more and more accepted amongst recipients. However, these types of business models often do not last to generate enough income for costly web-sites. As well, user-payments have not been successful up to now (especially in the area of general interest publications), because equivalent services are easy to find (see Zerdick et al. 1999, 171). Therefore, commission-based business models are widely perceived as the most promising approach for online-services.

Broadband Multimedia PC

Broadband multimedia PCs distinguish themselves from ordinary online multimedia PCs by broadband access to

the Internet. Simultaneously, information processing and reproduction capabilities will be further improved.

Especially because of broadband Internet access, new alternatives arise for pull-oriented distribution of video- and audio-based content (like video-on-demand). Research suggests that this kind of service will become very popular (see Albers et al. 1998, 277). Also, user payment is widely accepted in this area, both pay-per-view and pay-per-period are technically possible. However, up to now most customers do not use PCs for passive consumption of contents. This attitude towards PC-based end devices might have a limiting effect for the time being.

To what extent the Internet can be used for push-oriented broadcasting depends on the development of the Internet-MBone and its support through widely spread software products. Yet, a prediction is difficult at this point of time and will therefore be omitted.

Offline Multimedia PC

Offline multimedia PCs utilise storage media technologies like CD-ROM or DVD to distribute digital contents. Due to the time delay caused by physical transportation, storage media is not suited for timely contents. Typically, CD-ROMs and DVDs are used repeatedly by the recipient, like reference books, text archives or computer games. In contrast to online-based services user payment is an established source of receipts. With regard to advertising, storage media is best qualified for long term image advertising. Otherwise, users might be annoyed by obsolete advertisements. In comparison to online media, advertising is not widely prevalent on digital offline media.

So far, one of the most important advantages of storage media like CD-ROMs and especially DVDs has been their large capacity. However, this ad-

vantage becomes less important in view of rising bandwidth capacity of online media technologies. Hence, the substitution of storage media through network-based media becomes likely in some areas (see Turecek et al. 2000, 188). As an example, video stores lending DVD or ordinary video tapes are faced by potential competition with video-on-demand providers (see Zerdick et al. 1999, 60; Paukens and Schümchen 2000, 69).

Online Digital TV

Online digital TV focuses on broadcast-oriented distribution of movies, sports events and other TV programmes. Static media types like text and pictures suffer from poor readability, at least on conventional television screens. This is not only due to technical reasons, but also to the fact that recipients are used to sit in a longer physical distance from the screen (see Zimmer 2000, 117). Another limitation is to be seen in the lack of adequate input facilities in most digital TV-sets. Because additionally the traditional user behaviour tends to be passive consumption, it will probably be difficult to establish complex, interactive services (see Paukens and Schümchen 2000, 73).

Nevertheless, digital online TV is one of the most flexible platforms with regard to business models. Both user payment and advertising have been deployed successfully. Especially video-on-demand in conjunction with pay-per-view seems to be a promising approach (see Albers et al. 1998, 277). However, it must be pointed out that there is a negative correlation between quality and scope of free-TV programmes and pay-TV usage in a mutual market (see Zerdick et al. 1999, 41). As well, it is not clear whether recipients are willing to use digital TV as a technical platform for transactions (online-shopping). Previous studies indicate, that this kind of service is not very important for customers (see Albers et al. 1998, 278).

Video-DVDs can be seen as an alternative to conventional video tapes. Physical production and distribution generate costs and take time, so that DVDs are not suited for up-to-date, obsolescent, changing or low volume contents. In view of business model, user payment is well established (purchase or renting). In analogy to video tapes, advertising will have a minor importance. At present, DVD-based transactions are not possible because of missing online-capabilities and therefore business models based on commissions have no significance.

4. Two exemplary Concepts in New Media Technology

At this point, two major technical concepts important for the media industry shall be discussed in greater detail. Following predictions of business analysts, mobile end devices have an extraordinary potential for growth (see e.g. Forrester 1999). In section 2.3, this kind of device has been labelled MID. In order to classify strategies of end device manufacturers, two additional criteria are being used: the range of supported functionality and mobile data communication capabilities. In respect of these criteria the positions of some exemplary mobile end devices mentioned in section 2.2 are shown in

fig. 3. Also, the category of MID 3Gs has been added to demonstrate the prevailing technological trend.

From this, two different strategies can be derived. On the one hand, there are specialised end devices mainly for the reproduction of digital contents (eBooks) with limited support of additional functions and constrained online capabilities. EBooks will be discussed in section 4.1. On the other hand, most other mobile devices are being driven in the direction of multi-purpose devices with strong communication capabilities. Target applications of MID 3Gs are not only distribution of contents, but a broad range of interactive services. In common, this kind of services are called "Mobile Commerce" and will be considered in section 4.2.

4.1. eBooks

The main purpose of eBooks is to complement or even substitute traditional, paper-based distribution of text-oriented contents. Typical properties of eBooks are evaluated and commented in table 2.

Overall, eBooks imitate paper-based books in view of user function and business model. However, substantial additional value (apart from potentially lower prices and memory) cannot be

identified easily, at least for general intended purposes like consumption of best seller novels. Additionally, contents cannot be rented using available eBooks because of technical issues. Also, eBooks are not as robust as traditional books and some products are not suited for outdoor usage (e.g. on beaches).

Yet, some niche applications profit from eBooks. For example, technical manuals, lose-leaf collections, catalogues, time-table information or massive textbooks benefit from memory capacity, unproblematic updates, support of hyperlinks and search mechanisms. As well, customers with weak eyes take advantage of variable type sizes.

From the perspective of the media industry, two aspects of eBooks are of particular interest and will be discussed in more detail: copyright protection and costs. Missing support of copyright protection has been one of the most important drawbacks of past attempts to establish electronic reading devices. However, modern versions of eBooks use cryptography in order to prevent unlicensed copying of digital contents. Because of this, many major publishers have shown considerable interest in eBooks recently. With regards to costs, both production and distribution of contents for eBooks potentially reduce

Table 2: Evaluation of eBooks

Requirement		eBooks (evaluation and comment)	
access mechanism	pull	++	Download of contents via Internet or specialised terminals
	push	-	Limited, because permanent online-access is not supported yet
simultaneous recipients	unicast	++	Intended mechanism of distribution
	broadcast	-	Not supported in available products
feedback channel	supported	-	Not supported in available products
reproduction	text	++	Comparatively good readability of text
	pictures	0	Varies in dependence of product (typically no colours, though some products offer grey-scale, mostly pixel-oriented, typically low resolution)
	audio	0	Varies (typically low quality)
	video	-	Not supported in available products
storage capability	supported	+	Varies in dependence of product (potentially high, but adds significantly to the cost of the end device)
input facilities	keyboard	-	Not supported in available products
	mouse, joystick	-	Not supported in available products
	pen	++	Supported, intuitive handling ("book-like")
volume	low	+	Possible, but laborious, because eBook has to be connected to the Internet for each package of content
	high	++	Intended application area, memory capabilities depend on product and configuration
speed of distribution	low	++	Intended application area
	high	+	Slightly limited, because permanent online-access is not supported yet
purpose	information	++	No obstacles observable
	entertainment	0	Possible, but limited by traditional user behaviour
activity	passive	++	No obstacles observable (apart from the user selecting the required contents)
	active	0	Available products do not focus active user behaviour (limited support of user interaction)
user attention	low	++	No obstacles observable
	high	++	Intended user behaviour, possibly limited by mobile usage
business model	advertisements	0	Possible, but only little experience up to now. In analogy to traditional books advertising is probably of minor importance. However, advertising might be possible in electronic newspapers based on eBooks.
	recipient payment	+	Intended source of revenues. However, renting of digital contents is not supported yet in available products.
	commissions	-	User transactions are not supported yet.

Legend: ++ strong support — weak support

costs compared to traditional books. Particularly, expenses for paper, print-services, stock and physical shipment cease to apply. Next to reductions in price, two other consequences occur. Firstly, publishers can efficiently offer highly specialised contents for limited target groups because of decreasing overhead costs. Secondly, authors can circumvent traditional publishers and distribute their contents with pure online-publishers or even without help.

Still, the future of eBooks is difficult to predict. Proprietary approaches from Nuvomedia and Softbook have been available in the U.S. since autumn 1998. However, both companies have failed to establish eBooks as a mass medium and sold only a few thousand devices. Both Nuvomedia and Softbook have been acquired by Gemstar International in spring 2000. A new generation of eBooks has been announced by Gemstar to appear by the end of 2000. Improvements focus on better usability and ex-

tended memory. Other eBook manufacturers like Librius changed their strategy and produce specialised, device-independent reading software for PDAs and Subnotebooks. Additionally, major software companies like Adobe and Microsoft also work on similar technological alternatives.

In general, mobile reading devices and appropriate contents are not likely to enter the mass market in short term. It seems more likely, that eBooks will be

used in niche markets first and might diffuse from that base into the mass market.

4.2. Mobile Commerce

Following a widely accepted definition of electronic commerce (see Picot et al. 1998, 317) mobile commerce (M-Commerce) will be defined as every kind of business activity based upon mobile information devices. Different types of M-Commerce services can be divided into four categories (see Heil 1999, 84 for a classification of online services in general): Information-oriented services, application-oriented services, transactional services and communication-oriented services.

This paper has mainly focused on information-oriented services so far (see section 3.3). Supplementary, services that support navigation and information retrieval are possible. This kind of service is commonly called "WAP-Port-

mobile Internet access. Therefore, a possible business model might be based on commissions for user click-through to charged information sources.

Application-oriented services will be especially appealing to the end-user under the condition that they do not require complex operations. Subsequently, individual and anonymous services will be distinguished. On the one hand, individual applications like calendaring, task management or address lists are interesting approaches particularly for business purposes. However, media companies can not benefit from their core competencies in this area. On the other hand, anonymous applications like those known from the Internet (e.g. product configuration, price comparisons, routing etc.) cannot be transferred to mobile devices easily, because these applications typically use applets or a sequence of forms for data input. This kind of interaction is difficult to handle on mobile devices as we

Transaction-oriented services can be considered as a special kind of application-oriented service. Additionally, transaction-oriented services obligatory execute some type of business transaction. One of the major difficulties of transaction-oriented services with mobile devices is user interface. For example, ordering simple products like books or CDs can take a significant amount of inconvenient interaction. Complex products that have to be configured are even more demanding. Other problems arise because potentially significant amounts of product information and business conditions must be transferred to the potential customer as well. Summarising, transaction-oriented mobile commerce services are most promising for simple, standardised products that fit the needs of customers in transit, for example intermediation of lifts or booking services (hotels, tickets). However, a reasonable alternative to mobile transaction-oriented services are call

Table 3: Communication-oriented services

	one-to-one communication	many-to-many communication
synchronous	This kind of service will be difficult to establish, because ordinary mobile phone calls basically offer a convenient alternative.	Mobile chat systems will be difficult to handle for customers, because real time communication are constrained by small displays and inadequate input facilities.
asynchronous	SMS and mailbox systems are already in use. In future, WAP-based E-Mails might supplement these services.	News groups can be accessed via mobile devices. No serious obstacles apart from small displays and inadequate input facilities.

tal" and helps users to find relevant information sources via catalogues or search engines (see Hess and Herwig 1999, 551). In analogy to common Internet-portals there will probably be general-interest portals as well as numerous special-interest portals, both of which will provide a number of additional services. Because it is difficult to enter Internet-addresses (URLs) via small phone keys or other, comparatively inefficient input facilities, portals are likely to become quite important for

have mentioned above. Therefore, only simple applications are likely to appeal to the mass market. With regard to revenues, user-payment is possible for premium services with significant user value and unique selling point. Additionally, business models based on commissions are possible. In this case, the application should prepare transactions with business partners (for example, a hotel guide offered by a media company may be linked to appropriate booking systems).

centres, especially if the customer uses a mobile phone to access these services. Also, transactional offerings are typically new for media companies. Therefore, adequate partnerships are important for launching this kind of mobile service (for strategic alliances of media companies in the online-business in general, see Lichtenberg 1999, 26).

Finally, communication-oriented services support communication amongst users. Internet E-Mail, chats and news

groups are well known examples. Today, most mobile phones already support sending short messages using SMS (short message service). In spite of inconvenient input facilities, SMS is widely used by the customers (see IDC 1999), which is mainly due to lower costs in comparison to mobile telephone calls. In the future, more sophisticated services can be implemented using WAP. For classification, communication processes can be synchronous or asynchronous. Further, a distinction between one-to-one and many-to-many communication is being made. Table 3 shows and evaluates the resulting categories of communication services.

In conclusion, asynchronous news groups are most likely to be successful. Media companies can profit from professional know-how in moderating groups or providing additional, editorial contents. Again, the business model may be based on user-payments or even commissions.

5. Conclusion

The goal of this paper was to assess the impact of new digital media and devices on the media industry. In order to achieve this, relevant technologies have been described and bundled in section 2. After this, general requirements of digital media products have been developed in order to evaluate major technology trends in section 3. Three major outcomes can be pointed out:

- The portability of contents from one class of devices (e.g. PCs) to another (e.g. MIDs) is difficult due to significant technical differences. Therefore, new devices and transport media must probably be supported with target media specific contents.
 - Starting from conventional publishing, technical innovations also enable new kinds of distribution (for example video-on-demand) as well as sources of income (for example pay-per-view).
 - Additionally, interactive online technologies provide completely new types of services based on applications, transactions or user-driven communication. Establishing these kinds of services present major challenges for the media industry, because they draw media companies away from their traditional, content-oriented activities.
- From business-oriented perspective, especially the latter aspects are relevant. On the one hand, new markets emerge that the media industry can share in. On the other hand, conventional media products are in danger of being substituted. For example, classified ads of newspapers are increasingly being displaced by specialised online brokers. Therefore, traditional media companies are under pressure to exploit upcoming technologies before newcomers or companies from the IT-industry break into their established markets.
- Supplementary, two exemplary concepts (eBooks and mobile commerce) were discussed in greater detail. With regard to eBooks, major technical improvements have been achieved throughout the last couple of years (Internet-based distribution, protection of copyrights, readability etc.). However, it is not expected that eBooks will become a mass media device, because for general purposes (reading literature or news) eBooks do not provide substantial additional value in comparison with print products or established digital end devices like PDAs or (sub-)notebooks. Therefore, the greatest potential for success is to be seen in niche products like technical manuals.
- Also, provision of mobile commerce services is difficult. Restrictions are mainly due to limitations with regard to small displays and insufficient input facilities of mobile devices. This weaknesses can not be compensated by considerable transmission capabilities that are expected within the next few years. Consequently, mainly low vol-

ume contents and simple applications will be successful. Also, a major problem will be to achieve convenient user interfaces for a range of devices with different hardware capabilities (e.g. display and input).

References

- Albers, S., Bachem, C., Clement, M., Peters, K. (1998) 'Marketing-Instrumente. Produkte und Inhalt', in: Albers, S., Clement, M., Peters, K. (eds.): *Marketing mit interaktiven Medien*, Frankfurt a.M.: IMK, pp. 267-282.
- ARD (1999) *Media Perspektiven Basisdaten*, Frankfurt a.M.
- Bailer, B. (1997) *Geschäftsmodelle: Methoden und Qualität*, PhD Dissertation, Department of Computer Science, University of Zürich.
- Bienert, P. (2000) 'Das Mediengerät der Zukunft – Fernsehcomputer oder Computerfernseher?', HMD 211: pp. 43-52.
- Blödorn, S., Gerhards, M., Klingler, W. (2000) 'Fernsehen im neuen Jahrtausend – ein Informationsmedium?', *Media Perspektiven* 4: pp. 171-180.
- Forrester Research (1999) 'Forrester predicts that one in three Europeans will access the Net via Mobile Phone by 2004', <http://www.forrester.com/ER/Press/Release/0,1769,195,FF.html>, accessed 3 March 2000.
- Grauer, M., Merten, U. (1996) *Multimedia*, Berlin, Heidelberg et al: Springer.
- Heil, B. (1999) *Online-Dienste, Portal-Sites und elektronische Einkaufszentren*, Wiesbaden.
- Hess, T., Herwig, V. (1999) 'Portale im Internet', *Wirtschaftsinformatik* 6: pp. 551-553.

IP Multicast Initiative (IPMI) (1997) 'IP Multicast Background', <http://www.ipmulticast.com/community/whitepapers/background.html>, accessed 3 March 2000.

Kauffels, F.J. (1994) *Moderne Datenkommunikation*. Bergheim: DATACOM.

Lichtenberg, L. (1999) 'Influences of Electronic Developments on the role of Editors and Publishers – Strategic Issues', *Journal of Media Management* 1: pp. 23-30.

Luxa, B. (1999) 'Mobile Internet- und Web-Zugangsgeräte der Zukunft', in: Heinen, I. (ed.) *Internet – mit E-Commerce auf dem Weg zum wirtschaftlichen Erfolg*, Heidelberg: dpunkt, pp. 169-175.

Noelle-Neumann, E., Schulz, W., Wilke, J. (1999) *Publizistik Massenkommunikation*, Frankfurt a.M.: Fischer.

Paukens, H., Schümchen, A. (2000) *Digitales Fernsehen in Deutschland*, München: Reinhard Fischer.

Picot, A., Reichwald, R., Wigand, R.T. (1998) *Die grenzenlose Unternehmung*, 3rd Ed., Wiesbaden: Gabler.

Rawolle, J., Hess, T. (2000) *Neue digitale Transportmedien und Endgeräte: Eine Analyse aus Sicht der Medienindustrie*, Working Report 4/2000, Department of Information Systems II, University of Göttingen.

Schreiber, G.A. (1997) *Neue Wege des Publizierens*, Wiesbaden: Vieweg.

Schumann, M., Hess, T. (2000) *Grundfragen der Medienwirtschaft*, Berlin, Heidelberg et al.: Springer

Shannon, C., Weaver, W. (1949) *The Mathematical Model of Communication*, Urbana, Illinois: University of Illinois Press.

Stipp, H. (1999) 'Convergence Now?', *Journal of Media Management* 1: pp. 10-13.

Sedman, D. (1998) 'Market Parameters, Marketing Hype and Technical Standards: The introduction of DVD', *The Journal of Media Economics* 11: pp. 49-58.

Turecek, O., Grajczyk, A., Roters, G. (2000) 'Digitale Konkurrenz für das Medium Video?', *Media Perspektiven* 4: pp. 181-189.

WAP Forum (1998) *WAP Architecture Specification*, <http://www1.wapforum.org/tech/documents/SPEC-WAPArch-19980430.pdf>, accessed 12 May 2000.

Zerdick, A., Picot, A., Schrape, K., Artopé, A., Goldhammer, K., Lange, U.T., Vierkant, E., López-Escobar, E., Silverstone, R. (1999) *Die Internet-Ökonomie*, Berlin, Heidelberg et al.: Springer.

Zimmer, J. (2000) 'Interaktives Fernsehen – Durchbruch via Internet?', *Media Perspektiven* 3: pp. 110-126.

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Exploring the link between culture and strategy in media organisations: the cases of the BBC and CNN

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Introduction

Since its inception, television broadcasting has been a classic example of a 'public good', with a distinctive financing sector and special regulatory arrangements. For many years the industry was characterised by stable nationally-bounded spheres of activity that were clearly circumscribed by regulation, markets that tended towards the oligopolistic, processes that were rooted in well-established technologies, strong organisational cultures derived from the confluence of a variety of professional, national and individual influences, and audiences who clearly understood their role in the broadcasting process.

However, starting in the late 1980s a series of tremors, including market liberalisation, the introduction of new transmission technologies, and changing social attitudes, triggered the beginnings of an industry restructuring. This was followed by a series of even stronger technologically-driven shocks which have provoked the so-called 'digital revolution'. Developments such as the internet and World Wide Web, digitisation, rapid advances in computing power and bandwidth availability and the development of open global networked electronic platforms are gradually eroding the structural barriers between the media, telecommunications and information technology industries. This phenomenon, termed convergence, is leading to profound change. Channel capacity is fast becoming unlimited. Viewers are increasingly able to dictate which

broadcasting products they want to consume and when and pay for these directly. Every single element of the broadcasting business model – whether funding, programming, production, delivery or audience – is subject to forces of disaggregation and fragmentation.

As a result the characteristics of television supply have been altered. Broadcasting is evolving into a wholly market-orientated system. It is no longer the pre-eminent example of a public good, but a private good which must compete for customers like any other. Public service broadcasters can no longer assume automatic access to every home, must fight to maintain access to viewers and even perhaps expect find a significant proportion of their income from commercial sources. As a consequence, the way in which they fulfil their basic function, in some cases, whether they are able to fulfil their basic function at all, is open to re-examination. For all players, competition is rising steeply, with new competitors coming from outside national boundaries as well as within, and from other industry sectors. The broadcasting world to come will be very different than that in which the current players grew up. Environmental change means that new strategic directions are inevitable.

Theoretical foundations and methodology

This article explores how the cultures of two broadcasting organisations – the BBC and CNN – are responding to the

organisations' respective changes in strategic direction. It is a digest comprising key findings from a five-year research project exploring the relationship between culture and strategy in media organisations, specifically the influence of corporate culture on determining strategic direction and achieving strategic goals.

The theoretical 'lens' by which the BBC and CNN are scrutinised is culture, a powerful but frustratingly elusive organisational element which has an equally powerful impact on an organisation's strategic options. The model of culture that provides the theoretical underpinnings of this research was developed by Schein (1992). He contends that at the heart of every organisation there is a paradigm of interrelated and unconscious shared assumptions which directs how members of that organisation think, feel and act. According to Schein at the heart of the culture of any organisation lies an interrelated set, a paradigm, of deeply-held beliefs. These beliefs, so ingrained that they are unconscious, are the hidden determinants of actions and the ultimate source of beliefs and attitudes. They govern, amongst other things, what that organisation feels its fundamental mission to be, how it perceives its environment, and the strategies it judges as appropriate responses to that environment.

The primary in-company research underpinning this analysis of the BBC and CNN was conducted between 1994-5. During that period twenty-one senior members of staff were interviewed at the BBC and thirteen at CNN. The majority of these individuals were interviewed twice, once for the initial data-gathering and once for feedback. In addition, nineteen expert interviews were carried out with senior industry figures and academics in the UK and US.

Figure 1: The BBC's cultural paradigm

The BBC

The BBC, or 'Auntie', has always been Britain's "national instrument of broadcasting" (Blumler ed., 1992; 11), regarded with trust and affection by its devoted audience. Its uniquely broad range of programming; a blend of liberal and conservative, high brow and low, mass market and elitist was once famously compared to a cooked English breakfast as something which shouldn't work but somehow does. It has always been accustomed to some level of protection against commercial forces and holds the dominant position in UK broadcasting.

The BBC was the world's first public service broadcaster and for over seventy years has operated on the integrated factory model, producing a very high percentage of its own programming (in 1993/4 this was over 70 per

cent, just about the highest figure globally for a PSB). It owned its own transmission system until 1997.

Among public service broadcasters the BBC is unusual in having a licence fee as its dominant source of revenue. In 1998 its income was approximately £2,000 million and it was engaged in a broad range of broadcasting activities including two national television channels, BBC 1 and BBC 2, five national radio stations and 35 local radio stations, five free-to-air digital channels available on each of the UK's three digital platforms, digital radio and BBC Online – a non-commercial internet operation.

Since the 1960s and 1970s, the BBC's finances have been negatively transformed. For decades it had been cushioned by, and accustomed to, regular real rises in income. During the '60s

and '70s the number of households in the UK grew, bringing consistent increases in licence fee income. As large numbers of households each year traded up from black and white sets to colour sets with more expensive licences, fee income grew further, boosted by periodic increases in the licence fee. But increases in the licence fee reached a ceiling in the 1970s. In 1991 it was cut by three per cent and it has since been pegged to inflation. Low growth in UK households coupled with drop off of homes upgrading from black and white to colour mean that its income is effectively flat while its costs are escalating.

Until the mid-1990s broadcasting in Britain was still, by American or continental European standards a protected market. In 1994 the combined market share of BBC 1 and 2 and the two terrestrial commercial channels was 93

per cent, of which the BBC's share was around 40 per cent. Cable and satellite programmes had a market share of only 7 per cent. In recent years the BBC has been faced with an unprecedented increase in competition. Not only has commercial satellite television become entrenched, but there are new digital channels to UK households transmitted via digital satellite, digital cable or digital terrestrial transmission systems.

The BBC's cultural paradigm

The 'Scheinian' paradigm of inter-related assumptions that lie at the heart of the BBC's culture is described below. Assumptions are, of course, unconscious and those presented here therefore represent an amalgamation, an synthesis of interviewees' underlying sentiments, not actual, overt comments. The methodology for deriving these assumes an indirect relationship between individual language or rhetoric, group assumptions, and the corporate unconscious. Coded assumptions are therefore derived directly from the language of the interviewees. Schein (1992) does not make this methodology explicit, but seems to follow it himself. In contrast, the citations appearing after each assumption are verbatim quotes from interviews with senior managers. Grammar has not been corrected but repetitious information or non-sequiturs have been lightly edited (indicated by '...'). Confidentiality agreements with interviewees prevent the identification of the individuals concerned.

Assumption 1:

'Public funding makes us different'

This assumption derives from the public service ethos which has been present in the organisation since its earliest days (Burns, 1977). It concerns a definition of broadcasting conceived in terms of the public good, of public betterment:

"It is the commitment to an organisation that is different in character from other organisations, it is the public service commitment, it is the commitment to quality ... that drives people".

As the quote above suggests, this belief encapsulated a profound conviction that the BBC makes an important contribution to the nation; that its programming does not just fill empty hours in the audiences' evening, but, to echo Reith's views, enriches the viewer's life:

"Our aim is to provide entertainment that is morally sound and has a bit of the Reithian extra about it. Television producers are like doctors, good producers make good moral judgements as well as good programmes, I think it's as important as in medicine".

Assumption 2:

'The Best in the Business'

This assumption relates to the ethos of professionalism, a concern to offer broadcasting of the highest possible quality. This strand of BBC culture appeared to serve as the 'motor' behind the organisation's unparalleled excellence in programme-making:

"We've been a Rolls-Royce organisation, everything has been done very well. I would argue, if you were looking for best practice in broadcasting around the world, you'd probably find quite a lot of it here, in terms of product, in terms of the level of service that has sustained that product".

Assumption 3:

'Part of the British Way of Life'

The third assumption concerned the BBC's view of its national role. The BBC conceived of its role as being far, far, more than simply supplying television and radio programmes. It was not simply in service of the nation but a fundamental part of the nation, and its programming should both reflect and help define the national identity:

"As everything else fragments around you and becomes multi-national, international, satellite and all the rest of it, the BBC remains a sort of touchstone for the identity of the nation".

Nowadays, a sense of fulfilling a unique national role generates feelings of motivation and responsibility:

"This is the great thing with the BBC ... the sense of acting on behalf of the nation, the BBC as a unifying culture – I'm sorry these are grandiose words but these are really what, if you talk to people in some areas of the BBC ... they believe in".

The BBC's sense of fulfilling a unique national role had positive and negative connotations. Like the pride associated with Assumption 2, there was concern that sense of responsibility engendered by Assumption 3, could easily mutate into self-importance, and thence into arrogance:

"there's a sort of Auntie knows best, condescending, patriarchal, matriarchal 'we'll look after you' old-fashioned welfare state public service and a more sophisticated, 'we're aware of your needs', 'we're in tune with the nation', 'we're part of the nation and we can enrich it'".

Assumption 4:

'Defending a great heritage'

Just as children of famous parents have difficulty shrugging off the expectations of their heritage, so too, it can be argued, is the current-day BBC to some extent weighed down by the organisation's extraordinary track record of power, influence and broadcasting success. For many, the BBC represents the pinnacle of televisual achievement, and that achievement was made possible by the rigorous values instilled by Lord Reith.

"I think that one of the tensions of the BBC is that the staff see themselves in a way as the custodians of the Reithian

ethos ... I think the tension arises not that the people at the very top don't see that, but that they see changes are necessary. ... whatever else people feel about the BBC they feel a very strong sense of identity with the BBC. They may dislike a huge number of things about the changes, but they feel extremely strongly, and therefore extremely possessively, about this thing called the BBC. ... It's an enormously conceived commitment and it's an area of enormous strength, but it can also be an area of great tension, if the BBC, in the shape of its Chief Executives ... or the senior team around those entities wish to do something different, or something which the staff feel runs against the true interest which they feel they represent".

Analysis: Reithianism versus Birtism

So how did the BBC's culture, with its distinctly Reithian overtones, respond to the ambitious programme of organi-

sational and strategic change initiated during the Director Generalship of John Birt? As a starting point, it must be observed that overt strategy-making of a positivist, rational type was at that point a relatively new activity for the organisation. Because for decades its environment was basically benign, its income generous and secure, and its mission clearly bounded, the BBC had had little need for classic 'corporate strategy':

"in the BBC you had a culture where because the income had been growing by and large ... there was a bedrock of sustainable income growth and even though the licence was not being upgraded, then your income was growing. Because of that ... there wasn't a huge amount of long-term planning in the BBC. The strategy wasn't there".

The organisation's intellectual tendencies also militated against strategic action:

"We make them (strategic issues) very complicated. We spend ages debating the vari-

ous subtle nuances, there are a lot of them, but I'm not sure they're really that complicated ... one of things the culture here is very good at ... is to discuss and debate, in an intellectual common room sort of way, but very little is set into action. There is a danger that we become fantastic at analysing the competition but don't do a lot about it because we can't quite work out what to do".

Those at the 'strategic apex' of the organisation felt they understood well the dramatic changes facing the organisation, but were concerned that their understanding had not permeated throughout the entire organisation:

"For many of the strategic objectives that have emerged over the last three to five years ... one of the real difficulties ... has been the absence of shared understanding as to why the BBC is going down those paths (there was a) sort of mismatch between where the strategic intent of the BBC was and is, at its most senior level and what the vast mass of people in the BBC thought was the right thing to happen".

Figure 2: Assessing 'fit' between the BBC's environment, strategy and culture

When this phenomenon was discussed during feedback interviews, two possible reasons were mooted. First, that strategic goals had not been explained well:

"Management generally are perceived as the harbingers of doom and gloom. Another problem is that a lot of this is communicated poorly. The message is communicated without the rationale".

Second, some suggested that organisation's use of management consultants could be to blame:

"For 30 years McKinsey and other management consultants have been marching in and out of the BBC and ... they behave as if the company is just like any other company. All you have to do is install the correct processes, the correct systems, and by and large they tend to be insensitive, not only to corporate culture ... but extremely insensitive to non-economic issues".

Relationship between culture and strategy at the BBC

Moving from generalities to specifics, the next question is whether the BBC's culture supports its strategic goals. In response to squeezed financial resources, increasing and ever better-funded competition and environmental instability, plus a government requirement that it become a global player, the BBC developed a five-pronged strategy: innovative quality programming (including new non-commercial services such as BBC Online), efficiency, commercial activities, world development, and alliances and partnerships.

There was no evident tension between the organisation's culture and its goal of producing innovative quality programming. Indeed, this was so integral to the culture that some staff did not even perceive this as a distinct strategic priority:

"I've stuffed the BBC strategic priorities. My priority is to make the widest possible range of high quality drama in the knowledge that if we don't get drama right on BBC 1, we are the defining factor on BBC 1, then BBC 1 will be sunk; if BBC 1 is sunk, then that in the public perception probably means the BBC. ... it's the survival of BBC 1 with a substantial audience loyalty, and an audience out there that believes they get things they don't get anywhere else that is important, and if you then focus down, well what can you do about this? You can't mend the BBC, you can mend bits of it, and in mending bits of it you might mend the BBC".

The second strategic goal was greater efficiency. This too appeared to pose no conflict:

"The audience is who we serve, programming is how we serve it, and efficiency is how we fund it".

The third, fourth and fifth strategic priorities can be considered together. All concerned commercial activities, focusing on world development to be achieved via joint ventures and alliances. Here the BBC's public service ethos, its commitment to serving the British public, traits of anti-commercialism and insularity, and the low priority given to business activities generated tension between strategy and culture:

"[We are] involved in trying to get a couple of hundred million pounds in through commercial activities, via enterprises and via world satellite services and all the rest of it, and it scares the pants off me, because actually it's diverting probably management attention and time from what is absolutely essential and what the UK viewer will only see as important, which is the services in this country. I don't know if the BBC can compete as bloody Heseltine and the others want it to as an international broadcaster and channel operator, I'm not even sure that it's necessary for the BBC to compete as a major international broadcaster and channel operator, but it's in an economic bind that it can't de-

liver its home services unless we get more funding directly from the public purse, without becoming a major international operator and broadcaster".

Tensions between strategy and culture

There were two areas in particular where the culture of the BBC collided with its strategic goals. The first was the increasing emphasis on commercial activities, and this tension had many facets. From a cultural perspective, it contravened many cultural assumptions simultaneously – the public service ethos, the commitment to broadcasting 'for broadcasting's sake', the commitment to serving the UK public, and the commitment to the Reithian heritage:

"I think there's a great deal of unease ... critics would argue that there are two possible problems. One of them is that the public service organisation stops being public service when it starts to become aggressively commercial, and the other one is that the public service organisation, by its very nature ill-equipped to be successful commercially because it has hired people who reject those principles".

"We are not in the business ... of finding a segment of the market which they will then provide a product to and make some money in the process ... we are in a different world".

In the case of commercial activities, cognitive constraints were reinforced by objections from competitors:

"If its job is to compete in the new media arena then [the BBC] has to change out of all recognition and must lose the licence fee, because if it's competing aggressively with everyone else, there's no reason why it should get a licence fee and we shouldn't".
(Competitor)

In addition, some saw a direct conflict between the BBC's brand and commercial activities:

"The brand that we are selling (commercially) is a brand that has become what it is because it hasn't had a commercial imperative ... what you are selling is the brand, and the brand is based on all those cultural attributes ... independence and non-commercial and so on. If you distort that then what you have to sell changes because it becomes more like other products, the more like other products it becomes, the less distinctive, and the less distinctive the brand the less attractive to buy, so the virtuous circle becomes a vicious circle".

The second major tension arose in connection with the licence fee. It was clear from research that licence fee funding engendered creative energy, high levels of professionalism, and an innovative, award-winning standard of programming. But it was equally, as bankers would put it, no free lunch. In return for its guaranteed revenue the BBC must effectively be all things to all men. It must explain itself constantly (as evidenced by the plethora of strategy, policy and other publications). It must maintain an extraordinarily wide span of output to the highest possible creative standards. It must focus squarely on domestic markets while simultaneously developing into a world-media global media entity, and all this against a backdrop of falling revenues.

The closer the BBC is analysed, the larger loomed the conundrum of its funding. Technological change is rendering the licence fee increasingly anachronistic. Yet if it is abolished, important components of the internal justification which pushes people to perform at the levels they do will disappear. Public service status has been one of the things that enabled employees to ride out the radical changes within the organisation. Its removal could have a detrimental effect on motivation at all levels. Finding alternative sources of motivation would not be straightforward, since there appeared to exist an inverse relationship between financial rewards and motivation:

Figure 3: CNN's cultural paradigm

"By paying them more you would lose the motivation. Once you say 'We can buy your commitment' then you would lose it, because people want to believe their commitment is above pearls".

CNN

Cable News Network (CNN) is a niche broadcaster concentrating on round-the-clock news reporting. It was founded in 1980 as a subsidiary of Turner Broadcasting Systems Inc. (TBS). In 1996 Time Warner, a 20 percent shareholder in Turner Broadcasting, bought the remaining shares of the publicly traded company. Now officially entitled the CNN News Group, CNN is engaged in a broad range of broadcasting activities across a variety of media including Cable News Network, CNN Headline News, CNN International, CNNfn, CNN/SI, CNN en Español, CNN Airport Network and CNN Interactive.

CNN has two major sources of income: subscription fees from cable operating companies and advertising. Since its merger unconsolidated figures are not available, however CNN's revenue for

1998 has been estimated at \$676.5 million. In 1996, CNN had around 3300 employees worldwide, their ranks swelled by several hundred freelancers worldwide. (Turner International and the rest of the Turner group employed around a further 3000.)

The core concept behind CNN was to concentrate one hundred per cent on news and cover that news in an entirely different way. First, it would be a twenty-four hour service broadcasting news non-stop. Second, the orientation would be global – CNN would report news from all over the world to all over the world. Third, it would be live – CNN would cover news as it happened, rather than report after the fact. The network sought to underline the 'differentness' of its news product by presenting it in a radically different way to the slick, groomed approach of the US networks. The guiding principle was to create "a role in the process for our viewers" (Peters, 1992: 33); 'ragged edges' would be on display, creating an impression of immediacy and authenticity, of real news stories evolving as viewers watched.

CNN was created in 374 days. Its founder, Ted Turner, a larger-than-life businessman (known as ‘The Mouth of the South’) announced its launch at a press conference on May 21 1979, saying it would go on air on June 1 1980. It duly did, with access to 1.7 million subscribers, although the minimum number of subscribers required to cover 50% of operating costs was 7.5 million (Whittemore, 1990). The network’s early days were characterised by a maverick opportunism and a great deal of luck. The industry was scathing about ‘The Chicken Noodle Network’, and considered it a gamble in virtually every respect. However, Turner was convinced that a 24-hour news channel had potential, and this conviction was endorsed by a series of scoops beginning within the first half hour of service, demonstrating the value of his concept and enabling CNN to establish itself as a major international broadcaster.

US broadcasting is intensely competitive. In part this is a reflection of national values, in part also a function of a regulatory environment which has, since the 1980s, relied on competition to ensure diversity (Blumler, 1992). Competition between the television networks has always been fierce. For many years CNN was outside the fray – viewed as a marginal player delivering a niche service using what was widely perceived as an inferior delivery system. Neither cable nor news were considered attractive by the industry’s dominant players therefore CNN was not viewed as a threat (the networks at this point were scaling back their investment in news). This meant CNN had the field of 24-hour international news coverage to itself for 15 years. However from the mid-1990s onwards, CNN’s competition intensified. A raft of new entrants (including FNC, FNN, MSNBC, and BBC World) entered the 24-hour news field, giving the network its first taste for full-blown direct competition:

CNN’s cultural paradigm

The four dominant beliefs that drive CNN’s corporate culture and the attitudes arising from them are described below.

Assumption 1:

News lies at the heart of CNN
– CNN is the news

At the heart of CNN’s culture lay a commitment to breaking news which is as fundamental as the BBC’s commitment to public service broadcasting. Underlying this was a deeply-held conviction that CNN’s news makes a difference to the course of world events: CNN staff believed their news can change the course of world history:

“It’s utterly brilliant at moving quickly to cover real time events and organise those real-time events into some coherent strand of oral history”.

Assumption 2:

We understand the realities of life

Like the BBC, those at CNN felt the organisation existed to serve its public. But the balance of power was different – at CNN viewers dictate:

“You are in the business of providing news and information to people, the theory being that if you are doing it well you will have lots of people watching. If you don’t have lots of people watching maybe you should examine how you are providing it”.

CNN did not appear to believe in ‘improving’ its audience, nor that it could afford to adopt a lofty tone:

“We want to educate them, but if you can’t get them to watch you can’t educate them, and that’s where a lot of people get lost. If they aren’t watching it doesn’t matter how good what you’re doing is”.

Assumption 3:

CNN the pioneer – the dissident –
the iconoclast

CNN saw itself as a crusading pioneer, with its success rooted in taking risks, in doing things differently, in ignoring received industry wisdom. In part this has been driven by necessity: for many years CNN could not afford to follow standard industry practices. But now it has made a virtue out of necessity (and many of its practices – the VJ system, its affiliate network – have ironically been adopted by so many of its detractors to have become standard industry practice). Thus Ted Turner’s iconoclasm has transmuted into an ‘official’ policy of disregarding convention:

“... an edge that we have because we started off as nothing 15 years ago and people made fun of us, and nobody thought Ted knew anything about the news, so why was he starting a news network ... and that’s an important edge to keep, whether you call it underdog or whether you call it the lean and mean machine”.

For CNN, success rests on breaking moulds, disregarding received wisdom:

“I’d say we question what the industry says: we have proved that it pays to question what the industry does”.

Assumption 4:

We are the underdogs and outsiders
of US broadcasting – and proud of it

The concept that CNN is an underdog, a battling outsider in a hostile industry, was central to its cultural paradigm and linked many of its beliefs:

“This place grew up with a cultural inferiority by being in Atlanta and with a total underdog mentality by virtue of being on cable when cable wasn’t chi-chi. As a result it has been driven by a desire to get as big as its competitors. At the same time it’s a cash poor, capital poor, betting-the-farm-on-the-next-acquisition kind of place. ... the corporate goal ... was to be bigger than we were because we were too small”.

Figure 4: Assessing 'fit' between CNN's environment, strategy and culture

For the underdog or the pioneer, survival is a battle, and CNN's view of the outside world was highly combative:

"We used to say 'you want to be an overdog, then you wanna to behave like an underdog'. No matter how good you are you want to wake up every morning figuring there's somebody smarter, crazier, luckier than you are out there who's gonna reinvent something and then you're in trouble".

Analysis: Culture's impact on strategy at CNN

How does CNN's culture influence its ability to respond to its strategic goals? The starting point for analysis is to observe that CNN and its culture are themselves the products of environmental change and there was little evidence of cultural 'tension' about environmental upheaval. This is not to say that the organisation was not aware of the velocity and breadth of impact of the changes underway, but there was a latent confidence that the organisation was equipped to deal with them:

"It's a bit of a race right now. Fortunately we're already out there. Distribution is going to be very difficult for our competitors. As we say, the price of poker has just gone up".

An interesting facet of the impact CNN's culture on the strategic aspects of the organisation was that it predisposed the organisation to disregard formal strategic planning (an activity which it happily left to its parent). This could have stemmed from its desire to break moulds and do things differently, or from its immersion in the real-time world of news which means a focus on action rather than analysis. Whatever the root, it promoted flexibility of outlook:

"There is a certain impermanence that comes (when) the environment keeps changing, you've no guarantee that whatever you've built yesterday is workable tomorrow. That's been a part of our thinking and our attitude".

Relationship between culture and strategy

CNN's strategy was conceived in response to address two environmental threats; increased domestic competition and industry instability. In response CNN developed three strategic priorities, continued global expansion, the development of new businesses and strengthened domestic programming.

Further global expansion offered a way of consolidating existing strengths, and was in some ways a wider application

of existing competencies – newsgathering on a global basis and repurposing. Unsurprisingly, there was little conflict with cultural assumptions. Equally, the development of new businesses posed little conflict. CNN's achievements had long been rooted in exploiting new developments and its associations with new technology were positive:

"in five or ten years' time there'll be 500 channels ... So if we say, 'Okay, we've got our five networks right now, we're ready, we're in a good position', that would be naive, because even if these other channels get only a few people to watch, they're still going to break down our total numbers of viewers. So we need as many networks or stations as we can. ... In other words, if somebody is going to take away viewers from CNN, it might as well be us".

However, CNN's last strategic goal, that of strengthening domestic programming, did cause cultural conflict. By domestic programming the broadcaster meant fixed schedule, appointment-based programming that was not necessarily breaking news related, thereby relieving the news-related problems of erratic ratings, accusations of sensationalism and unattractiveness to advertisers. Here, the deep cultural commitment to news militated in many ways against the strategic goal:

"we have to be careful we don't ever lose track of what it is we do, and that is cover the news, that's our responsibility".

CNN's cultural commitment to news and its ambition of improving its scheduled programming did appear mutually exclusive. It was felt that an organisation dedicated to, and whose audiences expect, round-the-clock coverage of big breaking stories, could not afford to 'clutter' channels with fixed, immovable scheduled programmes:

"There is a sub-problem here, which is that we want to strengthen our domestic programme schedule. Everything tells us that outside of this breaking, just-in news, you need appointment-based programmes that have a special shape and content. How can you do that and make it important if every time the shit hits the fan, as we say in English, you throw out these programmes? The programme XYZ won't be seen today because we've got this continuing coverage of a bomb threat in Abu Dhabi, or wherever we are. How can you reconcile being a 24 hour news channel with the need to put in programming posts, mileage markers, that tells people where they are in the day and when they can watch?"

A special case? Do media organisations need managing differently?

What conclusions can be drawn from this investigation into corporate culture's influence on strategic activities in broadcasting organisations? This section presents a number of insights arising from this investigation.

It is axiomatic to suggest that if an organisation's culture offers unalloyed support for its strategic processes, and if those processes represent an optimal response to environmental demands, then a powerful foundation has been laid for exceptional organisational performance. This research does not claim to prove or disprove such claims but it does, however, provide evidence of the organisational implications when

there is disequilibrium between such elements. Somewhat inevitably, the example is the BBC. For decades it was in the fortunate position of enjoying a stable environment (characterised by protection from competition and high levels of guaranteed income). Its strategy was correspondingly fixed and focused, concentrating primarily on delivering high quality programming to UK licence-fee payers. A stable environment, consistent strategy and market success, coupled with high national prestige and an elitist recruitment policy, gave rise to a powerful culture, driven by shared values of dedication to quality, innovative output, to public service ideals, to serving the UK and to preserving the organisation's unique heritage for future generations. A 'golden scenario', where environment, strategy and culture were in harmony, gave rise to what the organisation describes as its 'golden years', when it enjoyed unparalleled success as one of the world's leading broadcasting organisations.

However, the radical contextual change during the 1980s and 1990s destroyed the alignment between these factors. The BBC found itself for the first time both in a real marketplace, one that was commercial, global and multi-channel, and at a disadvantage vis-à-vis competitors. Changes in the environment forced a redefinition of its mission, goals and the means by which those goals were to be achieved.

Radical change required a radical strategic response. The BBC shifted gears, introduced an internal market ('Producer Choice', 1991), forced producers to focus on a wider range of viewer needs ('Programme Strategy Review', 1992), set up new divisions to reap the benefits of commercial exploitation of existing assets and to run international channels, and reorganised to cut administrative overheads and position the organisation for technological developments ('A Structure for the Digital Age', 1996). Thus, strategy and envi-

ronment were 'realigned', and the assumption appears to have been that culture could be correspondingly brought into line, through the judicious application of management development interventions and internal communications initiatives.

However, despite such activities, the new strategic initiatives were poorly received by the prevailing culture. The research suggests that not only did the new strategy countermand many of its intrinsic beliefs and values, but this was aggravated by the fact many staff, because of the strength of the culture, had little understanding of the environmental developments which necessitated such radical responses. The fact that some of the strategy development task was 'outsourced' to consultants meant that many within the organisation were not privy to the underlying reasoning processes, and had limited exposure to the underlying environmental rationale for strategic change.

Culture, strategy and the way forward

Perhaps the key general conclusion to be drawn is that the culture of broadcasting organisations exerts a significant influence on their strategic priorities and processes, indeed that culture's impact on strategy is pivotal. Culture doesn't preclude strategy, but it develops and shifts more slowly than strategic imperatives do and governs the rate of uptake of strategic imperatives. Culture not only governs how environmental developments are perceived, but also defines the acceptability of strategic responses to those developments, and, by extension, determines the level of commitment to achieving those responses.

Consider the organisational difficulties which have surfaced in relation to the BBC's attempts to move into international and commercial arenas, and CNN's intentions to develop 'appointment-based' scheduled programming. In both cases there are genuine 'stum-

bling blocks' in terms of resources, expertise and suchlike. However, as the research demonstrates, underlying these are cultural constraints arising from a fundamental emotional acceptance of and commitment to certain spheres of operation, and a concomitant antipathy to others.

This research demonstrates that culture can exert a powerful restraining influence on strategic plans in media companies. However it can also be argued that although the culture of a media organisation has significant destructive potential, it is first and foremost a valuable strategic asset. Culture provides leverage to all strategic plans because it holds the key to intrinsic motivation and creativity, and creativity of course is the key to the task that lies at the heart of any media organisation, the development of creative content. Culture drives motivation, drives creativity, drives content.

For both the BBC and CNN, their cultures are the emotional engines of their success. CNN could not have achieved its track record of exclusive live coverage of key world events without its singular cultural obsession with live news, nor would the BBC have been able to maintain its exceptional programme quality during a decade of organisational turmoil without a deep cultural dedication to serving the UK public with programming of the highest professional and creative standards.

The distinct cultural beliefs held by CNN and the BBC – about broadcasting's fundamental purpose, about the nature of competition, about viewers, about the relationship between competition and quality – drive those organisation's products, performance and strategic options. Their cultural beliefs have laid the foundations for each organisation's striking current and past successes, and will also determine how these organisations respond to the coming media revolution, and perhaps also their ability to survive it.

References

- Blumler, J. G. (1992) (Ed.) *Television and the Public Interest: Vulnerable Values in West European Broadcasting*, Newbury Park etc.: Sage.
- Burns, T. (1977) *The BBC: Public Institution and Private World*, London: Macmillan.
- Peters, T. (1992) *Liberation Management: Necessary Disorganization for the Nanosecond Nineties*, New York: Knopf.
- Schein, E. H. (1992) *Organizational Culture and Leadership*, Second Edition. San Francisco: Jossey Bass.
- Whittemore, H. (1990) *CNN: The Inside Story*, Boston: Little Brown.

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Calendar of Events

September

■ 09/06/2000 – 09/08/2000

LUMIS 2000:
Second International Workshop
on Logical and Uncertainty Models
for Information Systems
Greenwich, London, UK
<http://www.dcs.qmw.ac.uk/~mounia/LUMIS.html>

■ 09/12/2000 – 09/14/2000

USM 2000 3rd IFIP/GI Int. Conf. on
Trends towards an Universal
Service Market
Munich, Germany
<http://usm2000.informatik.uni-muenchen.de/>

■ 09/11/2000 – 09/15/2000

SAB2000:
The Sixth International
Conference on the Simulation
of Adaptive Behaviour
Paris, France
<http://www.poleia.lip6.fr/~sab2000/>

■ 09/25/2000 – 09/28/2000

Web Site Content Management
Summit
San Francisco, U.S.A
<http://www.iqpc.com/cgi-bin/templates/0/index.html>

October

■ 10/15/2000 – 10/18/2000

Strategic Management Society
Annual Conference 2000
Vancouver, Canada
<http://www.smsweb.org/Pages/Frames/00/00main.html>

■ 10/19/2000 – 10/22/2000

7th Annual – Human Resources
Management and Organizational
Management/Behaviour (HRMOB)
Converence
Charlotte, North Carolina, U.S.A.
<http://www.aom-iaom.org/hrmob/index.html>

■ 10/23/2000 – 10/24/2000

Measuring & Analyzing Online
Customer Behaviour
Chicago, U.S.A.
<http://www.iqpc.com/cgi-bin/templates/0/index.html>

■ 10/24/2000 – 10/25/2000

Online Intellectual Property
Washington D.C., U.S.A.
<http://www.iqpc.com/cgi-bin/templates/0/index.html>

■ 10/30/2000 – 11/04/2000

WebNet 2000
San Antonio, Texas, USA
<http://www.aace.org/conf/webnet/webnet2000call.htm>

November

■ 11/16/2000 – 11/17/2000

ACM Conference on Universal
Usability: Solutions, Systems, and
Methods
Washington D.C., USA
<http://www.acm.org/sigchi/cuu/>

December

■ 12/04/2000 – 12/05/2000

2nd IFIP / MASSYVE Working
Conference on Infrastructures
for Virtual Enterprises
– Managing Cooperation in Virtual
Organizations and Electronic
Business
Florianopolis, SC, Brazil
<http://www.uninova.pt/~prove/>

2001
January

■ 01/03/2001 – 01/06/2001

Hawaii International Conference
on System Sciences 2001
Maui, Hawaii, U.S.A.
<http://www.hicss.hawaii.edu/>

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- Economics of traditional and new media
- Evolution of the media industry and me-
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- Technology, infrastructure, user behavior
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- Effects of new media on economy, society,
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