

---

# THE INTERNET

---

## **Berg New Media Series**

ISSN 1753-724X

Edited by Leslie Haddon, Department of Media and Communications, London School of Economics and Political Sciences, and Nicola Green, Department of Sociology, University of Surrey

The series aims to provide students with historically-grounded and theoretically-informed studies of significant aspects of new media. The volumes take a broad approach to the subject, assessing how technologies and issues related to them are located in their social, cultural, political and economic contexts.

Current titles in this series include:

*Mobile Communications: An Introduction to New Media*

*The Internet: An Introduction to New Media*

Forthcoming titles in this series will include:

*Games and Gaming: An Introduction to New Media*

*Digital Broadcasting: An Introduction to New Media*

*Digital Arts: An Introduction to New Media*

---

# THE INTERNET

An Introduction to New Media

Lelia Green

 **BERG**  
Oxford • New York

---

English edition  
First published in 2010 by  
**Berg**  
Editorial offices:  
First Floor, Angel Court, 81 St Clements Street, Oxford OX4 1AW, UK  
175 Fifth Avenue, New York, NY 10010, USA

© Lelia Green 2010

All rights reserved.  
No part of this publication may be reproduced in any form  
or by any means without the written permission of  
Berg.

Berg is the imprint of Oxford International Publishers Ltd.

### **Library of Congress Cataloging-in-Publication Data**

Green, Lelia, 1956-

The internet : an introduction to new media / Lelia Green.

p. cm. — (Berg new media series)

Includes bibliographical references and index.

ISBN 978-1-84788-299-8 (pbk.) — ISBN 978-1-84788-298-1 (cloth)

1. Internet—Social aspects. 2. Computers and civilization. 3. Information society. I. Title.  
HM851.G744 2010  
302.23'1—dc22

2010004767

### **British Library Cataloguing-in-Publication Data**

A catalogue record for this book is available from the British Library.

ISBN 978 1 84520 298 1 (Cloth)

978 1 84520 299 8 (Paper)

e-ISBN 978 1 84520 769 6 (institutional)

978 1 84520 798 9 (individual)

Typeset by JS Typesetting Ltd, Porthcawl, Mid Glamorgan  
Printed in the UK by the MPG Books Group

**[www.bergpublishers.com](http://www.bergpublishers.com)**

---

For Linda Jaunzems who helps me keep all the balls in the air

---

# CONTENTS

Illustrations	ix
Acknowledgements	xi
Permissions	xiii
<b>1</b> Introduction	1
<b>2</b> History	19
<b>3</b> Policy	43
<b>4</b> The Digital Divide	65
<b>5</b> Customising the Internet	79
<b>6</b> Regulation and Legislation: Pornography and Cyber Stalking	99
<b>7</b> The Public Sphere	119
<b>8</b> Community	139
<b>9</b> Internet in Family Life	159
<b>10</b> Conclusion	177
Annotated Guide to Further Reading	191
Exercises and Questions	197
Abbreviations and Glossary	205
References	217
Index	239

---

# ILLUSTRATIONS

## TABLES

4.1	Internet users as a percentage of a territory's population, for 30 June 2009	66
4.2	Percentage of world's internet users, and percentage of a country's citizens using the internet, for the top five countries in terms of numbers of users, 30 June 2009	67
4.3	Top ten countries worldwide for fixed broadband subscribers, first quarter 2009	68
8.1	Lines of conflict in the HeartNet case study	156
9.1	Opportunities and risks of children's online activities	163

## DIAGRAMS

2.1	A hub and spoke system with sub-hubs	25
2.2	A distributed network	25
2.3	How IMPs and TIPs link to each other, and to hosts	30
2.4	A schematic representation of TCP/IP	33

## FIGURES

3.1	An indicative framework for regulation	44
5.1	An outline of Jeanneney's argument against the Google Books project	86
6.1	Morgan's metaphors for organisations	102
7.1	Brun's preconditions for the creation of an effective wiki	132

---

# ACKNOWLEDGEMENTS

I am extremely grateful to my employer, Edith Cowan University, who allocated the study leave which allowed this book to be written, and particularly to Professors Arshad Omari, Clive Barstow, Brenda Cherednichenko and Julie Warn who approved and managed my absence.

Professor Brian Shoesmith, and my PhD supervisors Professors Tom O'Regan and Bob Hodge, first encouraged my interest in this area. Dr Ann Willis, Dr Danielle Brady and Julie Dare have all supported and developed the teaching of units in the discipline, and I've learned a lot from working with them. A number of Australian Research Council (ARC)-funded projects have informed the research communicated in these pages and I acknowledge the ARC's support, and that of my co-Chief Investigators including Professors Robyn Quin and Mark Balnaves, Associate Professor Trevor Cullen, Dr Debbie Rodan, Dr Leesa Costello, Dr David Leith and industry partners Maurice Swanson, Steve Furmedge and Vanessa Bradshaw. Dr Anne Aly, Jack Seddon, Donell Holloway, Christine Teague and Lynsey Uridge were all involved as Research Assistants or PhD candidates with the ARC research. My co-supervisors, postgraduate students and research associates contribute a continuous stream of relevant, fascinating, information and opinion so I also mention Associate Professor Maggi Phillips, Dr Julie Robson, Dr Teresa Maiolo, Dr Kay Hearn, Dr Uta Daur, Julie Johnson, Jason Noble, Robyn Torney, Christopher Phillips, Alex Bradley, Christina Ballico and Catherine Gomersall.

Warm thanks to Dr Judy Clayden for the index. Judy was also generous in sharing a librarian's approach to finding quality information on the web, and helpfully critiqued my punctuation. Ken Gasmier was more patient than I deserve as my specialist librarian. Jude Elund crafted the diagrams in the book, and she and Sharron Snader also provided other help. Dave Batley, proving that Wikipedia discussion lists do work, reviewed them from the perspective of a computer programmer and theoretical physicist, although any errors remain my own.

I am fortunate to be involved as a joint Chief Investigator in the ARC Centre of Excellence for Creative Industries and Innovation. This has brought me into contact with a number of exceptional academics whose work is relevant here, including:



---

distinguished Professors John Hartley and Stuart Cunningham; Professors Jock Given, Gerard Goggin, Greg Hearn, Catharine Lumby and Alan McKee, Associate Professor Axel Bruns, Dr Jean Burgess and Dr Kate Crawford. My international colleagues on the *Asia-Pacific Digital Review*, but especially Professor Claude-Yves Charron, and volume editors Chin Saik Yoon, Professor Felix Librero, Shahid Akhtar and Associate Professor Patricia Arinto have, since 2003, provided me with an illuminating introduction to the digital divide as it operates in most areas of the globe, for the majority of the world's population.

As a member of the International Advisory Panel of the EU Kids Online project, 2006–9, I was among the first to see the exciting outputs of that 21-nation research network. I'm grateful to Professor Sonia Livingstone and Dr Leslie Haddon for the opportunity to take part. Dr Haddon is also one of the two editors of the Berg New Media series, with Dr Nicola Green, and was particularly generous in his support and unstinting in his feedback: thank you Leslie. Commissioning Editor Tristan Palmer was wonderfully flexible in calling in my deadlines and Emily Medcalf intuited a fabulous cover. I am grateful to them, to the Berg Production staff, and to the anonymous reviewers whose comments both challenged and inspired me. Linda Jaunzems, like Dr Haddon, was indispensable to the eventual completion of this book, offering support, assistance and one-stop expertise. This volume is dedicated to her, and to her family.

My life is sustained by a network of friends, many of whom have already been mentioned and others of whom include: Claire Andrews, Jenny Benjamin, Jeanette Connolly, Carmel Elwell, Professor Nadine Henley, Dr Larissa Hjorth, Dr Kara Jacob, Heather McLean, Joan Smith, Emily Walker and Susan Young.

My mother, also Lelia Green, has fuelled this work with food, drink and love and by creating a refuge from other demands to allow me time to commit myself to writing. My sister, Ginny Weston, has supported me throughout this and other journeys. Anna Weston, Mark Weston and Paul Schutz, all of whom have an important place in my life, have offered feedback from the 'students' viewpoint'.

My final acknowledgement must go to my two wonderful children, Carmen and Ben Guinery. They grew up digital and generously shared the excitement of so doing, together with some details of the journey. They tolerated the progress of this book, and others of my consuming passions, with open-minded good humour and large bowls of vegan pasta. They tell me this is an Oscar acceptance speech. I would be lost without them. Thanks, kids.

---

# PERMISSIONS

I am grateful to the following authors and publishers for permission to reproduce their work. For Table 4.1 and Table 4.2, Sr Enrique De Argaez, Editor and Webmaster, *Miniwatt Marketing Group and World Internet Stats*, published June 30 2009, <http://www.internetworldstats.com>; reproduced with permission from World Internet Stats. For Table 4.3, Louise Budde of Paul Budde Communication Pty Ltd, 2009, trading as BuddeComm, <http://www.budde.com.au>, regarding 2009 data from Point Topic on behalf of the Broadband Forum, based on self-reporting by carriers and defining broadband as 144Kb/s; reproduced with permission from Paul Budde Communication Pty Ltd. For Figure 5.1, Jean-Nöel Jeanneney, author of *Google and the Myth of Universal Knowledge: A View from Europe*, 2006, The University of Chicago Press, for permission to create a figure based on Jeanneney's arguments; reproduced with permission from the University of Chicago Press. For Figure 6.1, Gareth Morgan, author of *Images of Organization* (revised edition), 2006, Sage Publications, for permission to create a figure based on the Contents pages of Morgan's book; reproduced with permission from Sage Publications. For Figure 7.1, Axel Bruns, author of *Blogs, Wikipedia, Second Life and Beyond: From Production to Producers*, 2008, Peter Lang Publishing, for permission to create a figure based on pp. 19–20 of Bruns's book; reproduced with permission from Peter Lang Publishing. For Figure 9.1, Uwe Hasebrink, Sonia Livingstone, Leslie Haddon and Kjartan Ólafsson, editors of *Comparing Children's Online Opportunities and Risks Across Europe: Cross-National Comparisons for EU Kids Online* (2nd edition), 2009, the London School of Economics and EU Kids Online for permission to adapt two figures on pp. 8–9 of the second edition of Deliverable D3.2 of the EU Kids Online project; reproduced with permission from EU Kids Online, the London School of Economics and Political Science, London.

---

# I INTRODUCTION

This book explores the internet as an introduction to new media. It does so by looking backwards to examine the history of the internet, and by looking forward to its emerging future. It draws upon current evidence from around the world to illustrate different aspects of internet use as these reflect a range of social, political and economic circumstances. It uses case studies, many based on new research, some of it unpublished, to reveal important aspects of the internet for comment and analysis. While the internet is too big a subject for any book to provide a complete review of its past, present and future, insights from case studies provide a series of snapshots which taken together create a broad picture of the contexts of internet use and illustrate what is happening, how and why.

*The Internet (as) An Introduction to New Media* examines the internet as itself, but is also a way of examining our everyday lives through our uses of the internet, and linking the internet with aspects of other new media. Many changes wrought by new media swiftly make their way into popular culture, both reflecting and building the excitement about new possibilities. Old media – the press, radio and television – discuss the innovations, and new media become the central element of novels and films. One example of this, within a popular culture context, would be the film *You've got mail* (Ephron 1998).

The type of context chosen is itself important when considering the internet, since a historical context will provide different information, and raise different questions, compared with a social context, for example. The diverse range of case studies covered in this book makes a number of different contexts visible. These include the way that the internet is used in everyday western life, as well as its technological, political, economic and global contexts. What becomes clear is that the internet, like other new media, is a site of constant reinvention. It has energised creativity, collaboration and novel models for commercialisation. At the same time that the internet makes possible new ways for us to seek information and relate to others, it also offers another technological medium through which individuals and societies can express themselves and their priorities.

In many western countries, the internet is pervasive. That is to say, almost everybody who wants to do so can access the internet (but see Chapter 4). This access will not necessarily always be in the time and place and circumstances that a person chooses, but there are comparatively few people who lack the skills and support to use an internet terminal in a library. It is important to remember, however, that the situation is very different in most parts of the world where the internet is still generally restricted to the richer, better educated, younger, males in the community. This also used to be the pattern of access in the West up until the early 1990s. The huge growth in take-up of the internet has both raised interest and created anxiety, a pattern common to each new medium as it is taken up and diffuses through society. When printing first started, and when telephones, radio, the cinema and television all became integrated within everyday life, the lawmakers and regulators of the day were concerned. Even while people are excited by new possibilities and potentials, as we will see later in the book, they may simultaneously be worried about risks, dangers, control, and relative advantages and disadvantages. For these reasons, new media are often associated with fear and panic, and a concern that the technology is 'too big to regulate'.

Given the numerous ways in which a book about the internet could be structured, this chapter explains why this book has been approached as it has. The explanation includes not only why there is a focus upon case studies, but also the logic behind the structure of the book. First, we start off with consideration of the internet as an introduction to new media, including a definition of the internet, in order to understand what we are focusing upon in this volume of the Berg 'new media' series.

The digital is a critical component of new media, and characteristics of digital goods are compared and contrasted with physical goods. The chapter goes on to consider how societies choose to use technology and explains the 'social shaping of technology' approach, which is the major conceptual framework used. This approach is complemented by the theory that technologies are 'consumed' by the people who use them and become part of a revised, enlarged conception of that person's sense of self. The benefits of consuming a technology are often communicated through 'social constructions' of that technology, the meanings and understandings about that technology which circulate in the relevant society, while a particular strand within that approach – Actor-Network Theory – positions people as key actors in networks which form integrated wholes related to technology use.

The internet can be explored using a wide range of theoretical frameworks and while the social shaping approach is not the only method used in this book, it is the main one. To illustrate the ways in which a particular framework makes some research and some evidence more or less important, the discussion of the social shaping of technology is developed in Chapter 2 through the use of a feminist

---

approach. Partly as a way of considering the predominantly male history of the early internet, we examine Wajcman's (1991) argument that technology is a 'masculine culture'. This is contrasted with the requirements of a more traditional historical analysis, such as that which characterises most of the material in Chapter 2, which positions key inventors and industrialists as the 'heroes' of innovation.

Empirical research forms a vital part of this book and, consequently, there is a brief introduction to case study research methods relevant to a social shaping framework. This allows readers to understand the ways in which case studies draw upon and showcase relevant evidence concerning people's uses of the internet. This introduction concludes with a description of the chapters that follow and suggests ways in which readers might like to use the book, since it has been designed to be read in bits and chunks, as well as a single narrative. A dot-point summary draws the threads of the chapter together, and sets the scene for the chapters to come.

## THE INTERNET AS AN INTRODUCTION TO NEW MEDIA

The term 'the internet' is used here to cover:

- the interconnected and networked technological infrastructure that supports the World Wide Web;
- proprietary sites linked into the web (such as that maintained by The Louvre, the world-famous French museum);
- open and closed source software and architecture (e.g. Firefox, Wikipedia, Internet Explorer, Google);
- computer and everyday languages in terms of making the internet accessible to people of many cultures and literacies;
- email, chat and instant messaging (e.g. AOL, MSN);
- blogs and social networking sites (e.g. Facebook);
- games, communities, environments and worlds (e.g. World of Warcraft, Second Life);
- the many ways in which digitally mediated communication has become domesticated and pervasive within the everyday.

Not all of these aspects of the internet are given equal attention in this book since many areas, such as computer games and digital arts, are covered in companion books in the series. However, an inclusive notion of the internet, as indicated above, provides the blueprint for this volume. While it is expected that readers – not only students and educators but also researchers and policy makers – will be familiar with

using aspects of the internet, this book encourages a critical examination of such individual experiences and places them into a context which includes the past and the future of the internet; as well as the technical and social implications of internet use.

A new media approach to studying the internet recognises that digital technologies and environments are convergent. When technologies converge they take on and share the capacities and characteristics of other technologies alongside the core technology. This contrasts with everyday goods from pre-digital life, which had separate functions and separate technical characteristics. In the early days, television could not be used as a radio; a telephone could not work as a camera. Once information is digitised, however, it can be handled in consistent and effective ways which allow a blurring of functions and the emergence of hybrid technologies. For example, early computers had started as number crunchers, but became word processors as well as calculators. Increasingly, new media technologies can perform more functions in more varied contexts; such as accessing the internet from a mobile phone to post digital pictures to a social network profile, even as the event recorded is still happening.

### **Reflection: Convergent technologies**

Can you think of a technology in your life that used to be two or more separate technologies?  
What advantages do you find to having a number of functions combined in the same technology?  
Are there disadvantages?

In addition to recognising convergence in the functions of end-user technologies, new media perspectives acknowledge that formerly distinct industries also converge, partly to position themselves strongly as competitors in emerging markets. The internet itself is sometimes positioned against a background of 'old media': print culture, which started in about 1439 with Johannes Gutenberg's invention of printing using movable type; and broadcast culture, which is a little over a century old. While old media do offer starting points for understanding the internet and the World Wide Web (WWW), these perspectives are more relevant to 'Web 1.0' than they are to 'Web 2.0', or than they will be for 'Web 3.0'. It might be worth noting here that the internet is not the WWW, although it provides the technological structure which makes the WWW possible. Web 1.0 refers to a stage in its evolution

---

when the internet could be used to access information and relatively static web pages, while Web 2.0 recognises that online environment now offers opportunities for social connection and interactivity for example, through blogs, wikis and social networking systems and technologies. For people in western countries, Web 2.0 has become increasingly prominent since the new millennium, although the organising principles of both print and broadcasting culture dominate many aspects of corporate content production.

As well as including aspects of both print and broadcasting culture, the internet marks a major development in the fields of information technology (IT) and telecommunications. One of the reasons for this huge growth in hybrid and convergent products, services and markets has been the impact of the digitisation of information in comparison to older analogue broadcasting technologies. When audio, video, data, graphic and multimedia applications are all designed to process digital information then those audio, video and data services can also be manipulated, stored and communicated via computers and telecommunications. The underlying digital structure of these different applications allows the outputs to be delivered through a variety of channels including cable, satellite, microwave and other telecommunications systems, with the platform of delivery being less relevant in terms of access and use than the bandwidth capacity of the delivery channel. New media are digital media, they tend to be information and communication technologies (ICTs) and they are hybrid to their core. The relevance of their digital nature lies in differences between the characteristics of digital goods and services, and material goods.

## **HOW DIGITAL INFORMATION DIFFERS FROM PHYSICAL GOODS**

In the physical world, if a package is lost in a journey between London and New York, there is a problem. If it cannot be found, it may have to be replaced. In the digital world, if a packet of information is lost it will be re-sent, automatically, without anyone being aware that the packet has gone 'missing'. This is partly because digital information is kept by the source at the same time that it is sent to the receiver. In the digital world you can have your cake, and eat it too! Four characteristics of digital information differ dramatically from the characteristics of physical goods, as identified by Japanese futurist and information scientist Yoneji Masuda (1981).

First, information is not consumable: it continues to exist after it has been used, and different people can use the same information multiple times. Second, information is non-transferable: this means that the information can be passed onto

others and yet still be retained by the original user. Third, information is indivisible. Every fourth letter-space-punctuation in this book, for example, would fail to communicate a quarter of the meaning. Fourth, information is accumulative. As information is used, for example, entered into a database and then processed using statistics software such as SPSS, so it becomes more relevant and accessible for a range of purposes. Usually the processing information makes it more useful: it adds value. This is because 'accumulation of goods is by their non-use, but information cannot be consumed or transferred' (Masuda 1981: 77), thus as information is accumulated, so it has greater use; and as it is being used, so more information is accumulated. Masuda adds that the quality of accumulated information is increased through the addition of further high quality information.

This is the opposite of material goods, where consumption equates with destruction. The use of digital technologies to process data magnifies the benefits of these four properties of information. New information can multiply both the value and the amount of existing information through the creation of new knowledge.

### Reflection: How does digital information compare with:

- printed information
- personal knowledge
- material goods?

Are all four characteristics of digital information used in internet communication?

Masuda (1978, cited in Jones 1995: 186) demonstrates that other astonishing things happen when digital information is combined with information technology. He notes that while 'information has always had the property of self-multiplication, computer-communication technology has rapidly increased the speed and quality of self-multiplication because the technology itself has added four more properties to information: (1) concentration, (2) dispersion, (3) circulation, and (4) feedback'. To these four functions we can, following the invention of the WWW, add (5) searchable.

1. Concentration occurs because ICTs store digital information more efficiently than any other means. This results in ICT operators being able to work effectively with multiple data sets using just one piece of technology.



---

It also allows many people simultaneously to access huge databases from remote terminals, e.g. international ATM access to credit card accounts.

2. Dispersal allows information to be exported to many different sites. Together with inconsumability, this capacity of ICT permits information to be incorporated into a variety of data storage systems for multiple uses by many people.
3. The circulation of information provides users with additional choices. Even if information is not downloaded onto a drive (as, for instance, would happen with dispersal), access to that information circulates via emails, web-links, etc.
4. Feedback allows ICTs, via their data protocols, to verify that all the information sent has been safely received and reassembled. If the sending machine does not receive appropriate feedback verification, it automatically re-sends the data: hence the missing packet is replaced before anyone notices it is missing.
5. Searching for data using WWW search engines allows access to constantly multiplying amounts of information, prioritised according to the searcher's key requirements. This aspect of ICTs will be examined closely in Chapter 2's case study of Google.

## THE SOCIAL SHAPING OF TECHNOLOGY

Having established some key features of the digital information handled on the internet, we now move on to examine the main theoretical frameworks drawn upon in later chapters. The social shaping of technology approach to new media studies takes a fundamental pair of questions as its starting point: 'Does technology shape society?', or, 'Does society shape technology?'. Once people have started looking at these questions they find others also emerge: 'How does the shaping process happen?' and 'Is technology neutral?'. These questions and the discussions arising from them provide a starting point for thinking about the internet and other new media. They offer a way of talking about where people experience power and powerlessness in their uses of technology (MacKenzie and Wajcman 1999).

Some people's everyday experience is that technology changes too fast for their comfort. They prefer the old ways of doing things and feel disempowered when asked to carry out their everyday activities online. They resent that bank branches are closed down because more people are using internet banking. They feel disadvantaged when airline companies offer special fares for booking on the web. They can't believe that a smart-phone menu ('Press 1 for ...; Press 2 to ...') offers customer service advantages over the real person who used to answer when they

called a company's office. Such people might feel that the technology itself is behind the changes that make them uncomfortable.

Some commentators construct technology as the power which drives social change, impacting upon society. It is almost as if the scientific rules behind the development and application of technology are more effective and non-negotiable than the social and cultural dynamics that shape the communities and countries in which we live. Since new media technologies conform to the laws of science – of electro-magnetics, engineering, digitisation – this can be interpreted as indicating that technological change is a given, like gravity. There is no point in arguing about whether gravity is good or bad. According to this approach, the only role for society is to adapt itself to the technology, and come to terms with a future that is driven by technological change. Such a perspective sees technology as shaping society. It is called 'technological determinism' because the technology is positioned as the most important element determining people's lives.

Very few theorists these days argue a pure case for technological determinism. Instead, this perspective tends to be aligned with those who argue that certain technologies are inherently bad, and that this contaminates all uses of the technology. Such a perspective can be found in Theodore Roszak's classic criticism of the computer:

No matter how high the promise of that [information] age is pitched, the price we pay for its benefits will never outweigh the costs. The violation of privacy is the loss of freedom. The degradation of electoral politics is the loss of democracy. The creation of the computerised war machine is a direct threat to the survival of our species. It would be some comfort to conclude that these liabilities result from the abuse of computer power. But these are the goals long since selected by those who invented information technology, who have guided it and financed it at every point along the way in its development. The computer is *their* machine; its mystique is *their* validation. (Roszak 1994: 233, original italics)

### Reflection: Is the internet neutral?

Thinking about your own circumstances, at home and in other locations, what rights and opportunities are implied in your use of the internet?

Do you see your internet use as neutral? Why?

Do you see the internet itself as a neutral technology?

What factors are you taking into account?

---

Social determinists agree that technology is an important change agent, but they argue it is not developed outside society but is an expression of priorities and choices that are made within social systems. This perspective is part of an overarching philosophy called Social Constructionism, which argues that social forces construct our understanding of the world and frame how we act within it. When discussing the role of technology, social determinists point to the actions of elites in sponsoring, developing and marketing technologies; and claim it is no accident that some technologies are promoted while others never even reach a prototype stage.

This perspective positions technology as having the power to impact upon everyday life, but it also constructs technologies as the result of social processes. When technology is positioned as an outcome of social dynamics, as it is in the social shaping of technology approach, there is the possibility that technological processes can be made accountable and that the development and deployment of technology can be regulated. The social shaping of technology perspective is generally a positive one. It says that technology is not beyond the control of social processes. However, it also argues that since technology is part of society, it tends to express the priorities of elite groups in that society.

The elites typically identified as supporting the development of technology can be remembered using an alphabet mnemonic: the A, B and C of technology change.

- A Armed forces;
- B Bureaucracy; and
- C Corporate power.

These three drivers of technological change are key promoters of new technology development. The US armed forces, for example – in the shape of ARPA, the (then) Pentagon-based Advanced Research Projects Agency – commissioned the work which led to the start of the internet. Bureaucratic drivers are behind innovations such as online tax returns and government portals delivering information and services. The UK Pension Service (<http://www.thepensionerservice.gov.uk>) would be a contemporary example of a bureaucratically-driven investment in technological development, which would include design and usability studies. Corporate power notes that companies also seek out and develop new products for new markets. Google would offer many examples of corporate power driving development (Chapter 2). Even where universities are the powerhouses for innovation, the funding for their research tends to come either from defence, the (civilian arm of) government or business.

Traditionally, the A, B, C of technology change ended with these three categories. Latterly, however – and excitingly – it has become appropriate to acknowledge a D and an E. These are less clearly elites, but may be seen as comparatively small groups

of people within their societies who have special skills and a passion for new media. The D and E that should be added to the mnemonic are

- D Distributed collaborators; and
- E Everyday innovators.

It is not the case that D necessarily comes before E (or that A came before B and C) and many would argue that everyday innovators have always been active in customising technology for their own purposes (Marvin 1990; Haddon 1988).

The acknowledgement of distributed networks of collaborators allows recognition of the creative power of 'harnessing the hive'; the community of people engaged in a shared activity. We see these alliances of enthusiasts working creatively and productively in gaming contexts, in wikis and on fan fiction sites – to name but a few. An everyday innovators category acknowledges the creativity of new media adopters in finding novel applications for emerging technologies unsuspected by the technology developers. This was the case, for example, of SMS texts and the adoption of texting by Finnish teenagers as their major mobile application once it became clear how much cheaper it was to communicate in this way rather than by voice (Kasesniemi and Rautianinen 2002). These examples make clear the possibility that the elite associated with a technology can change over time: the corporate designers were supplanted by the cash-poor teenagers who fashioned the uses of the mobile phone to suit their lifestyles, their budgets, and to circumvent the usual communication patterns of their parents and teachers. (See the separate book in this series on *Mobile Communication* for more.) Clearly some internet advances can be attributed to Distributed and Everyday groups, and the internet is rarely conceptualised solely in terms of its Armed forces-sponsored beginnings.

These examples introduce the fact that the social shaping of technology approach is an umbrella concept for a range of specific micro-theories. Theories of specific relevance to the social shaping of technology approach include the 'Theory of Consumption', the 'Domestication of Technology' framework, the 'Social Construction of Technology' (SCOT) and 'Actor-Network Theory' (ANT).

The theory of consumption, developed by Daniel Miller (1987: 178–217) argues that 'Mass goods' ... are an integral part of that process of objectification by which we create ourselves as an industrial society: our identities, our social affiliations, our lived everyday practices' (ibid.: 215). This has been stated more simply as: 'social identity can be interpreted as a function of consumption' (Hearn et al. 1997: 106). Essentially, to the world outside, we are what we consume in terms of products, services and technologies (Green 2001). We fashion our identities in part according to whether or not we go online and what we go online to do. We also change our homes, our schools and our workplaces by engaging in voluntary consumption

---

practices in those spaces. Since the home is the least (externally) regulated of all the places we inhabit, consumption in domestic spaces is particularly indicative of identity. The domestication of technology is consequently of great significance in understanding its consumption.

In suggesting that technology is ‘domesticated’, the ‘Domestication of Technology’ framework (Silverstone et al. 1992: 15–31) implies that the technology in question goes through a process of being tamed to serve the needs of those people inhabiting that domestic space. The classic model, originally focusing on domestication in the home, has four elements and proposes that the households concerned have a porous boundary with the wider society. The process of appropriation includes developing awareness, interest and desire for the technology, culminating in the action of procuring it for use in the home. Objectification involves the creation of a physical space, often within the home, for using the technology. In parallel, incorporation describes how the technology is integrated into the rhythms and the time structures of the household, and the individual lives of the people who belong to it. Finally, conversion explains how the people who consume the technology use it to construct and develop their social identity. This may be, for example, by developing good online search skills and becoming not only a better student, but the natural leader in group projects. Alternatively, it may be used to develop an identity as a gamer, or a fan fiction writer. Chapters 8 and 9 address these issues in much greater depth.

SCOT is generally associated with the work of Trevor Pinch and Wiebe Bijker (Pinch and Bijker 1984; Bijker, Hughes and Pinch 1987) and offers both a theory and a methodological approach which sets out a series of steps to follow when analysing the uses of a technology. Whereas I have used the term social elites in my brief introduction to the social shaping of technology, Pinch and Bijker discuss ‘Relevant social groups’. Principally the producers and users of a technology, such relevant social groups can also include, for instance, regulators and journalists. One criticism of the SCOT approach is that there are no objective tests as to what constitutes a relevant social group. Instead, the identification of any relevant social group is itself the outcome of social constructionist processes.

Bruno Latour’s work on Actor-Network Theory offers the provocative idea that non-humans are ‘actors’ in a network alongside humans, and that networks combine different entities (human and non-human) to form a unified whole which can itself be an actor in a network. Thus ‘the internet’ might include technology, systems, designers, programmers and users; it might also be an actor in the network of people and things that make up a national health system. This theory does not assume that networks, once formed, are stable and tends to focus on how networks evolve and disintegrate. It accepts that networks may be temporary, and it assumes that

networks are characterised by conflicts as well as by collaboration. Both human and non-human network actors are implicated in these conflicts. Carefully grounded in qualitative case studies, the early formation of ANT culminated in Latour's 1987 book, *Science in Action: How to follow scientists and engineers through society*. Within the social shaping of technology framework, then, SCOT charts the importance of relevant social groups while ANT sees people and non-human actors forming and reforming critical networks of relevant technological activity.

The discussion so far has used a somewhat inclusive notion of technology. As well as assuming that all new media have a technological dimension, this book treats programs and practices as part of the technological whole: alongside the technological product. The object itself, the systems (e.g. electricity, software) through which that object is made functional as well as the (human) knowledge, skills and expertise through which the technology and its systems are harnessed to create activities and outputs; are all implicated in this inclusive notion of technology. These three levels of understanding technology (Wajcman 1994: 6) together constitute one way to consider the question of whether technology is neutral. At the level of an object – where an object is as inert as a sculpture with no sense of what it was made for or how it is used – technology might be seen as neutral. However, it would be hard to recognise such an inert and mysterious entity as a technology: technologies necessarily have a use. Once that use is known, neutrality becomes impossible as a result of the technology being associated with certain elites, users, outcomes and processes. Further, only certain people have the know-how to use a new technology. When consideration is given to the individuals or groups empowered to use a technology, in which circumstances, in regards to which groups of people, a technology becomes imbued with issues of power, privilege, gender, nation and education: entirely embedded in social and cultural processes.

## CASE STUDIES

We now turn from the analytic frameworks used in this book to consider the role of the case studies that it draws upon. These examine many aspects of internet use as a way of addressing and illustrating the relevance of the internet and new media to everyday life. They allow us to explore both the breadth and the depth of current and classic research and this approach is one way to deal with the huge diversity of the global experience of new media. By using research-based case studies, people's uses of the internet are thrown into focus. Readers can examine evidence from their own lives to gauge their experience of the internet compared with other people in terms of points of similarity and points of difference. As the book progresses, students

---

and other readers will learn from the examples given, and analysis offered, how to construct their own case studies around uses of the internet.

Yin identifies three kinds of case study: exploratory, explanatory and descriptive, commenting that the focus should be on 'a contemporary phenomenon with some real life context' (Yin 2003: 1), and that case studies are particularly useful when 'the boundaries between phenomenon and context are not clearly evident' (ibid.: 13). This method of presenting research draws upon a wide variety of materials and evidence: 'documentation, archival records, interviews, direct observation, participant-observation, and physical artifacts' (ibid.: 83); and is particularly indicated when matters of 'how' or 'why' are being addressed (ibid.: 9).

The 'triangulation' of research findings is particularly relevant here (ibid.: 97–99), where two or more research methods are used to illuminate the same issue. Also important is the complementary use of qualitative and quantitative research. A quantitative study may follow on from a qualitative finding in order to investigate how widespread a particular practice or belief may be in terms of a specific population. Similarly, a qualitative investigation, answering 'how' and 'why' questions, is often used to investigate in depth a finding that is uncovered through a quantitative study, which deals with 'how many' and 'how often' issues. For example, we might find via a quantitative survey that people over 75 with children are more likely to be internet users than people over 75 without children. Using in-depth interviews, which are a qualitative tool, we could then discover that a major motivator for over-75 internet use is the desire by seniors to keep in touch with adult children, and that these children are often mentors for their parents in terms of helping them develop internet skills. In a case study of over-75s' internet use, these two data sources, surveys and interviews, would triangulate to support a finding that family communication is an important promoter of internet use among older people.

Among other benefits, triangulation comes into its own when data from a range of different sources or perspectives give similar or overlapping indications as to 'how' or 'why'. Indeed, many detailed case studies try to include a number of different sources to make triangulation possible. In terms of this book, a range of data will be addressed in the case studies, but the case studies themselves are also a research tool to consolidate and integrate available evidence in order to triangulate theories about the role and relevance of the internet across a variety of cultures and contexts.

Yin's view (2003: xiv) is that there are three steps in a case study: defining and designing the study; preparing, collecting and analysing the data for the case study; and drawing conclusions. In the case of this book, considering the internet as an introduction to new media, the case studies have been defined and designed to illustrate the multi-faceted nature of the internet, and give some indication of the range of ways in which organisations, cultures, consumers and prosumers

(producer-consumers, e.g. Hartley 2006) use it. A list of case studies is included in the contents section and each case study is also accessible via the index.

A case study approach can be criticised since each study is necessarily short, and to some degree partial, since these ‘abbreviated vignettes’ are part of a larger consideration of the internet itself (a ‘cross-case analysis’ in Yin’s terms (2003: 148)). However, these studies also mark a starting point upon which further research can be based. All the case studies can be expanded by further research to build additional insights and knowledge. Such further research can be carried out as part of the engagement with the book and will add value to the case studies included here, especially if, paraphrasing Yin, all the evidence gleaned is attended to; alternative interpretations are adequately considered; the finding(s) of greatest significance to the researcher are identified and addressed; and if the elaborated case study builds upon your own area of interest and expertise (Yin 2003: 137).

### Reflection: Yourself as a case study

If you were writing a study of your own use of the internet, where would you start?  
What motivated you to learn how to use the internet?  
Who and what influenced you as you developed your skills and knowledge?

## THE STRUCTURE OF THIS BOOK

The book’s structure is pivoted around Chapter 4. Chapters 1–3 introduce the internet by examining key concepts and theories, the history of the internet and the important policy dimensions that impact upon its use. Chapters 5–9 start wide and gradually become more specific in focus, beginning with how the internet is customised for specific purposes (Chapter 5); attempts to regulate the internet (Chapter 6); the relevance of the internet to the public sphere (Chapter 7); communities (Chapter 8) and the internet in family life (Chapter 9). Chapter 10, the book’s conclusion, ties the different strands together and also looks forward to the future. Within this structure, Chapter 4 uses one example of a policy issue, the ‘digital divide’, as a bridge to move from the policy focus to research upon how and why people do or do not access the internet. A slightly expanded account of the contents of each chapter follows.



- [\*\*Los olvidados de Roma: Prostitutas, forajidos, esclavos, gladiadores y gente corriente online\*\*](#)
- [download online Food, Cookery, and Dining in Ancient Times: Alexis Soyer's Pantropheon online](#)
- [download Hegel's Dialectic: Five Hermeneutical Studies here](#)
- [\*\*click Content is Currency: Developing Powerful Content for Web and Mobile\*\*](#)
- [read Crushed \(Pretty Little Liars, Book 13\) book](#)
  
- <http://qolorea.com/library/Los-olvidados-de-Roma--Prostitutas--forajidos--esclavos--gladiadores-y-gente-corriente.pdf>
- <http://www.gateaerospaceforum.com/?library/Food--Cookery--and-Dining-in-Ancient-Times--Alexis-Soyer-s-Pantropheon.pdf>
- <http://www.mmastyles.com/books/Hegel-s-Dialectic--Five-Hermeneutical-Studies.pdf>
- <http://www.khoi.dk/?books/The-Song-of-Achilles--A-Novel.pdf>
- <http://redbuffalodesign.com/ebooks/Project-Management-Metrics--KPIs--and-Dashboards--A-Guide-to-Measuring-and-Monitoring-Project-Performance.pdf>