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# **CABLE & WIRELESS - Past, Present and Future,**

## **The Telecom Giant Awakens**

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### Authors' Biographies

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**Maria E. Burke** is a Senior Lecturer at the Department of Information and Communications, Manchester Metropolitan University, UK where she is Deputy Course Leader for the undergraduate programme. She is primarily responsible for business information and in this regard has published journal articles and presented papers at many national and international conferences. In addition to her MBA she holds a first degree in Library and Information Studies and a Diploma in Management Studies. She is an Associate of the Library Association and has served as Honorary Secretary of the Library Association's national Personnel, Training and Education Committee.

# **CABLE & WIRELESS - Past, Present and Future: The Telecom Giant Awakens.**

## **ABSTRACT**

**Presents a view of the UK telecommunications company Cable & Wireless plc, past, present and future. The company has had a successful international history for over 125 years. Describes their existing global business with subsidiaries in over 50 countries and links with many overseas governments and major companies. Discusses the development of communications from copper cables transmitting Morse code, to modern fibre optic strands using laser light; the introduction of satellite and digital technology, computers and the Internet. Debates the convergence and possible future combinations of these technologies in a multi-media communications revolution. Discusses the precedence set in the early 20th century with mergers of cable and radio companies, and the possibility of similar mergers in the future between cable, satellite, computer and media businesses. C & W plc are already involved with Microsoft and BSkyB in areas such as Web TV, set-top boxes, video-on-demand, and digitisation.**

## **INTRODUCTION**

Cable & Wireless plc (C & W) is a long established UK company and a global market leader with group headquarters in London. The company is a global market leader and in particular is playing an important part in the deregulated and constantly evolving UK telecommunications industry - one of the fastest growing and most interesting in the world. Of particular topical interest is the launch in 1997 of Cable & Wireless Communications plc (CWC), a merger of three cable companies, which challenges British Telecom (BT) in exploiting the opportunities for growth in the United Kingdom's data and communications markets. This, it is hoped, will revitalise the stagnant cable television arena and develop services such as the Internet via cable.

This paper will examine Cable & Wireless as a key player in telecommunications during the last century and upto the present day. It is intended to describe briefly the history of the telecommunications industry in general and the part played by C & W since its inception in the Victorian era of the mid 1800s. The paper will also describe the company's international business interests in such areas as deep sea cabling, mobile telephones and satellite technology, with partners and subsidiaries in such countries as China and Hong Kong, Russia, Australia, the Caribbean and US. In addition the company's financial position, partnerships and recent mergers will be discussed. It is intended to describe the development of cable technology from the original copper wires to the present glass fibre optic cables using lasers to carry massive amounts of information. These have helped to revolutionise the industry in conjunction with computer and satellite technology, with the Internet playing a crucial role. The paper aims also to look at new developments, such as links with BSkyB and Microsoft, which involve Cable & Wireless in the rapidly changing and competitive digital and multi-media markets.

## **HISTORY OF THE TELECOMMUNICATIONS INDUSTRY**

Much of the early telecommunications industry was developed in the United Kingdom. In 1837 Cooke and Wheatstone, the inventors of the electric telegraph, used electric currents powered by batteries to send messages along wires, originally sited along the newly developing railway lines. The invention by the American Samuel Morse, of a buzzer to send a coded language of dots and dashes, enhanced the speed of the system enormously. The use of gutta-percha, a form of rubber produced in the Far East, to cover the copper cables or wires, enabled these to be laid on the bottom of oceans to carry electric telegraph signals along great distances.

### **Victorian Entrepreneurs - Steamships, Copper Cables and Radio Waves**

John Pender, a Manchester cotton merchant trading with India, first invested in the Anglo Irish Magnetic Telegraph Company in 1852, only two years after the very first submarine cable had been laid between England and France. In 1864 Pender formed a cable manufacturing company Telcon (Telegraph Construction and Maintenance Company), and in 1872 founded the Eastern Telegraph Company, eventually laying both submarine and overland cables to Ireland, France, India, China, Hong Kong, Gibraltar, Malta, North Africa, South and North America and Australia. This was the company which after many mergers eventually became Cable & Wireless plc.

John Pender's cable company Telcon provided the cable used in laying the first transatlantic cable in 1866. This feat exemplified the Victorian entrepreneurial spirit by using the "Great Eastern", a giant iron steamship designed in the UK by Isambard Kingdom Brunel, which was at the time the only ship strong enough to handle the heavy copper cable. John Pender was a successful businessman and Liberal Member of Parliament for Totnes, until his death aged 80 in 1896.

In the meantime, Alexander Graham Bell a naturalised American born in Scotland, had patented voice telephony in 1876. Guglielmo Marconi, an Italian working in England, had developed long-distance wireless communication using radio waves, and in 1901 succeeded in sending a radio signal from Cornwall UK, to Newfoundland, Canada. A major development occurred in 1929 when, after years of competition, a merger was arranged with Marconi, creating the combined radio and cable company Cable & Wireless Ltd. Thus voice telephony and radio communication was added to Morse code telegrams or "cables"; and soon pictures also were transmitted over the "wires", transforming international reporting and information services for ever. **(1)**

### **Museum of Submarine Telegraphy and Staff College**

A site at Porthcurno, Cornwall, previously the world's largest cable station and situated at the most southwesterly point in England, is soon to open as the Museum of Submarine Telegraphy, in collaboration with the UK National Trust and the Heritage Lottery Fund. Porthcurno began life as a telegraph station in 1870 with the opening of first communications link between Great Britain and Bombay. By the early years of the 20th century the cable station was the world's largest with long-distance telegraph cables linking Great Britain with the British Empire and the rest of the world.

The Company has long been committed to staff training and since 1950 has run the Cable & Wireless Engineering College originally based at Porthcurno and now operating in a new purpose-built college in Coventry, UK, training telecom engineers from around the world.

## **GLOBAL BUSINESS AND INTERNATIONAL INTERESTS**

Cable & Wireless Headquarters in London spearheads a large group of companies operating in many countries world-wide. The Company prides itself on its unrivalled experience and expertise as the only telecommunications company that has evolved on a global basis. Unlike its competitors who may have a presence in other countries, C & W already has operations in over 50 countries and a presence in more than 70. The Cable & Wireless group owns a twelfth of the world's international submarine cable capacity, and over the years has installed cable under the world's oceans using the group's large fleet of cablesheets and subsea vehicles. They are the fourth largest carrier of international telephony and data traffic and are involved in the mobile telephone business in more than 30 countries. Globally the Company operates by land, sea and satellite. Principal activities are the provision of business and domestic telecommunication services for telephone, facsimile, telex, internet and data transmission using the latest fixed line and mobile technology.

The Group has subsidiary interests in countries from Anguilla to the Yemen. Some of the largest of these being Hong Kong Telecom Ltd.; Jamaica Telecom Ltd.; and Cable & Wireless (North America) Inc. There are also substantial interests in Australia, Israel, Japan, Pakistan, and recently in China and the former Soviet Republics. Cable & Wireless as a company developed with the approval and co-operation of governments, initially within the British Empire and Commonwealth, and the company has continued this tradition in the 20 years since privatisation.

**(2)**

### **Nationalisation and Privatisation**

In 1947 C & W was nationalised by the postwar Labour government and the shares, assets and staff transferred to the UK General Post Office. At the time the Company was the largest single international telegraphy enterprise in the world, operating throughout the British Colonies, with 186,000 miles of submarine cable converging on the telegraph station in Cornwall. By 1956 electric telegraphy was superseded and coaxial cable voice transmission was created across the Atlantic by Cable and Wireless Ltd in conjunction with the the US telecom giant AT&T.

By 1972 C & W's largest operation was in Hong Kong and the Company specialised in providing cabling and telephony equipment whilst also operating the services in joint ventures with governments around the world. In 1979 the new UK Conservative government privatised British Telecom. By 1985 Cable & Wireless itself had been fully privatised and was on its way to developing a wider product base which later included founding Mercury Communications Ltd to challenge British Telecom (BT) in the deregulated UK telephone market.

Cable & Wireless continues its traditional practice of linking with governments to develop telecommunication services, and has recently been invited by the Chinese government to set up a representative office in Beijing which will re-establish the historic link the company had with China. The Company is also involved in providing services in Finland, Russia and the Baltic States and recently completed the Nordic Baltic Restoration Ring, thus ensuring that Latvia, Sweden, Finland and Estonia have alternative traffic routes to each other should a link fail.

## **Global Digital Highway**

One of the Company's main stated objectives is the completion of the "global digital highway", linking the centres of the world economy through fibre optic cables linking the USA, Europe, Japan and many other countries. C&W also provides a customised network for its customers through its Global Managed Data Services (GMDS). Since 1995 the Company has been involved in developing a global Internet service, initially in the USA and Hong Kong, and now using its linked international operations to create the Cable & Wireless Internet Exchange (CWIX), with access points in the USA, Asia, Australia, Europe, the Caribbean, and the Middle East. **(3)**

## **Satellites**

Created only 50 years ago in the fertile mind of Arthur C Clarke, **(4)** satellites are now a reality and are vital to global communication, and for communication within vast countries such as China and Australia. Information is increasingly being transmitted around the world using a varied mix of technologies. A telephone call may begin in a isolated cottage, routed locally through copper cables then sent via optical fibres to a microwave radio transmitter, on to a communication satellite, from whence it is received by another telephone across the oceans thousands of miles away by the use of another similar mix of technologies.

In 1990 Cable & Wireless plc, recognising the value of being involved in the latest entrant onto the communications scene, helped to fund AsiaSat 1, the first part-privately financed domestic telecommunications satellite. Other shareholders included the Chinese government and the Hong Kong company Hutchison Whampoa Ltd. This has since been joined by AsiaSat 2, to provide a 'footprint' covering one third of the world's population, from the China Sea to the Mediterranean. AsiaSat 3 was launched in late 1997 and should provide considerably more capacity. C & W at present owns almost 30% of the shares in AsiaSat. Satellite technology in Asia and Australasia has helped Cable & Wireless to set up an in-flight telephone service, FlightLink, which they hope to extend to Europe shortly.

## **DEVELOPMENT OF CABLE TECHNOLOGY**

Having described the growth of telecommunications in general and Cable & Wireless in particular, perhaps it is relevant to outline the role cables play in the industry. It is interesting to note that even after the advent of satellites, cables are still developing in dynamic and innovative directions. Cables have been transformed from the early heavy copper cored variety used by the Victorians, into one of the most exciting new technologies.

Copper wires have a narrow bandwidth and can carry only limited amounts of information slowly. The telephone call capacity of the last copper cable to be laid across the Atlantic was just 4,200, compared to the new cables which can offer truly phenomenal capacity, for example carrying 300,000 simultaneous telephone calls. These cables consist of incredibly transparent optical fibres which use laser light to carry huge amounts of digital data transmitted in compressed form at the speed of light.

The investment needed to install these broadband capacity cables is already happening in many countries, and Cable & Wireless Communications claim that they are the first company to provide such a comprehensive range over a single network in the United Kingdom.

Cable & Wireless plc announced in October 97 that it plans to spend \$500 million laying a new Atlantic cable 11,900km long, which will be used in part to cater for the explosive growth of the Internet and also to increase capacity for general telephony. A study carried out recently for the Company concluded that demand for new capacity on transatlantic cables had risen by 600 % in the past year, thanks in part to increased Internet usage. At the same time, Cable & Wireless Marine started laying FLAG (Fibre-optic Link Around the Globe), which, when complete, will be the world's longest submarine cable, stretching more than 28,000km from Cornwall to Japan via Spain, Italy, Egypt, India, Thailand, Hong Kong and Korea, with side connections to the United Arab Emirates, Malaysia and China.

## **FINANCIAL POSITION AND MERGERS**

Having looked at the Company and the industry in which it is involved, the financial health of the company must also be examined.

Over the past five years the value of the Company has increased from approximately £7 billion to over £11 billion and generated over £2 billion in cash during 1996/97. Total turnover of £7,002 million is up 13%, and includes the Group's share of turnover from associates amounting to £952 million. Turnover from the associates is up 45% . Pre-tax profits of £1,418 million were up 12% before exceptional items. Revenue and earnings per employee are among the highest in the industry. Cable & Wireless plc is a cash rich company, with greatly increased revenues and earnings and dividends growing at double-digit annual rates. **(3)**

Crucial to their present success appears to be the appointment in 1996 of the US telecoms veteran Mr Richard H Brown as Chief Executive. Previously President of H & R Block, Inc., the parent company of CompuServe, Mr Brown has been decisive in encouraging the company's growth and transformation, leading in the setting up of the Cable & Wireless Communications merger, and pulling out of an unsuccessful venture with the German mobile company Veba.

Other factors in their favour are lucrative partnerships with foreign companies such as Optus Communications Pty Ltd in Australia, Bouygues Telecom SA of France, and the 50% partnership with Schumberger in Omnes, the US oil industry telecom company. (ref Annual Report). Tax relief from the UK cable laying operations, and the UK deregulation of the telecommunications market have also been helpful.

Cable and Wireless announced at the end of 1997 that they plan to sell £1billion worth of minority stakes in a corporate spring cleaning exercise. The group, which has small positions in about 50 companies, has long been viewed by some business observers more as an investment trust than an integrated group, and this strategic tidying up will enable the company to concentrate on developing as a hands-on key player in the world telecom market.

As a company with wide global presence C & W may experience some risks from the effects of capricious local market forces, such as those affecting Far Eastern stock markets in recent months. Particular account must be taken of the uncertain future of Hong Kong following the colony's handover in mid 1997 from the United Kingdom to China.

## **Developing a Visible Brand Image**

In the past, Cable & Wireless has suffered from lack of exposure because its organic growth over the years has hidden the corporate name under many different names and trademarks. 'Cable & Wireless' is not as visible a presence around the world as say 'Microsoft' or 'Mitsubishi'. The Chairman Sir N Brian Smith, knighted in the 1998 New Year Honours List, made it clear at the 1997 AGM that this is changing by adding the name Cable & Wireless to many of their subsidiary companies worldwide, and in particular with a £50 million marketing campaign in the United Kingdom begun in 1997 to promote the newly formed Cable & Wireless Communications company.

## **Merger of UK Cable Companies**

A major development in UK telecommunications occurred in April 1997 with the launch of a new company formed by combining the original C & W telephone subsidiary Mercury Communications with Nynex (UK), BellCablemedia (UK), and Videotron. The new company is called Cable & Wireless Communications (CWC), and now claims to be the UK's largest cable company and one of the few telephone companies in a position to mount a challenge to British Telecom. Cable and Wireless plc currently own 52% of CWC. (5)

This is reported to be one of the most complex mergers in UK business history, and was planned in order to revitalise the stagnant cable television market. In addition it is hoped to exploit the perceived potential demands for data services such as the Internet via cable by utilising Cable & Wireless and associated companies' global connections. Both business and domestic customers are being offered a "seamless and affordable service". The new company is valued at about £5 billion and at its inception already had access to 1.1 million telecom customers and 580,000 cable television customers with particular strength in the London and Manchester areas. The Chairman is Dick Brown of C & W, with Graham Wallace, formerly head of Granada Group's restaurant and services division, as Chief Executive. Non-executive directors include Sir Bryan Carsberg, the UK's first telecoms watchdog.

Cable & Wireless are spending £50m on a widespread and colourful marketing campaign in the UK to establish a corporate identity and to market CWC as a major provider of telephony, cable television and the Internet. Earnings and profits are reported to be healthy, and a recent management restructuring has aided efficiency and cost savings. CWC appears to be in a good position to exploit the opportunities in the UK and Europe in new areas such as personal mobile telephones, the Internet, video-on-demand, digital set-top computers, and other applications which will utilize the new technologies in the very near future.

## **Mobile Telephone Venture**

Another subsidiary of Cable & Wireless is the UK cellular mobile telephone company, Mercury One2One, a joint venture with US West, which claims to have added 29 % of net new mobile customers in the past year and have the fastest growth of the four UK mobile groups. At the time of writing the marketing of One2One still has a separate identity from Cable & Wireless. It will be interesting to watch if the corporate image will extend to this area and remove the possible confusion surrounding the Mercury name in the United Kingdom. (6)



## **Partnership with BSkyB**

Continuing the custom of entering into lucrative and innovative partnerships, from early 1998 CWC will enter into a two-year deal with BSkyB, the satellite television company. Customers will be offered the Sky Box Office pay-per-view movies and sport on both analogue and digital platforms. The companies feel that combining their technical and marketing skills will increase consumer confidence in the benefits of new technology, regardless of delivery platform. CWC also intends to provide Internet television as well as home shopping services.

## **Possible Merger with British Telecom**

One perennial question is the question of a merger with British Telecom, negotiations about which were abandoned in 1996. What the UK government Monopolies and Mergers Commission would feel about such a move is debatable, but since BT's disappointment with US Telecoms group, MCI, the attractive synergy of such a merger cannot be entirely discounted. Cable & Wireless Chairman, Sir Brian Smith has made it clear his company has the strength to compete internationally, but has always been keen to discuss alliances with other operators. Partners might include British Telecom, Global One, (owned by Deutsche Telekom), France Telecom, or Sprint of the US. C & W must be an attractive potential partner due to its substantial global assets and strong cash flow.

## **NEW DEVELOPMENTS - INDUSTRIES AND TECHNOLOGIES CONVERGING**

Recent press reports emphasise the speed with which three traditionally separate industries are converging - broadcasting, telecommunications and computing. (7) With the Internet as the main driver the personal computer (PC) is at present acting as the tool which integrates the diverse digital information available. According to Intel, the US computer hardware company, about 90 million PCs will have been sold in 1997, virtually overtaking the sale of television sets. However digital technology and TV set-top computers may change the scene dramatically in the very near future, tipping the balance back in favour of the television set or its descendant. ( REF. Kanellos)

### **Digital Technology Adds Other Dimensions**

Superseding the existing analogue equipment, digital technology uses computer binary numbers 0 and 1, encoded as a series of 'on' or 'off' signals, to transmit extremely rapid sequences and large amounts of information. This when used in conjunction with fibre-optic cables creates the possibility of new seamless services which combine computers, communications and consumer electronics. A heady cocktail of text, images and sound is stored, converted and manipulated speedily and decoded by the personal computer. Current desktop computers and their portable counterparts pack the power of mainframe computers of the 1970's. New equipment is being developed which will enable the user to manipulate the information received for their particular needs. Dynamic interaction will be possible, changing the passive viewer to a participant.

### **TV Set-top computers**

A major new development are the digital "set-top boxes", in fact set-top computers, which can provide a link between the television and the communications network - cable, satellite or terrestrial. They receive and unscramble the digital data to the subscribers television set. Not only providing multiple TV channels and music or

video-on-demand, but can offering Internet, electronic mail and word processing using the television set, without the need for a separate personal computer or a new digital television set, therefore at a reduced cost. **(8)** A deal with Microsoft's WebTV or the Oracle subsidiary Navio Communications is being mooted in a move by Cable & Wireless to provide software for digital set-top boxes in up to 1 million homes by the year 2000.

The results of these new technological developments must be the rapid growth of multi-media entertainment. The development of digital TV and thinner flatter screens may see a change away from the need for a personal computer and a separate TV, towards a new product which will receive and display a variety of multi-media options which will link media, computing and telephony. These screens will give the option to watch television and to simultaneously use another window on the same screen to receive Internet transmissions or transmit e-mail. It should be possible to watch a film or TV programme whilst at the same time keeping up to date with news or sport as it happens. Video or music-on-demand, home banking and shopping, and the sharing of video and digital photography via the cable network to family and friends abroad are just some of the possibilities for the private user.

In the commercial arena PCs are being superseded by Network Computers (NCs). Linked through broadband interactive networks to any other computer in the world, in a far more sophisticated way than we see presently with the World Wide Web, 'Extranets' are being described as the Internet's third wave after 'Intranets'. These can open up parts of the organisation's intranet to outside business partners and customers. They will provide fully-integrated, online capabilities and could offer an extension to telephone or e-mail by providing interactive access for certain users. Industrial manufacturing companies, for example, could offer access to maintenance manuals and service bulletins to approved clients. **(9)**

#### **Broadband Interactive Networks**

Cable & Wireless have experience in installing broadband digital networks with Optus Communications Pty Ltd, the leading Australian telecom company, 49% owned by C & W, and also with their subsidiary Hongkong Telecom. The world's first commercially available interactive multimedia services in a major city will have been available in Hong Kong by the end of 1997 offering full bandwidth information, entertainment and telephony to homes down a single cable. This follows the announcement that the Chinese Government is to grant Hongkong Telecom a licence to provide Video-on-Demand services (VOD). Customers will pay an initial installation fee and a monthly subscription to gain access to over 100 hours of programmes and films. Music on demand, including karaoke and music videos, will be available at low cost, while access to home shopping, which already includes offerings from supermarkets and children's bookstores, will be free. **(10)**

#### **United States Overtaken**

Unusually it appears that the United States are lagging behind due to their earlier and therefore older telecommunications network technology. Microsoft's Chairman, Bill Gates, is known to have been pressing the US cable industry to make the large investments in digital and cable technology and TV set-top boxes, and to develop high-capacity broadband networks to exploit the capacity for widespread Internet use and the other emerging technologies. Gates, in the 1996 revised edition of his book, "The Road Ahead", discusses the importance of this digitisation of information. The development of broadband transportation of signals at the speed

of light through fibre optic cables will enable unimaginably large amounts of information to be processed. He predicts that these advances, together with improvements in computer chip and hard disk storage, will lead to an exponential growth in communications and information technology, the start of which we have only just begun to see during the late 1990s. (11)

## CONCLUSION

The rapid advance and growth of digital technology in the 21st century will create a communications revolution comparable to the technological innovations of the 19th century industrial revolution, and be as important as electricity and the internal combustion engine in changing our world and the societies in which we live. The competition however is fierce and likely to become more so as the information revolution takes place worldwide. A merging of computer, satellite and cable companies is a possible scenario for the future, just as earlier in the century telegraph and radio companies merged to create the Cable & Wireless companies.

Cable & Wireless plc and their subsidiaries appear to be in a strong position to take advantage of the convergence of the telecommunications, computing and media industries; Chief Executive Dick Brown states his is a "growth company in a growth market in a growth industry". From being one of the industry's best kept secrets the Company may be evolving from a hidden giant into one of the most powerful and visible global telecommunication companies, poised to take the technology well into the 21st century.

## CABLE & WIRELESS PLC

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