

Wales on the Web

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Wales on the Web

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Preface

This Gregynog Paper is about how Wales appears in the online universe, and what online technologies, including the World Wide Web, can offer the Welsh people. It is the twelfth Paper that has arisen out of a seminar organised by the Institute of Welsh Affairs at the Gregynog University of Wales Conference Centre near Newtown, Powys. Each seminar comprises around ten people including the author and the editor. They meet for dinner and an opening presentation by the author during a weekend evening and stay overnight. The seminar then continues the following day.

The seminar out of which this Paper has been produced was held in March 2004. In addition to Andrew Green and myself those who attended were Sue Balsom, Managing Director of FBA, the Aberystwyth design, marketing and communications company and Wales' representative on the Content Board of Ofcom; Allison Coleman, Director of Culturenet Cymru; Rhys David, Associate Director IWA; Gayle Evans, Head of Documentation, Knowledge and Information Management, National Museums and Galleries of Wales; Linda Tomos, Director of CyMAL: Museums Archives and Libraries Wales, Welsh Assembly Government; Miranda Morton, Actions Manager, Cymru Ar-lein, Welsh Assembly Government; Brian Roussel, Lucida Consulting, Llangattock, Monmouthshire; Wil Stephens, Head of Media, FBA; Iain Tweedale, Assistant Editor, New Media, BBC Wales; and Hywel William, Head of Broadcasting and Telecommunications Wales, Ofcom.

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Others who offered comments on further drafts of the paper were: Leighton Andrews, AM for Rhondda; Ann Beynon, BT Director Wales; Alun Burge, Head of Communities First, Welsh Assembly Government; Rhidian Griffiths, Director of Public Services, National Library of Wales; Mike Hopkins, Director of Information Services, University of Wales, Aberystwyth; Gwyn Jenkins, Director of Collection Services, National Library of Wales; Brinley Jones, President, National Library of Wales; Diana Reynolds, Strategy Manager, Cymru Ar-lein, Welsh Assembly Government; and Chris West, Director of Library and Information Services, University of Wales, Swansea. Sara Branch and Sarah Jones, of the National Library of Wales, provided assistance with textual references.

All those who participated in the seminar and those who provided information contributed extensively to the debate around the issues addressed in the Paper. As ever, however, responsibility for the contents rests with the author alone.

A final comment is necessary in relation to the themes addressed here: one constant about the World Wide Web is incessant and rapid change. Inevitably, therefore, some of the information in this Paper will have dated since the text was completed in April 2005.

John Osmond

Director, Institute of Welsh Affairs
May 2005

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Introduction

What has broadband ever done for us? A perfectly plausible answer to that question as things stand today would be 'not much yet'. Given how much prominence broadband has been given by commercial providers such as BT and by public sector proponents such as the Welsh Assembly Government it has yet to justify all the attention it has been given in terms of its genuine effect on the lives of ordinary people.

The charge for broadband has been led, very successfully, by those 'in the know', as it were, those whom marketeers would describe as 'early adopters', the people who are one stage beyond the geeks and computer nerds. The way broadband availability became a serious campaigning issue for communities the length and breadth of Wales in 2003-2004 is truly remarkable and those campaigners should feel justly proud that they have played a key role in getting Wales to where it is now – pretty close to 99 per cent availability across the country by July 2005.

It is true that broadband is better than dial-up. It does provide quicker, always-on services at a fixed price. That is compelling in itself. But not half as compelling as what comes next. Andrew Green's paper explores what will make broadband truly compelling: content.

Having broadband available is a first step. What it provides and how that impacts on the way we live our lives, run our businesses, care for our communities, promote our cultures and interact with the rest of the world is what comes next. It is what broadband does for people that matters now. Providing fatter, broader pipes to deliver the requisite digital signal is well underway. Technology will continue to compress those signals so that more can be carried on less. Investments in new Internet Protocol-based telecommunications infrastructures, such as BT's 21Century Network, are underway. The challenge is to make these developments relevant and meaningful not just for those 'in the know' but for all the people living in Wales. We cannot allow any of our communities to be digitally excluded.

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BT's take-up figures for broadband are an interesting barometer of economic and social well-being. Those communities which we know are less economically prosperous are the same communities where take up of broadband is low. The cost savings and efficiencies already available on-line are not being accessed by those who would benefit most. For instance, it has been estimated that purchasing basic services such as car insurance online can save the average household around £225 a year. Andrew Green's paper refers to the Communities@one project which the Welsh Assembly Government is about to launch and which will help address digital access issues across Wales.

Having a broadband infrastructure makes a number of people-centred activities available more easily and efficiently. It can play a key role in the social justice agenda. CCTV cameras helping to keep people safe, interactive kiosks for reporting crime and anti-social behaviour are examples. In health it can help transfer and store key clinical data in a digital format allowing consultants in Cardiff to see patients in Llangwyrfon. In schools it can help monitor attendance and allow pupils to access their school work online from home. For the economically inactive it brings new possibilities for working from home or for employers to provide more flexible working practices for their employees. The economic benefits are enormous. We can create a digitally networked economy where business transactions become cheaper and more efficient. And we can develop new businesses that will underpin these new ways of working by developing new technical solutions and applications.

In turn these will allow all manner of content to be made available on a global basis. As Andrew Green outlines in this publication it is important that Welsh content is there in that global content pool, both as information that can be accessed free of charge from public sector sources, and as commercial products delivered by a plethora of Welsh digital businesses. There are a number of encouraging signs that Wales is stepping up to the mark. But as the old saying goes *Nid da lle gellir gwell* (good can always be better). The potential is limitless and only confined by our own imaginations. Let's get on with it and then we can truly 'look on the bright (broadband) side of life'.

Ann Beynon
BT Director Wales

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1 Internet Internationalism

No phenomenon better exemplifies the triumph and the limitations of globalisation than the internet. Thanks in large part to electronic mail and the World Wide Web, the internet enables individuals and organisations around the world to speak to one another rapidly and cheaply, and to share vast quantities of information in ways that were inconceivable fewer than ten years ago.

Email has shrunk intercontinental distances to almost nothing. The contents of libraries that were remote and hard to use are beginning to be opened up at the touch of a key. Television and radio broadcasts, once ephemeral, are now retrievable on personal demand. Within a second or two using a broadband connection, a Google search will uncover a breadth and depth of information that would have taken days or weeks to accumulate in traditional ways.

However, as in other areas 'globalisation' of the internet is incomplete and unequal. The 'digital divide' between those who are able to take advantage of what it offers and those who cannot is persistent and well-known: not only here in Wales and the UK, but more starkly across the gulf that separates the developed and the developing worlds.

Other limitations arise from the nature of the information carried on the internet. Just as barriers have been reduced for those seeking access to information, so too have barriers to those generating and providing it – with implications for the quality and reliability of what is now to be found, for example, on the Web. In the print world publishers act as gatekeepers and guarantors of some kind of quality. On the other hand the democratic Web makes no distinction between serious-minded reports and scurrilous, unreliable weblogs.

A paradoxical outcome of 'internet internationalism' is the increased opportunity that now exists for the local and the specialist – for example, local cultures and languages, and specialist disciplines and hobbies – to claim their rightful place in cyberspace. Wales is no exception. We have a new stage on which to appear and project our individualities.

Admittedly, it is a crowded stage. It is estimated that there were around 9 million websites online in the world in 2002.¹ Nonetheless, there has never been a

1) Reliable estimates of the number of websites in the world are rare. However, it can safely be assumed that the number has more than doubled since 2002. Google indexed 8 billion web pages in November 2004.

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better time for organisations and citizens to exploit online technologies to benefit Welsh people and businesses and to promote Wales to the wider world.

This Paper is not concerned with the traditional technical themes of the emerging internet – megabytes per second, unbundling the local loop, wireless connections, terabytes of storage – but with the much less discussed subject of what is known in the jargon as online ‘content’. This is the information and knowledge that the internet, and specifically the Web, allows us to generate, receive and share.

The central question is this: what is special about Wales in the world of online information? There are subsidiary questions. What already exists that is of real, added value to Welsh people, and to outsiders interested in Wales? What are the gaps and the unmet needs? What is the role of the Welsh Assembly Government and other public agencies in creating, or stimulating the creation of, online knowledge and its use? What are the special needs of Wales that set it apart from other countries? Are there opportunities for Welsh businesses to flourish in the online information economy? As our education system increasingly diverges from the pre-Assembly ‘England and Wales’ model, what resource needs can or should be met through digital, online means?

My contention is that, while in some areas of online content Wales can justly claim to have taken an early lead, there is more that could and should be done to place Wales in a stronger position. There is a need for direct and indirect government intervention, much of which can be undertaken for a fraction of the cost of technical interventions. Only by doing this will we be able to say that we are taking full advantage of the internet to enrich the lives of Welsh people and to give Wales a better chance to perform effectively in the UK and beyond.

Online content touches almost all fields of human activity. This Paper touches on six key areas: broadcasting and media (Chapter 3); governmental and official information (Chapter 4); culture and language (Chapter 5); education and learning (Chapter 6); commerce (Chapter 7); and contact with the international world (Chapter 8).

Before turning to content we should first review progress on the other internet ‘C’s’ – connectivity and competence – to see what the implications are for content.

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2 Cables and Confidence

How online content is offered and used depends on three conditions: convenient and cheap internet access, awareness of what is available, and the technical skills to make effective use of it.

Access may be from the home, the work place, a public library or an internet café. Home access has been driven mainly by commercial considerations. The cost and availability of a home personal computer (PC) and network access are typically the main factors. In 2002-03 only 34 per cent of Welsh households had an internet connection.² This figure is lower than for all other UK countries and regions except Northern Ireland, and parallels other indicators of the relative economic and social disadvantage of Wales.

The picture is brighter in other areas of technical access. The 'People's Network', a UK programme funded by the New Opportunities Fund, installed internet-connected PCs in all static public libraries in Wales, and, uniquely in the UK, guaranteed uncharged public access to them. The Welsh Assembly Government has funded equipment, including at least one interactive whiteboard, in every state school in Wales, and ICT facilities in more than 800 learning centres in schools and community venues.

Above all, the Assembly Government has taken a lead on the promotion of faster and more dependable internet connections among public bodies in Wales, through its Broadband Programme.³ Broadband access is superior to earlier modes of access (typically dial-up) in several ways. It is much speedier (at least 500 kilobytes per second) and more capacious, with audio and video streaming made convenient. Moreover, it is 'always on', without disabling one's telephone connection. It is charged at a set monthly tariff, meaning there is no price restriction on the amount it can be used, which is particularly important for business users. Experience has shown that the use of broadband is highly sensitive to cost, with price reductions invariably resulting in an immediate increase in take-up.

Home take-up of broadband, either through the normal telephone line via ADSL (Asymmetric Digital Subscriber Line) or a fibre optic cable supplied by a cable company such as NTL, has been relatively slow in Wales. At March

2) <http://www.statistics.gov.uk/statbase/ssdataset.asp?vlnk=6935&More=Y>

3) http://www.cymruarlein.wales.gov.uk/fe_irc/details.asp?ircid=69

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2005 take-up across Wales was 16.4 per cent compared with the UK average of 19.2 per cent. However, a year earlier take-up in Wales was only six per cent, so the market is growing rapidly. As subscription costs reduce and availability further increases, the take-up figure can be expected to rise substantially.

Wales will have 99 per cent availability of broadband by the end of July 2005. The 35 remaining exchanges, too small to be commercially viable, were being included in an Assembly Government tender, expected before the end of 2005. Normal consumer broadband is now one megabyte unless distance from the exchange is too great, when it remains at 512k.

At mid 2005 BT had more than 250,000 broadband connections in Wales and some 5 million across the UK. SDSL symmetric services are important for companies that need to send as much data as they receive, for instance media companies, architects, and designers. They will be available in 13 Welsh exchanges by the end of 2005, including Bridgend, Cardiff, Newport and Wrexham.

The Welsh Assembly Government's Broadband initiative is especially welcome, since it concentrates on rapid building of the infrastructure. The Lifelong Learning Network succeeded in connecting all twenty-two Welsh local authorities in August 2002. It may in future be possible to combine the re-procurement of the Network with that of the higher and further education network in Wales (JANET).

The DAWN health service network has also benefited from investment to provide broadband connections in the primary and secondary health sectors. Businesses and voluntary sector organisations have been helped by the Broadband Support Scheme (formerly the WDA Satellite Subsidy Scheme). All of these are intended to stimulate demand and use, as well as increasing general awareness of the benefits of broadband.

It is interesting to note in passing that take-up of some digital technologies, especially digital television and mobile telephony, has been faster in Wales than in the UK as a whole. Taken together with the rapid spread of broadband, this suggests a promising future for new producers of digitally based multimedia content in Wales.

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Technical access is a necessary but not a sufficient condition for effective internet use. Though use of internet technologies has become much easier, thanks mainly to the highly user-friendly and intuitive World Wide Web, a minimum proficiency in computer use is still necessary to take full advantage of them. (Other modes of delivering internet access do exist, of course, but the PC persists as the main vehicle.) It is true that schools expose almost all children to the relevant technologies and transfer the necessary skills. Many employers also train their staff, using standard qualifications such as the European Computer Driving Licence (ECDL). But a large number of Welsh citizens could still be described as 'ICT illiterate'. The Assembly Government has attempted to grapple with this problem through initiatives such as:

- Cymru Ar-lein's 'Meet the Mouse', a nationwide training programme aimed at people with absolutely no previous experience of using PCs or the internet.⁴
- ROUTES (Reaching OUT – Extending Skills), a New Opportunities Fund-supported programme to introduce newcomers in disadvantaged communities to ICT-based training using the non-threatening environment offered by public libraries.⁵

Post-basic awareness and training needs are also important. A good example is assistance for firms that wish to adopt online means of advancing their business. Online relationships can exist with customers, with other businesses, for example suppliers, and with government or other public agencies, for example for planning applications or VAT returns. Again, assistance is available to assist firms that wish to pursue online relationships.

In Objective One areas the Opportunity Wales programme offers visits by professional e-commerce advisers and provides financial assistance in equipment and software purchases.⁶

Beyond awareness and training, a further step is the development of new applications of online technologies. Here the Technium movement, supported by the Welsh Development Agency and Objective One funds, is a pioneering example.⁷ Techniums provide incubator units for emergent high-tech businesses working in partnership with university researchers in sector-based clusters.

4) <http://www.cymruarlein.wales.gov.uk/fe/default.asp?n1=1&n2=433>

5) http://www.llgc.org.uk/routes/routes_s_001.htm

6) <http://www.opportunitywales.co.uk/>

7) http://www.wda.co.uk/index.cfm/wda_home/technium/en4414

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What are the implications of these trends and initiatives for the development of Welsh online content? First, content providers need to be aware that there will be many people who, for reasons of inadequate access or training (or for other reasons, such as pure lack of interest) cannot take full advantage of their products. Local authorities, for example, cannot expect online means to be the exclusive means of interacting with their citizens.

Second, and more encouragingly, the state of development of online technologies, such as broadband, and the progress that has already been made in Wales, suggest that the moment has arrived for a substantial leap forward in the provision of Welsh content. In particular this should be seen as an opportunity for government to provide enhanced services in fields such as education, health, community care and the environment. Indeed, government should see investment in content provision as a high priority alongside access and promotion in attracting more Welsh people and companies to the internet.

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3 News and Broadcasting

Two of the Web's main characteristics, speed and immediacy, hold special appeal to broadcasters and other media organisations. The BBC was one of the first in the field, and has built a formidable array of online services. In Cardiff, BBC Cymru/Wales has more than played its part. As well as contributing Welsh news and other material to the national provision, it has struck out in new directions, three of which deserve special mention.

Cymru'r Byd was launched in 2000 as a new website intended to be a kind of daily (or in reality, rolling) online newspaper or magazine in the Welsh language.⁸ In part it offers a Welsh language counterpart to news and features available via BBC Wales in English, but it also includes a wealth of original content, including arts and book reviews (*Llais Llên*), educational sites, and pages for Welsh learners.

The other two initiatives reflect BBC Cymru/Wales's concern to serve the needs of local communities within Wales. 'Digital storytelling' is a series of digitised RealMedia movies recorded by members of the public in workshops in local studios around Wales.⁹ 'Where I live' presents pages of directory information relevant to particular regions of Wales, with information on news, events, attractions, and reader feedback.¹⁰ And there are many other specially written features on the BBC Wales site, including much of educational value.¹¹

However, most of this material is supplementary to BBC Cymru/Wales's main output, its television and radio broadcasts. This is where the main challenge now lies. How can the internet be used as a vehicle for permanent public access to knowledge produced by the BBC and other broadcasters? Even with the advent of digitally-produced and digitally-available programmes, it remains true that the vast majority of broadcast output is ephemeral. However significant and important it may be, an individual programme will encounter its audience only once (many are now broadcast simultaneously on the Web) or perhaps two or three times if fortunate enough to be repeated.

Some radio broadcasts have been available in streamed form for up to one week on BBC websites. Almost 30 programmes are offered by Radio Wales

8) <http://www.bbc.co.uk/cymru/>

9) <http://www.bbc.co.uk/wales/capturewales/>

10) <http://www.bbc.co.uk/wales/whereilive/>

11) For an overview see <http://www.bbc.co.uk/wales/slashwales/>

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and about the same number by Radio Cymru. In January 2005 the BBC's Radio Player was relaunched to make about 95 per cent of its radio output available in this way. This extends a programme's life to a limited degree, but still leaves no permanent public record.

Recently the BBC has experimented with offering downloadable programmes, from Melvyn Bragg's Radio 4 series *In our Time*. Similar developments are afoot in BBC television. Towards the end of 2005 the introduction of the Interactive Media Player will enable television programmes to be watched again on PCs for up to seven days after broadcast.

So a vast reservoir of broadcast programmes, of immense value in educational and other contexts, lies hidden from public view. In Wales they are to be found in the broadcasters' vaults and in the National Screen and Sound Archive of Wales in the National Library of Wales in Aberystwyth.¹²

This was the context for the announcement at the Edinburgh TV Festival in August 2003 by Greg Dyke, then Director General of the BBC, that the BBC would aim to make its broadcast archives freely available online.¹³ Needless to say, numerous obstacles lie in the way of realising this ambition, but the BBC, including BBC Cymru/Wales, is currently considering how to open up parts of its archives to public use.

There are precedents in other media archives. The British Pathé film archive of historic newsreels is available on the Web, thanks to a New Opportunities Fund grant.¹⁴ The Joint Information Systems Committee of the higher education funding councils is financing two digitisation projects aimed at a higher education audience, one centred on the holdings of the National Sound Archive in the British Library,¹⁵ the other on the ITN archive.¹⁶

BBC Cymru/Wales, in collaboration with the National Screen and Sound Archive of Wales, Sgrín and other partners, is investigating the practicability of digitising a considerable selection of Welsh television and radio programmes and making the result freely available to the public. The provisional title for this project is 'PAWB: a Public Archive of Wales on Broadband'.

12) <http://screenandsound.llgc.org.uk/>

13) http://news.bbc.co.uk/1/hi/entertainment/tv_and_radio/3177479.stm

14) <http://www.britishpathe.com/>

15) <http://www.bl.uk/collections/sound-archive/archsoundrec.html>

16) http://temp5.bufvc.ac.uk/newsfilmonline/public_html/index.php

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The technical complexities of transferring pre-digital tapes to an electronic environment are formidable, as are those relating to the multiple intellectual property rights inherent in most programmes. Copyright is in general a serious constraint on what is practically achievable in digitisation: it is rights restrictions that limit Web availability of most BBC programmes beyond seven days. Another challenge is how to ensure that the user can retrieve programmes, or parts of them, by topic. Google has recently announced plans for a new video search service (though it assumes the existence of transcripts).¹⁷

Though there are challenges the rewards can be substantial. There is a shortage of expertise in Wales on assessing and exploiting the commercial viability of exploiting content that sits in publicly-owned archives. This may be an area that could be looked at in conjunction with the Assembly Government's Creative Industries fund.

Adequate funding is needed to put Wales ahead of the rest of the UK in opening up its broadcast heritage for study and enjoyment by the whole population. Programmes made through the use of public money, as is certainly the case with the BBC, should continue to be available for public use, now that the technical means are at hand.

17) http://video.google.com/video_about.html

4 Public and Official Information

One of the earliest and boldest decisions of the National Assembly for Wales related to content. It was agreed that all the recorded texts of the Assembly, the records of its debates, committee papers, reports and strategies, would be made available as soon as possible and in both Welsh and English, on the Assembly's website. Only a small fraction would be produced in parallel on paper.

This decision gave a powerful signal that the Assembly was serious in its ambition to be as open as possible in the way its information was treated, and prefigured the Assembly Government's adoption of a radical access to information code.¹⁸ This anticipated the coming into effect of the Freedom of Information Act in January 2005. Thus, the minutes of Cabinet meetings are posted on the Assembly's website, as are records of Ministers' decisions, together with a 'statement of information' giving the data underlying the decision.

This public policy mirrors practice in the chamber of the National Assembly. All Members have terminals at their seats and use them to read papers needed for current business. They can also email one another, and their offices. Voting is similarly automated.

The National Assembly's website is the inevitable starting point for anyone looking for governmental information about Wales.¹⁹ As an online source of official information it has few rivals among democratic institutions anywhere in the world. Whatever you may be seeking – records of debates, government reports and papers, contact details for Members, press releases, public consultations – in all likelihood you will find it on the website.

The result is a vast compendium of information of real value to the interested citizen. Unfortunately, partly because of its sheer scale, and partly because of the complexity of its content, the site is far from easy to navigate, especially for newcomers.

Despite the recent addition of a new introductory veneer (which for the first time makes explicit the de facto distinction between the National Assembly

18) <http://www.information.wales.gov.uk/>

19) <http://www.wales.gov.uk/index.htm>

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for Wales and the Welsh Assembly Government), it retains the underlying structure and design it was given at the Assembly's birth. Neither is now adequate to meet the needs of rapid and efficient retrieval. Nor does the quality of the site's search engine compensate for its structural deficiencies. In short, a complete overhaul is required if it is to be hospitable to an ever-increasing range of information and to its users.

At present the Assembly is responsible for the provision of comparatively few direct services to the public, although this will change to some extent with the incorporation of some Assembly Sponsored Public Bodies in future. It is the role of local authorities and national public agencies to make the best use of internet technologies in their public services.

The Assembly, of course, has a considerable influence over how this is done. First, it is responsible for funding the majority of expenditure by other public bodies in Wales. Secondly, it sets out a strategic framework for the online missions of public bodies, through its information and communication technology (ICT) strategy, *Cymru Ar-lein*.²⁰

Cymru Ar-lein's work concentrates on five key areas: promoting ICT infrastructure, encouraging the acquisition of ICT skills, improving public services provided via ICT, helping businesses to exploit ICT, and assisting citizens and communities to enrich their lives through ICT.

Cymru Ar-lein's strategy for ICT use by public services is encapsulated in its original 'Information Age Strategic Framework for Wales'²¹, launched in November 2001, and more recently in 'ICT and eGovernment in Wales'²², a consultation document issued in October 2004 as part of the Assembly Government's vision for the future of the public services, 'Making the Connections'.

It should be noted that the National Assembly's plans for 'e-government' are distinct from those of the UK government. The latter, guided until recently by the 'E-Envoy', set an over-ambitious target for providing all public services through the medium of the internet by 2005.

Cymru Ar-lein sees one of its roles as encouraging joint action by public authorities on pursuing ICT-related initiatives. It invites all such bodies to

20) <http://www.cymruarlein.wales.gov.uk/>

21) <http://www.cymruarlein.wales.gov.uk/fe/default.asp?n1=1&n2=3&n3=28&n4=29>

22) <http://www.cymruarlein.wales.gov.uk/fe/default.asp?n1=1&n2=5&n3=484P>

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become partners by agreeing appropriate ICT targets and sharing best practice. What does this mean in practice?

Local authorities provide most of the direct services experienced and valued by Welsh citizens. All of the twenty-two Welsh local authorities offer a range of online information and interactive services through their websites. In 2002 the Welsh Assembly Government carried out a survey of these websites. Its main findings included:

- Local authorities which consulted their communities discovered that personal (face to face) and telephone contact are still preferred as the usual mode of access.
- Authorities are interested in encouraging their external stakeholders, including their customers, to use ICT modes of access, but are aware of the barriers to uptake.
- The Society of Information and Technology Management (SOCITM) rates local authority websites according to type: in Wales, one website (Wrexham) was rated in 2003 as 'transactional', four were rated 'content plus', twelve as 'content' and five as 'promotional'.

A further short review by Welsh Assembly Government staff carried out in Autumn 2003 found that 30 per cent of local authority services in Wales were available electronically. A joint e-government working party has been set up between the Assembly Government and the Welsh Local Government Association to co-ordinate future action in this area. A third survey, again by the Welsh Assembly Government, looked at the extent to which electronic means were used by local authority members (as well as by National Assembly Members) to communicate with their constituents and others. More than half of councillors have an email address posted on their authority's website (though it is unclear how many of these are active).

Wrexham County Council's website is exemplary.²³ It led the Welsh category in the SPIN/SOCITM Website of the Year awards in May 2004. Its list of interactive facilities available over the web is impressive. Wrexham citizens can:

- Pay their council tax and other bills online.
- Request services.
- Report problems.
- Register complaints using online forms.

23) <http://www.wrexham.gov.uk/english/index.htm>

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- Book courses.
- Make appointments with officials.
- Renew and reserve library books.
- Apply for council jobs.
- Contact council departments.
- Interrogate a 'Find your Nearest ...' portal, a facility for locating neighbourhood schools, doctors, and other services.

In March 2003 Wrexham estimated that it was 38 per cent 'e-enabled' according to the number of interactive online services it offered. Moreover the site is information-rich, making available a wealth of data about the council, councillors and council services and documents.

Unfortunately not all Welsh local authority websites can match Wrexham's for interactivity, richness of information or effective design. This is hardly surprising given the diversity in size and resources of the twenty-two authorities, but it means that citizens receive an unequal and uneven online service, depending on where they happen to live. The Assembly Government has attempted to encourage a degree of uniformity through requiring councils to produce 'Implementing Electronic Government' statements (IEGs). In 2003 the north Wales councils combined to produce a joint updated IEG, under which lie a number of jointly developed initiatives, such as those on library systems and countryside services. However, levels of co-ordination and partnership will need to increase very substantially before individual local authority online services achieve the standards SOCITM has set out as an acceptable provision.²⁴

Meanwhile local authorities in other parts of the UK are pushing ahead with new and far-reaching developments in ICT-based services. Dundee City Council is introducing a multi-purpose smart card (the 'Dundee Discovery Card'), and is leading a Scotland-wide smart card consortium.²⁵ The smart card could in time be the key to citizens throughout Scotland gaining access to 'privileged' online services, such as commercial information services, available through the web. The parallels for Wales are obvious.

However, E-government is not a matter for individual authorities or public agencies alone. Indeed, it is arguable that many of the more significant benefits of online delivery occur when boundaries between agencies are

24) See its 'An e-charter for the people of Wales: delivering locally on the promise of technology', 2004, <http://www.socitm.gov.uk/Public/insight/publications/An+e-Charter+for+Wales.htm>

25) [http://www.slaente.org.uk/publications/serials/infoscot/vol2\(3\)/vol2\(3\)article2.html](http://www.slaente.org.uk/publications/serials/infoscot/vol2(3)/vol2(3)article2.html). I am grateful to Gordon Hunt of the National Library of Scotland for this reference.

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transcended. Such 'joined-up government' is notoriously hard to bring about, even in a relatively small area such as Wales. In practice it is often easier to achieve in a virtual than in a physical environment, a point illustrated by the following three examples, all supported by the Welsh Assembly Government:

- 1 'Traffic Wales' is a website produced by a partnership led by the Welsh Assembly Government.²⁶ It provides a national information service for road users, invaluable for notice of accidents and other hold-ups.
- 2 'Buy4Wales' is a website devised by the Welsh Procurement Initiative Team and intended to help all public sector bodies in Wales achieve more effective procurement of the goods and services they need.²⁷ 'Sell2Wales' is the equivalent site for suppliers.²⁸
- 3 In 2003 the Welsh section of the Association for Geographic Information (AGI Cymru), published a *Geographical information strategy: action plan for Wales*.²⁹ Produced in association with the Welsh Assembly Government, this suggests ways public bodies can apply geographical information systems throughout Wales.

The scope for extending this kind of cross-agency partnership working into other areas is considerable. To give one example, library resources are controlled by different jurisdictions and scattered among public, academic, national and special institutions across Wales. Nevertheless, from the point of view of the user/reader, they should all be regarded as part of the distributed national library collection of Wales. The aim should be to offer a single, simple online search of all the library resources of Wales, backed up by mechanisms for transport and consultation. CyMAL, the Assembly Government's agency for promoting libraries, archives and museums, is currently funding development work that will, it is hoped, result in exactly that.

26) <http://www.traffic-wales.com/>

27) <https://www.buy4wales.co.uk/buy4wales.aspx>

28) <https://www.sell2wales.co.uk/sell2wales.aspx>

29) <http://www.agi.org.uk/regionalgroups/cymru/download/GIS%20Strategy%20for%20Wales.pdf>

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5 Culture and Language

Long a distinctive badge of Wales and the Welsh, culture found early prominence in the online world, especially in the area of documenting Wales's history and recorded past. The vast majority of objects that record the history and culture of Wales exist in real, 'analogue' form, rather than digitally as streams of bits and bytes. However, they can be converted into electronic form by a process known by the unlovely term, 'digitisation'. Analogue material – text, pictures, sound and moving images – may be digitised for many reasons:

- To give better access and achieve wider – literally world-wide – audiences.
- To bring together in a single place material widely scattered in its original, physical form, or to arrange materials in different original formats to produce new and creative combinations.
- To exploit the information in ways impossible before, for example by searching text, comparing versions of texts, or replaying film on demand.
- To preserve information that could be lost in its original analogue form.

All of these apply to cultural and other material that retains a lasting value. Maps long hidden in remote libraries, photographs in archives or paintings in museum stores can suddenly become immediate and live on a screen at home or in school. They can be read, compared, searched and set into context, in all the familiar ways of computer-based technology.

As it happens, Wales has an enviable record of achievement in this area. One of the earliest pioneer projects was the 'Powys Digital History' website.³⁰ But perhaps the best-known example is the bilingual website 'Gathering the Jewels'.³¹ Supported by the New Opportunities Fund and completed in its initial phase in March 2005, this has already attracted heavy use and considerable media attention.

'Gathering the Jewels' displays on a single website cultural artefacts of all kinds illustrating Welsh history and culture. They are taken from museums, libraries and archives all over Wales. It is possible to search for specific items in the collection, but also to follow discovery trails within particular subjects.

30) <http://history.powys.org.uk/history/intro/entry.html>

31) <http://www.gtj.org.uk/>

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'Gathering the Jewels' is remarkable for several reasons. It is a large-scale enterprise, digitising more than 21,500 objects to a high standard. Its website receives on average 660,000 hits and 200,000 page requests a month. It brings together objects of very varied types: books and pamphlets, manuscripts and archival documents, posters and photographs, pictures, museum objects and clips from films and videos. It is the fruit of a partnership between nine separate bodies, between them representing 190 cultural institutions.³² It is the kind of partnership that comes naturally to Wales but is so hard to replicate in larger or less collectively-minded societies. And finally, it is a single consistent collection, united by common standards and common presentation.

'Gathering the Jewels' is now the responsibility of Culturenet Cymru, established in 2003 and shortly to become a unit within the National Library of Wales. One of Culturenet's chief responsibilities is to maintain and develop the 'Gathering the Jewels' database and website, not only by adding to its content but also by devising new pathways to its contents, especially for teachers and school students. As a cultural partnership aimed at promoting 'online culture' in Wales, Culturenet Cymru has pursued other, original projects. For example, '100 Welsh Heroes' was designed to increase public awareness of online information about Welsh figures of historical importance.³³ And 'Books from the Past' was an exemplar for cultural organisations of how to digitise individual printed volumes both cheaply and to acceptable standards.³⁴

Digitisation is a misleading term. It suggests a simple, single process of digital capture (for example, through photography) and display (on the Web). In reality it refers to a complex flow of different operations and skills: selection and preparation of material, digital capture, storage and preservation of the resulting image, addition of metadata (descriptive information to aid retrieval and manage the images), presentation and design. Many of these are areas where standards and good practice are only just emerging. Wales is at the forefront of these developments. 'Gathering the Jewels' is recognised as one of the leading cultural digitisation projects in the UK. At the same time individual partners in the 'Gathering the Jewels' alliance also have excellent records.

32) The original members were: Archives Council Wales, Council of Museums in Wales, Federation of Welsh Museums, National Library of Wales, National Museums and Galleries of Wales, Royal Commission on the Ancient and Historical Monuments of Wales, Society of Chief Librarians (Wales), Wales Higher Education Libraries Forum (WHELP), Welsh County Archivists' Group.

33) <http://www.100welshheroes.com/>

34) <http://www.booksfromthepast.org/>

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Since 2000 the National Library of Wales has built up a substantial body of experience and skills in digitisation techniques. It is at the forefront of techniques to capture two-dimensional objects digitally, and to organise and display them, notably through the use of the emerging Metadata Encoding and Transmission Standard (METS).³⁵ Many of the products of this work can be seen on the 'Digital Mirror' section of the Library's website.³⁶ They include several photographic collections of crucial historical importance, most of the Library's paintings, some of the more emblematic Welsh manuscripts, historical maps of stunning beauty, as well as texts, archives and graphic works. Among individual items are:

- Text of the Black Book of Carmarthen, the earliest collection of poetry in Welsh.
- The elegant maps made of the Welsh coastline by Lewis and William Morris.
- Mary Dillwyn's photograph album: some of the earliest and most intimate photographs ever taken.
- 'Yny lhyvyr hwnn': the earliest book printed in Welsh.
- The laws of Hywel Dda.
- The remarkable landscape paintings of the 'Welsh Primitive' (circa 1840).
- The collected political cartoons of the Barry-born Leslie Illingworth.

The complete text of the *Dictionary of Welsh biography* is now available, in English and Welsh, as 'Welsh Biography Online', and plans are afoot to enhance the text with images.³⁷ Projects in progress include a large collection of historic Welsh wills.

Other institutions responsible for documenting Welsh history and culture have also developed active digitisation programmes. The National Museums and Galleries of Wales offers online images of about a quarter of the paintings and sculptures in its collections. The Royal Commission for Ancient and Historical Monuments in Wales uses its website to present aerial photographs and images of archaeological and historical sites. Local organisations have followed the lead. Rhondda Cynon Taf County Borough Council is an outstanding example. Its libraries have digitised 14,000 photographic items from their local collection. (Community digitisation is discussed in Chapter 6 below.)

35) <http://www.loc.gov/standards/mets/>

36) http://www.llgc.org.uk/drych/index_s.htm

37) <http://yba.llgc.org.uk/>

38) <http://www.nmgw.ac.uk/art/collections/db/>

39) http://www.rcahmw.org.uk/nmrw/photograph_selection/index.shtml

40) <http://ljh.d2g.com:81/photos/>

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Digitisation has already achieved much, opening up national and local collections and individual items in ways impossible before the advent of the Web. And, although evidence is weak, it may also have helped to encourage personal visits to the museums, galleries, libraries and archives concerned, as well as personal use of collection items. However, with one important exception, 'Gathering the Jewels', digitisation initiatives have been institution-specific, uncoordinated and relatively small-scale. There is a strong case for concerted strategic action in support of a larger national programme aimed at a more substantial, sustained and focused impact.

A hint of what may be possible appeared in the Welsh Assembly Government's strategic document *Wales: A Better Country* (2003): a commitment to a 'National Digital Gallery' for visual arts.⁴¹ A scoping study is due to be carried out in 2005. Another possibility lies in the printed heritage of Wales. Would it be feasible, for example, to put together a 'Digital Library of Wales', comprising a collection of the essential texts necessary for the study and experience of literature (and other disciplines) in both Welsh and English?

The Welsh Assembly Government has recently begun to fund the production of a selection of reprinted books central to the tradition of Welsh creative writing in English, the 'Library of Wales'. While this is a worthy aim, it is arguable that much greater added value could be gained from funding the means of mounting these and other texts freely on the Web, with all the inherent advantages of universal availability and sophisticated searchability.

Another prime candidate for mass digitisation is historic Welsh newspapers. These are a rich mine of information for historians, especially local and family historians, yet their content is largely locked away, in the absence of comprehensive indexes.⁴² Since all of these newspapers are now copied to preservation standard microfilm, and the technology of digitising newspapers from microfilm is proved, it should be possible to offer searchable texts of all Welsh titles, with immense benefits for researchers and learners of all kinds.

The digitisation of whole libraries has hitherto been seen as a utopian goal. However, in December 2004 this changed, with the announcement that

41) <http://www.wales.gov.uk/themesbettercountry/index.htm>

42) The index to the *Cambrian*, the earliest English language newspaper published in Wales, is due to be available via Swansea Library Service on the Web: see <http://www.swansea.gov.uk/index.cfm?articleid=5673>

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Google (newly floated on the stock exchange) had reached an agreement with several of the world's leading research libraries, including the Bodleian Library in Oxford, to digitise large portions of the libraries' contents. It is planned to make the full texts of volumes from five libraries available and searchable on the Web, including over one million items from the Bodleian Library's nineteenth century collections.⁴³ The programme, entirely funded by Google, is estimated to take three years to complete, with 10,000 volumes being digitised every week at peak production. It would be no exaggeration to say that this news revolutionises the way in which print digitisation is approached. It raises interesting questions about how to realise similar results for the Welsh printed heritage.

Since Wales is a small country, with a relatively small 'footprint' of recorded culture, projects such as the 'Digital Library of Wales' or the 'Digital Welsh Newspaper Archive' may in reality be less daunting than they would appear for larger countries.

Another question about digitisation is whether it would be possible to capitalise on Wales's lead in this area to encourage the growth of an indigenous 'digitisation industry'. This is explored in Chapter 7 below.

Before leaving the area of 'documentary culture' it is worth giving attention to the parallel world of 'born digital' material. This now occupies an important position in, for example, the collection portfolios of higher education libraries: in some almost half of the collections budget is devoted to subscriptions to electronic journals, electronic databases and reference works, and e-books. Among the advantages of disseminating scholarly information in this way is that it can be made readily accessible to all staff and students via, and beyond, campus networks, using automated authentication procedures.

This born digital material tends to be expensive, and much less accessible than its print-based predecessors, partly because of licensing restrictions that limit use to members of the subscribing institutions. As a result, ordinary citizens are denied access to important areas of knowledge, despite the fact that as taxpayers they have often helped to finance its production.

Again, state action is needed to close this increasing gap. There may be a case for attempting to negotiate 'Wales wide' licences to secure universal access to

43) <http://www.bodleian.ox.ac.uk/>

Wales on the Web

this kind of information. This could be achieved through, for example, public libraries in Wales, now that they have the infrastructure of the People's Network in place. A small beginning on behalf of all public libraries in Wales was made in 2003 with the purchase by Cymru Ar-lein of the 'Oxford reference online' service, which makes available a selection of Oxford University Press's reference works.⁴⁴ In Scotland academic libraries and the National Library of Scotland are working towards a national online 'library of science', with access for all Scottish citizens negotiated by means of a national licence with the rights holders. One obvious area to begin with in Wales would be health information in view of the existence of the Health of Wales Information Service (HOWIS) and its gateway to evidence-based health resources.⁴⁵

There is also a role for online media in the case of the live arts. These can usefully be documented on the Web, especially when information is dynamic in nature. Two examples are the Arts Council of Wales's directory of artists, arts organisations and venues,⁴⁶ and its calendar of arts events.⁴⁷ Private initiatives also exist, notably ArtCymru.⁴⁸ Yet more could be done to coordinate online information about Welsh art and crafts, especially with a view to publicising them outside Wales.

The internet has also given rise to its own artistic activity: 'virtual art', the exploitation of online technologies as a primary creative medium, rather than as a secondary reflection of activity taking place elsewhere. It is not evident that Welsh artists have yet embraced the internet in this way to any great effect.

Finally in this section it is worth looking briefly at the role of the internet in giving a virtual voice to the Welsh language. There is no better example of the global dominance of the English language than the Web. If the Welsh language is to survive and thrive, it must do so in all recording media, not only the traditional ones such as print and broadcasting. A weakness of the Assembly Government's strategy for the future of Welsh language, *iaith Pawb*, is that it is very cautious about measures to promote the language and its use on the internet.⁴⁹ A recent strategy document by the Welsh Language Board, *Information technology and the Welsh language*, begins to fill this gap, though it concentrates on technologies rather than content.⁵⁰

44) <http://www.oxfordreference.com/pub/views/home.html>

45) <http://www.wales.nhs.uk/page.cfm?OrgID=1&PID=1677>

46) <http://www.artswales.org/page.asp?id=artsdbdefault>

47) <http://www.artswales.org/diary.asp>

48) <http://www.welshartsarchive.org.uk/index.html>

49) <http://www.wales.gov.uk/subculture/content/iaith-pawb-e.pdf>

50) <http://www.bwrdd-yr-iaith.org.uk/en/cynnwys.php?cID=6&pID=109&nID=1106>, December 2004.

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Another large gap in *laith pawb* is the all-important area of higher education, where all agree that substantial extra investment is needed to improve Welsh medium provision of learning opportunities. Digital learning materials will be a key ingredient of improved provision, especially if the latter is to rely on collaboration between different higher education institutions (Chapter 6 discusses this in more detail).

What is needed is a debate between the Welsh Language Board and others concerned with the promotion of the Welsh language, and bodies and individuals in Wales whose primary focus is on internet content and use, so that opportunities can be found for building a stronger presence for Welsh on the web. These might include the idea of an online corpus of Welsh texts, of especial use in educational settings, and the promotion of interactive services through the medium of Welsh. Such an initiative would lead on naturally from past achievements, for example:

- Work by the Welsh Language Board on bilingual presentation online.
- Canolfan Bedwyr's initiative in Bangor on Welsh spellchecking.⁵¹
- Success in persuading Microsoft to include Welsh in its language array on Windows XP and Microsoft Office 2003.⁵²
- The BBC's 'Vocab' system, which grew from the desire to make 'Cymru'r Byd' more accessible to those with limited knowledge of Welsh.⁵³
- The online Welsh-English, English-Welsh dictionary developed by the Department of Welsh in the University of Wales Lampeter.⁵⁴

51) <http://www.bangor.ac.uk/ar/cb/>

52) <http://www.microsoft.com/uk/windows/cymruwales/default.msp>

53) <http://www.bbc.co.uk/cymru/vocab/>

54) <http://www.geiriadur.net/>

6 Learners and Communities

Educational services have for many years been seen as an area where ICT has important roles to play, both as an aid to learning practice and as a learning resource. The advent of the internet as a powerful medium for sharing ICT-based educational materials encouraged many to imagine that a brand-new pedagogical paradigm had arrived. It was thought by some that whole courses, even whole institutions could migrate to an electronic environment, developing quite new pedagogical methods. This was most evident in higher education. Some feared that new online higher education institutions, such as the University of Phoenix, would threaten traditional universities.⁵⁵ Others put their faith in the planning of parallel or co-operative e-initiatives. In this country the 'e-University', or 'UK e-Universities Worldwide' as it became known, was set up as a vehicle for recruiting thousands of overseas students to UK higher education courses delivered via the internet. It swallowed £62 million of public money before being abandoned in early 2004, only 900 students having been recruited.

A more realistic concept of internet-based learning is now beginning to emerge, based on two principles. The first is that 'e-learning' is simply part of a panoply of techniques and media available to the teacher and the learner. As local access and bandwidths improve, and sound educational content becomes more common, it will form a more substantial part of the educational process than it does now, but it will rarely supersede other modes: the emphasis is now on what is termed 'blended learning', mixing a variety of methods, including online, according to their suitability to the subject being taught and the needs of the learner.

The second is that individual learning materials, as opposed to teaching or classroom resources, are very rapidly moving into digital, online form. This is readily observable as a generational change: whereas earlier children would have turned naturally to books and libraries as their primary source of knowledge to back up classroom instruction, their contemporaries turn instinctively (and are increasingly directed by their teachers) to the Web as a first resort.

55) <http://www.phoenix.edu/>

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In both these areas, teaching support and resources for learners, a vast variety of activity is under way, in the UK and throughout the world. Where does Wales fit into this picture, especially in regard to specifically Welsh resources for learners?

Strategic thinking has been led by ELWa, and more recently by the Assembly Government itself. The most recent, very informative summary, published in October 2004, was *E-learning in Wales: current developments and stakeholder views on future priorities*.⁵⁶ This builds on the earlier *E-learning strategy* issued in 2003 by ELWa and Cymru Ar-lein.⁵⁷

Much progress has been made on the provision of broadband access to school classrooms, thanks to the Lifelong Learning Network and other initiatives, and to building e-learning capacity through support for teachers and other means. An ICT strategy for schools is currently in preparation.

Much work is going on in Welsh further and higher education institutions, across a wide range of subjects, to incorporate online learning into other forms of learning. Examples include the University of Glamorgan's 'E-College Wales', aimed mainly at business audiences, Coleg Sir Gâr, and Coleg Digidol Cymru.⁵⁸

The immediate challenge, as far as resources for learners are concerned, is to be able to discover what exists and what is of value for education purposes. In the UK the main gateway for educational resources for schools on the internet is the National Grid for Learning (NGfL).⁵⁹ It is linked to the Government's Curriculum Online programme, whose website lists multimedia resources available for sale.⁶⁰

The well-organised NGfL website validates and grades thousands of websites of educational value.⁶¹ Wales has an equivalent site, NGfL Cymru, which includes a website directory.⁶² In 2002 ACCAC, the Qualifications, Curriculum and Assessment Authority for Wales, commissioned a gateway

56) <http://www.learning.wales.gov.uk/pdfs/elearning-wales-e.pdf>

57) <http://www.cymruarlein.wales.gov.uk/fe/default.asp?n1=1&n2=6&n3=237>

58) For some case studies see

<http://www.cymruarlein.wales.gov.uk/fe/default.asp?n1=1&n2=6&n3=231>

For an up-to-date overview of e-learning from a Welsh perspective, see Ian Roffe, *Innovation and e-learning: e-business for an educational enterprise*, Cardiff: University of Wales Press, 2004.

59) <http://www.ngfl.gov.uk/>

60) <http://www.curriculumonline.gov.uk/default.htm?cookie%5Ftest=1>

61) <http://www.ngfl.gov.uk/>

62) <http://www.ngfl-cymru.org.uk/>

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to educational websites in Wales known as 'Drws'.⁶³ This is a portal for all websites that include Welsh or bilingual materials appropriate for use in schools. It was last updated in 2004, and ACCAC now uses NGfL Cymru to provide such website links. However, the listing and validating functions of NGfL are performed much more comprehensively in Wales by 'Wales on the Web'. This service, described in more detail in Chapter 9, has a section entitled 'Curriculum Cymreig' which brings together subject resources of interest to schools.⁶⁴

However, more important are the online resources that exist to serve the educational needs of Welsh schools and colleges, and specifically the Curriculum Cymreig. Until recently very little school-level teaching material has been specially commissioned by ACCAC, which maintains a relatively conservative view of the balance between print and non-print formats. ELWA is investing in the development of web-based bilingual material for post-16 students. Perhaps the most important work is being done by BBC Cymru/Wales with its 'Digital Curriculum'.⁶⁵ To be launched in January 2006, the Digital Curriculum will provide high quality learning materials, free for use on the Web, and tailored to the requirements of the Curriculum Cymreig.

The quantity of material suitable for learners is large, though a glance through 'Drws' or 'Wales on the Web' will soon show that very little of it was designed with the Curriculum Cymreig specifically in mind. Often what is directed towards a school audience is the by-product of an organisation's overall effort to provide content on its website or of its offline activity: for example, the National Museums and Galleries of Wales's education pages,⁶⁶ or the entertaining 'CCW for Kids' pages of the Countryside Council for Wales.⁶⁷

What is badly needed is a systematic review of the need for online resources in all areas of the Curriculum Cymreig, with a view to filling the largest gaps, either by commissioning new material or by digital conversion of material in print or other offline form. Some of these gaps are in surprisingly obvious parts of the Curriculum, for example the literature of Wales in the Welsh and English languages.

Higher and further education have long been well served with online learning and research resources. This is because of the existence of a body

63) <http://www.drws.co.uk/en/>

64) <http://www.walesontheweb.org/cayw/guides/en/1>

65) http://www.bbc.co.uk/info/policies/dc_wales_docs.shtml

66) <http://www.nmgw.ac.uk/education/schools/resources.php?resource=list>

67) <http://www.ccw.gov.uk/kids/flash.cfm>

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with national responsibility for online provision to all higher (and now further) education institutions throughout the UK, the Joint Information Systems Committee of the funding councils (JISC). Originally concerned mainly with developing JANET, the national ICT network in higher education, JISC soon expanded its remit to include the negotiation of national licences for software and then research information.⁶⁸ Together with other, similar initiatives this has meant that all staff and students can enjoy easy networked access, free at the point of use, to a wide range of electronic journals and newspapers, databases and other resources. In some disciplines reliance on non-online sources for research (if not yet for learning) is now minimal.

Further education institutions in Wales have been able to turn to a JISC-funded body, the 'Regional Support Centre Wales' (RSC Wales), for information, advice and training on the use of this wealth of online material. Its website is a model of an 'online guidebook' aimed at a specific clientele.⁶⁹

One of the disadvantages of the presence of a UK body such as JISC in this information providing or brokering role is that Wales and Welsh resources tend to be overlooked in the anxiety to concentrate on resources that will be relevant to all parts of the UK. The problem is compounded by the fact that most original research resources relating to Wales are not located in higher education institutions within Wales, but in other institutions such as the National Library of Wales and county record offices.

There is also the question of Welsh language learning resources, not only of course in disciplines like Welsh and Welsh history, but across the spectrum of subjects. At present there is a new momentum in the national movement to promote teaching and learning through the medium of Welsh, not unconnected with the Assembly Government's target that 7 per cent of students should receive part of their teaching in Welsh by 2010. However, one of the big challenges facing this initiative is the lack of Welsh language learning resources in most subjects. If these can be created, one of the great advantages is that they could be shared by all institutions and their members across Wales.

If there is one theme that unites the initiatives discussed in this chapter it is the importance of joint (national or regional) planning and cross-institution

68) For example, JISC has negotiated licences with publishers that make thousands of electronic journals available through the 'NESLi2' programme: <http://www.nesli2.ac.uk/>

69) <http://www.rsc-wales.ac.uk/>

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sharing of electronic learning resources. This is evident from the ELWa e-learning strategy itself to documents that seek to put the strategy into practice, such as a recent report on collaboration on e-training in north Wales.⁷⁰

The internet has brought particular benefits for lifelong learners not affiliated to any particular institution, as more and more material of relevance has been mounted on the Web, very often without subscription or charge. A good example is family history, a burgeoning area of interest in Wales, where a surprising amount of research can be done online before using record offices or libraries directly. This is due to the availability of online censuses from The National Archives, the indexes prepared by the Church of Jesus Christ of Latter-Day Saints (Mormons) and other sources.

In an online environment learning is not necessarily a passive activity. Since the barriers in the way of 'publication' have been dramatically reduced with the arrival of simple web page creation and weblog software, it is relatively simple for learners and informal researchers to share their findings with others online. The trend can be followed year by year, for example, in the entries submitted to the Welsh Heritage Schools Initiative's competitions.⁷¹ While in the past these typically included an exhibition or a leaflet, they now usually feature websites, often of a high standard, and, of course, reaching a much wider and more permanent audience.

A recent development has been the community website, the product of a local or subject-based group of learners or enthusiasts eager to display the results of their researches and to share them with others in a way that is effective and cheap to achieve. A well-established local example is 'penllyn.com', founded in 1999 as a partnership aimed at publishing a bilingual online guide to all aspects of the rural communities of Pen Llŷn in Gwynedd, and also to promote the 'information society' in the area.⁷²

The 'Llandrindod Portraits Project' is an excellent example of an interactive digitisation website, presenting digitised images of historic photographs of Radnorshire.⁷³ This grew out of the desire of enthusiasts to identify the subjects of local portraits in a privately owned collection. The website proved a powerful means of eliciting information about the people portrayed (only 10 per cent had previously been identified).

70) http://www.elwa.org.uk/elwaweb/doc_bin/Research%20Reports/e-training_nw_041004.pdf

71) <http://www.whsi.org.uk/>

72) <http://www.penllyn.com/1/index.html>

73) <http://www.mycymru.com/index.php?lang=en>

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The project is interesting in that it benefited from the assistance of several organisations: Radnorshire Museum, the Powys Family History Society and Culturenet Cymru, whose staff gave advice on digitisation techniques and standards, loaned equipment and hosted the site.

Culturenet Cymru evaluated the Radnorshire project and set out some useful guidelines for the development of high-quality community websites on cultural subjects.⁷⁴ These will be useful to the Assembly Government's 'Communities@One' programme being established by the Communities First team. This promotes social inclusion through technological means and is likely to give a major stimulus to the production of community online resources.

Rhondda Cynon Taf Council has already started down this path, with its 'virtual communities' project, supported by European Union funds.⁷⁵ This two-year project will develop twelve community web sites, portals for young people, older residents and local businesses, and an internet-based local television station, 'RCTv'.

We can expect much more community website activity in the next few years. How fast and how far this movement progresses will be important indicators of the degree of democratisation of online technology. It is likely to be as important as statistics on internet connectivity or online awareness.

74) unpublished report

75) <http://www.rhondda-cynon-taff.gov.uk/VirtualCommunities/Index.htm>

7 Business

With its rapid, worldwide reach, the internet holds obvious attractions for organisations interested in buying and selling goods and services. In the late 1990s the attractions seemed so obvious that they led to the 'dot com' boom, a bubble inflated on the assumption that enthusiasm for and even activity in online commerce would inevitably lead to large surpluses.

As in the world of education a more realistic set of assumptions now prevails. In a relatively 'peripheral' nation such as Wales, with large rural areas and where businesses tend to be small or very small enterprises, the internet has for years been seen by many as a means of overcoming geographical disadvantages.

Early action to help Welsh firms take advantage of online technologies concentrated on raising awareness of the internet and what it could offer. Opportunities included increased visibility for companies and their products, ensuring physical internet connections, and helping firms to establish a basic presence on the Web.

An excellent example of a European Union-funded project aimed at assisting SMEs in south west Wales in all three areas was the South West Wales Information Gateway. Between 1998 and 2001 this succeeded in introducing over 1,500 small companies to the internet and the benefits of e-commerce.

Today the same challenges still exist, if in rather different form: for example, companies are now encouraged to aim for a broadband rather than a dial-up or ISDN connection. In January 2004 a picture of SME take-up of the internet was provided in a survey by the eCommerce Innovation Centre in Cardiff University, incidentally the oldest-established research centre of its kind in the world.⁷⁶ This showed that 57 per cent of Welsh SMEs had internet access at that time (access is lower for small than for medium-sized firms).

The trend is upward, though broadband access, while increasing, is still not common. The main barriers to use appear to be cost or at least the

76) <http://www.ecommerce.ac.uk/pdf/State%20of%20the%20Nation%202003%202004%20English.pdf>

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perception of cost, and lack of training and expertise. There is also a low awareness of where broadband is available. For instance, in a recent BT survey SMEs gave lack of availability as a reason for not taking up broadband when half of them were actually within reach of the service.

Over half of the connected Welsh SMEs have websites. Uses include finding information, company promotion, and making (and to a lesser extent, receiving) payments. A significant 38 per cent reported that they had won domestic orders through their website, and half of those targeting overseas customers online said they had succeeded. Manufacturing and the hotel and restaurant sector had seen particular success in gaining custom through an online presence.

The main engine for stimulating progress in this area is 'Opportunity Wales', set up to assist SMEs in Objective One areas and supported by several key organisations, including BT.⁷⁷ Opportunity Wales has developed a progression model, the 'e-commerce route map', with seven steps leading from 0 (haven't started yet) to 6 (advanced e-commerce). It is not necessary for all firms to travel the whole route, or to follow it step by step, but the model is a useful way of graduating means of internet use. The greatest number of survey respondents placed themselves on step 3, that is to say using email and operating a website, but not undertaking interactive business processes.

Though in the past and in comparison with other parts of the UK Welsh businesses have been slow to adopt internet technologies, it is undeniable that the gap has closed considerably in recent times. The websites of the best Welsh firms can hold their own with any across the UK, as is easily demonstrated by taking a random example from the 'success stories' quoted by Opportunity Wales among businesses in the tourism sector. For instance, 'Escape Boutique B&B' in Llandudno offers residents wireless and cabled internet connections in its bedrooms, and relies heavily on its own website to attract customers.⁷⁸

This sophisticated and attractive website shows sequences of pictures of the building and each room, and of the locality, with links to local attractions. It describes how to reach the B&B, quotes media coverage, gives contact details, invites readers to join a mailing list, and allows users

77) <http://www.opportunitywales.co.uk/>

78) <http://www.escapebandb.co.uk/>

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to check availability and book online. For a company consciously seeking to set itself apart from others in its conventional category, the online facilities for guests and the website, clean and stylish but economical, both complement the desired image and extend its reach.

As companies begin to develop internet capability they need a different kind of assistance. They need help to take advantage of higher-level applications such as e-procurement and systems integration. Opportunity Wales Advance, financed from April 2004 by European Union funds, now offers a new programme with this in mind.

Another requirement for companies, even very small ones, is access to a range of business information to help them reach informed decisions about investment, markets or expansion. Most modern business information is now in online form. The website of the Welsh Development Agency's business advice service, 'Business Eye', includes some basic information.⁷⁹ However, much more needs to be done to supply Welsh companies with business information (as opposed to advice). If regulations on state aid will allow, there is a case for a collective approach, perhaps via national licences, to enable small firms to afford to take advantage of, say, market reports that would otherwise be beyond their reach.

Many small media companies in Wales have a genuine difficulty in knowing how to turn content they have developed for TV, film and radio to internet and broadband delivery in a commercial way. None of the current support schemes that the Assembly Government provides can help with these essentially marketing activities since the European Commission deems them to be an operational aid. On the other hand there are examples in the US and the UK of large companies or universities hosting incubators to develop commercial online propositions by offering legal, commercial and marketing support. The Annenberg Institute in the University of Southern California is one example. In Wales the Techniums could be developed in this way.

Of course, some Welsh firms take the internet as the basis of their core business. They may be web designers, online software developers, educational or games engineers, or digitisers. It is in Wales's interest, in the context of our current concern with high-quality content, that indigenous

79) <http://www.businessseye.org.uk/>

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businesses are available to supply and take advantage of that content, instead of being compelled to turn to other parts of the UK or overseas. The Technium initiative, mentioned in Chapter 2, is one that aims to nurture such companies, especially by encouraging links between innovation in higher education and commercial applications.

In 2003 a study undertaken by DTZ Pieda for the Welsh Development Agency and the National Library of Wales tested the thesis that a cluster of small digitisation companies could be built up in mid-Wales, centred on the increasing demand from public bodies for the digitisation of analogue material.⁸⁰ Though the results were discouraging ('digitisation of cultural material is not a sustainable commercial proposition'), the report made several positive recommendations for future action, including the possible establishment by the Library of a separate trading company and the exploration of new funding options.

80) DTZ Pieda Consulting, *Digitisation, access and economic development: feasibility study and outline business case*, 2003.

8 Wales in the World

How do Welsh businesses, and Wales as a whole, fare internationally in the online world? Commerce and the internet both aim for global reach. How successfully does Wales project itself on the Web to a global audience? What is the online contribution to attracting overseas visitors, encouraging inward investment, and connecting the Welsh diaspora?

It is important to be clear about the nature of the global audience. Web users are not distributed evenly across the globe but rather are concentrated in developed countries. More than half of them are in the United States, which, from a commercial point of view, is not necessarily a disadvantage.

Many would argue that what is needed is what may be called a Welsh 'virtual embassy': a place on the web where internet users abroad would congregate to find out about Wales. This model is presumably the assumption behind the National Assembly's website 'Wales World Nation.'⁸¹ The site is small and gives no more than a taster of some of the more obvious characteristics of the country as they might appeal to the interest or curiosity of the 'average world citizen'. It also exemplifies the difficulty of projecting a single, coherent or comprehensive picture of contemporary Wales. It is, of course, difficult to achieve a consensus about which parts of contemporary Wales are significant or worth projecting to an outside audience. To take another example, on its website the Wales Tourist Board, for understandable reasons, chooses to accentuate aspects of Wales that would be regarded as anachronistic and stereotypical to other agencies seeking to overturn what they see as outdated and conventional national self-images.⁸²

The analogy of the embassy is not wholly appropriate in an online context, where web users tend to seek information directly, for example via a search engine enquiry, than via an intermediate, 'vade mecum' site. However, there is merit in bringing together in a single gateway information of all kinds directed at overseas online audiences.

In what other ways can the advantages of the web be harnessed to project Wales effectively? The Wales Tourist Board has invested heavily in systems

81) <http://www.walesworldnation.com/home.asp?LanguageID=en>

82) <http://www.visitwales.co.uk>

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in recent years to improve online information about attractions and facilities available for tourists coming from outside Wales. 'VisitWales' offers information and assistance to potential visitors, using a computerised 'destination management' system.⁸³ More can be done to link its efforts to those of other agencies, for example through its culture tourism strategy. There is, for example, considerable latent potential in exploiting family and community history resources in the National Library and other archives to attract those of Welsh extraction who live overseas. This would mirror successful attempts by Irish agencies to exploit overseas markets, especially in the United States.

Similarly, the Welsh Development Agency has a website designed to interest potential overseas investors in Wales.⁸⁴ Yet, few other national public agencies have websites or sections of websites directed specifically at those outside Wales. A great deal more could be done, amongst others by the Assembly Government, to encourage better provision.

83) <http://www.visitwales.co.uk/>

84) <http://www.locate-in-wales.com/Homepage.aspx?id=04a2f196-5959-4187-8850-3f0872cd34c0>

9 Finding Out and Keeping Safe

The internet offers the largest agglomeration of readily available knowledge in one place that the world has ever known. This in itself brings problems of the sensible retrieval of information that is relevant and tractable in terms of being available in manageable quantities. The chief response is that wonder of the modern Web, the search engine. Many exist, but for the present the outstanding and best-used is Google, available in many flavours, by country (including the UK) and language (including Welsh). Google's pre-eminence rests on the size of the universe of websites it trawls and the methods it uses for searching and presenting its results. As the number of daily uses testifies, Google can claim to be by far the favourite way of finding information on the Web.

Web publishers, therefore, if they wish their sites to achieve maximum prominence and use, will take care to make sure that their pages are indexed, organised and cited by others in such a way that they will be retrieved effectively by a Google search and presented prominently in Google's listings. As websites proliferate it becomes ever more important that Welsh publishers are able to engineer their websites to maximum effect.

It might be thought that sophisticated web search engines like Google have solved the retrieval and access problems. Key in 'Neil Jenkins', and within seconds one can link directly to all available information about the king of Welsh goalkicking. Yet problems remain. Which of the many Neil Jenkinases are relevant? How can we trust the information on the sites we find? Is the information there to be had freely on the Web in the first place?

A Welsh answer to the navigation and reliability problem is offered by a bilingual service called 'Wales on the Web', funded by the Welsh Assembly Government.⁸⁵ A team based in the National Library, aided by other suppliers of information, scans the web for sites about any aspect of Wales that provide reliable, up-to-date information. These are listed, annotated and indexed, so that anyone with an interest in Wales – the learner, the researcher or the visitor – can discover web-based material and be confident of its dependability.

85) <http://www.walesontheweb.org/>

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The educational potential of 'Wales on the Web', where dependability is all-important, is considerable. It is also interesting to note that in the UK 'Wales on the Web' is unique. There is no comparable geographically-based guide to validated websites. Moreover, 'Wales on the Web' is soon to incorporate a parallel online service that directs users to non-digital, mainly print collections relating to all aspects of Wales: 'Collections Wales'.⁸⁶

A more intractable difficulty is preservation. How can we select, collect and store digital knowledge, and above all guarantee that in fifty (or even five) years' time it can be 'read' as easily as it can be today. Here the Legal Deposit Libraries Act 2003 represents a great step forward.⁸⁷

The rationale for legal deposit is that it allows a nation to create and preserve its intellectual record as expressed in its printed published output. The problem now is that the printed record no longer represents the intellectual record fully. The new Act extends the right of the legal deposit or 'copyright' libraries, including the National Library of Wales, to collect published knowledge from the print world to the electronic. In the process it gives a legal basis for selection, collection and storage of digital knowledge, even if longer-term preservation is still a large challenge. Over a period of several years a new regime will be put in place to ensure the 'sustainability' of the digital record of Wales and the rest of the UK.

86) <http://www.mappingwales.ac.uk/eng/welcome.shtml>

87) <http://www.legislation.hms.gov.uk/acts/acts2003/20030028.htm>

10 Where Next?

What should be the response of Welsh government, organisations and businesses to the challenges described in the preceding chapters?

On 20 October 2004 the first ever plenary discussion was held in the National Assembly for Wales on 'creating Welsh digital content and business'.⁸⁸ Leighton Andrews AM, who sponsored the debate, stressed the importance of developing substantial digital content, and advocated the need for a 'digital content creation strategy'. This would include making Welsh culture available electronically and building Welsh-based digital businesses. Andrew Davies, the Minister for Economic Development and Transport, agreed on the importance of government giving attention to content and avoiding what he termed a 'digital desert'.

Since the debate the Minister has published *Creative success: a strategy for the creative industries in Wales*.⁸⁹ The strategy includes the creation of a £7million 'creative IP' investment fund for the creative industries in Wales, film, television, new media and music. This seeks to channel back the returns from the exploitation of intellectual property in films or television programmes into the fund. Online businesses in Wales can expect considerable assistance from the fund and other measures in the strategy.

Of course, online content is not confined to the creative industries or to the private sector. To what extent can the National Assembly Government expect, or be expected to guide strategic action on online content across the entire range of its portfolios? Because the field is so wide and contains so many diverse players, it would be unreasonable and unrealistic to expect a comprehensive national 'strategic plan' to be prepared.

However, it might well be possible for the Welsh Assembly Government, in partnership with other bodies, to agree a 'strategic framework', that listed and prioritised the most important goals towards improving online content. This could assign tasks to different agencies, and develop the Assembly Government's own roles in encouraging and sponsoring action.

88) www.wales.gov.uk/servlet/ChamberSession?area_code=380313AC00046B17000028C300000000&document_code=N000000000000000000000000024914&p_arch=post&module=dynamicpages&month_year=10|2004#_Toc86652382

89) <http://www.wales.gov.uk/subitradeindustry/content/wda-creative-wp-e.pdf>
See also the National Assembly debate on the strategy, held on 2 February 2005:
<http://www.wales.gov.uk/assemblydata/N000000000000000000000000028099.pdf>

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To go further, it would also be possible to inform such a strategic framework with some of the conclusions from the discussion in this paper. The following priorities suggest themselves:

- 1 As discussed in Chapter 2 *we need to do more to exploit the availability of broadband across Wales.*
- 2 Wales should show the way, as Chapter 3 proposes, in *opening up for wide public use the huge wealth of material that is stored in our archives of radio and television programmes.* A large-scale programme, preceded by a pilot project, should be prepared to open up recorded broadcasting output in Wales. This should aim to promote Welsh companies that know how to make content available, either with public sector funding or through the market.
- 3 As Chapter 4 shows, *the website of the National Assembly for Wales is one of the richest governmental websites in the world.* The organisation and presentation of information on the site, however, are now in need of urgent improvement, in order to help all Welsh citizens make the best use of such a valuable resource.
- 4 Chapter 4 also argues *the need to build on best practice in the provision by local authorities of online information and interactive services.* Further encouragement and assistance from the Welsh Assembly Government is required to enable local authorities to give a fuller and more consistent online service, possibly including a national citizen's smart card.
- 5 Working across the boundaries of public organisations can often result in innovative web-based services. Chapter 4 gave examples in the areas of traffic management, procurement and geographical information systems. *More cross-sector partnerships are needed to allow such services to evolve.*
- 6 As Chapter 5 shows, *digitisation*, the translation of analogue originals into electronic form, is an area where Wales can claim to be at the forefront of development. The challenge now is to migrate from small and medium-sized ventures to larger, transformational, high-impact programmes. The Welsh Assembly Government could stimulate the production of such programmes, for example a 'Digital Library of Wales' or a 'Digital Welsh Newspaper Archive'.
- 7 Chapter 5 also argues that Wales must ensure that the public enjoys *free access to paid-for online information*, as it does now to paid-for printed information. Funding is needed to negotiate truly national public licences to commercial online content.

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- 8 Much more effort is required to *support and promote the Welsh language in the online universe*, where English is even more dominant than in the 'real' world. Chapter 5 advocates that a critical mass should be assembled of Welsh language material available on the Web, especially for educational uses.
- 9 Despite the large amount of work in Wales being carried out on what might loosely be termed 'e-learning', as described in Chapter 6, there is currently comparatively little activity in the area of *creating or adapting learning material specific to Welsh needs*. In particular, government agencies should be stimulating the production of more online learning resources to support the Curriculum Cymreig.
- 10 The Web is a natural and increasingly popular medium for *local and community groups* of all kinds. Evidence described in Chapter 6 suggests that many of them would benefit from initial technical and organisational support.
- 11 Continued and enhanced support is needed for *Welsh businesses*, including those outside Objective One areas. They need to make the best use of online technologies, now that the role of the internet in promoting and supporting firms is clearer and more realistic than it was at the time of the 'dot com' boom. In particular, firms need information sources as well as business advice (Chapter 7).
- 12 The way Wales appears to the online world beyond its borders is fragmentary and inchoate. Chapter 8 makes a case for bringing together the overseas-facing elements of many Welsh bodies in order to *create an 'online embassy' for Wales on the Web*.

The Welsh Assembly Government will play a critical role in all or nearly all of these proposals. However, as befits a medium that has not yet lost the egalitarian and communitarian ethos that gave it birth, by its nature the modern internet is hospitable to collective and cooperative action by all kinds of individuals and organisations. With its rich social texture and strong civil society Wales is in as good a position as any country to use these powerful tools for the benefit of its people.

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