Reviews

edited by Philip Barker

Integrating Information Technology into Education edited by Deryn Watson and David Tinsley, London, Chapman & Hall, 1995, ISBN: 0-412-62250-5, 316 pages.

In these days of research-assessment exercises and cost-cutting measures, if you have not arranged beforehand for the proceedings of your conference to be published, you can expect fewer proposals for papers from experts at the cutting edge of their subject. Many departments will not normally fund attendance at conferences, especially those held abroad, unless there is a concrete outcome which can be added to the departmental publications list. This is why, over the last few years, we have seen such an increase in the number of edited conference papers. Unfortunately (and I certainly do not include this current issue of *ALT-J* in this statement, because the selection procedure has been really quite cruel), many of these proceedings are of low overall quality. The is no doubt partly because once your paper has been accepted for the conference, you want as much of a guarantee of publication as possible before you turn up and give it, and conference organisers are thus under pressure not to give the copper-bottomed guarantee they cannot of course give, but at least to keep you, as far as possible, in Promise Land. This situation tends to lead to diluted proceedings.

It was therefore a pleasant surprise to find that this set of proceedings – the result of the International Federation of Information Processing Working Conference, held in Barcelona last October, on integrating technology into the curriculum at secondary-school level – was sufficiently focused on a main topic (essentially, how do we make IT as 'invisible' as TV?) to produce many very thoughtful papers. Not only that, but the editors have clearly been at the contributions, prior to publication, with a not-so-gentle editing hand, such that they all end up well structured and well written (it would be hard to believe that they were all received in their final published state).

The conference was truly an international one; that is, not one organized from the UK in some foreign town to give the event an international dimension and at which most participants are actually British. Contributors at this conference came from all over the world, and together were able to give a genuinely global perspective on the problems of integrating IT into schools. Many of these problems are identical in the world of higher education, so these proceedings will be of considerable interest to ALT members.

Topics range from learners' expectations and their achievements when relying on IT, through the role of the teacher in an integrated IT environment, to specific instances of success, part-success and even failure in integrating pieces of software into the classroom. There are 23 major (invited) papers, eight short papers, and nine so-called focus-group reports. The latter are summaries of round-table discussions, and in some ways represent the most interesting part of the proceedings, since they tend to highlight practical problems. But, in any case, such practical problems are everywhere present in the papers, whose themes cover topics such as coming to terms with teachers' concerns, the role of software in changing the conceptual basis of subjects, the role of IT itself as a subject of study and its role in fostering inter-disciplinary activities, and the need for national government initiatives.

It would be unfair to pick out one paper rather than another as being more important to, or more

representative of, the proceedings as a whole, but ALT members will be particularly interested in a number of contributions. These include Collis on societal and organizational influences of networking, Olson on the classroom ethos, van Weert on integrating IT generally into education (including higher education), Graf on inter-disciplinary and inter-cultural intentions, Teague and Clarke on some proposed historical reasons for gender differences in interest in computers, and Aston's short paper on the British approach to integrated IT.

Gabriel Jacobs, University of Wales Swansea

The Simulation and Gaming Yearbook. Volume 3: Games and Simulations for Business edited by Danny Saunders, London, Kogan Page, ISBN: 0-7494-1617-3, 1995, 331 pages.

This series of annual volumes succeeds *Simulation/Games for Learning*, the quarterly journal published from 1970 to 1992. Like the journal before it, the yearbook is compiled by SAGSET (the Society for the Advancement of Games and Simulations in Education and Training) which has about 150 members, mainly educationists and trainers in the UK. Volume 3, the 1995 yearbook, contains 29 papers arranged into six main sections: Activities and Ideas; Business Applications; Transforming the Curriculum; Development and Design; The Finland Symposium; and Computer Applications. A seventh section lists contacts (including SAGSET), publishers and recent articles. However, much of the content transcends this simple classification, with themes and ideas recurring across sections. Nor is the content confined solely to the topic of the book's subtitle – the environment, mathematics, primary education, English teaching, higher education and theoretical issues feature as well as business.

Games and simulations provide frameworks of rules and roles with the aim of promoting live, vividly interactive learning experiences, usually through group work, sometimes with computer support. As Jacques points out (p. 27), 'the magic ingredient is undoubtedly the imagination, triggered by a sense of play'. Although there are ways that we in ALT can incorporate such elements into the computer-based learning software we design, we probably have to accept there is little chance of creating such high levels of interaction for students working one-to-one with computers.

Some of the ideas described in the book make no use of computing technology at all. A simple but useful example is the Jigsaw induction activity described by King and Saunders (Chapter 6). Rather than just giving information to new students verbally or on paper, it is broken down into separate information cards handed out one per student. All students are then given a questionnaire which they can complete only by interacting with others.

More sophisticated is Walford's Caribbean Fisherman (Chapter 20) with 30 years of development behind it. Teams decide where to fish, whether to risk dangerous currents in order to catch larger fish, whether to run a holiday hotel or make pots rather than fish at all, and so on. It seems doubtful that a computer-based version could ever match the flexibility and spontaneity of an experienced human facilitator, for example by instantly inventing new rules for fishermen who unexpectedly ask whether it is possible to run tourist trips.

These kinds of activity, when organized well, are clearly very motivating. Thiagarajan (Chapter 5) goes one step further in arguing that the ultimate motivator is money, and describes role play games in which actual cash changes hands. These games employ devices such as secret ballots in order to create conflicts between self-interest and common-interest in competing teams. He writes: '[...] cash games arouse intense emotion, including interpersonal hostility. As a facilitator, you should be ready to abort the game if things appear to be getting out of control'.

Of course, games and simulations are not just for fun, they promote experiential learning. For example, Thiagarajan's cash games are intended to bring out concepts such as co-operation, confrontation, escalation and fairness, and to exercise skills such as negotiation, persuasion and building trust. Several contributors attempt to place games and simulation within a context of educational theory. Kolb's experiential learning cycle is discussed in several places.

Another recurring theme is the importance of debriefing for transforming experience into positive and lasting learning. Debriefing usually involves discussion in which the facilitator's main dilemma is to maintain balance between structure and free flow of comment. Crookall points out that debriefing is the most neglected stage of simulation and gaming: 'Compared to the amount that has been written about other aspects of simulation/games, very little has been written

about debriefing' (p.10). The book goes some way towards making good this deficit.

Also running through several papers is the issue of the nature of education and its future, especially higher education. All contributors see simulations and games as a means of improving learning quality. Evans and Jewell (Chapter 17) answer sceptics who might not regard 'games' as a serious academic endeavour. Cudworth (Chapter 19) deplores the stigma of 'abnormality' placed upon creative teaching and the hold of conformist tradition upon higher education, which still relies on lectures as the main form of learning. Yorke and McCormick (Chapter 14) report a workshop in which senior university staff planned institutional strategies beyond 2001 in order to submit proposals for an imaginary funding initiative. Changes to the nature of teaching and learning featured heavily in the strategies created.

Computing technology is by no means absent from the book; it plays a part in more than half of the games and simulations described, especially in business games in which teams manage simulated organizations competing in simulated marketplaces over a series of time periods. The main role of the computer here is in evaluating performance at the end of each time period. Examples include Fawcett's account of a team game for hospitality students who manage restaurants competitively (Chapter 11) and Gray's cost-accounting game which simulates competition between manufacturing companies (Chapter 12). Burgess (Chapter 7) traces the evolution of these business games, and the gradually increasing importance of computers within them. He sees this trend continuing into the future, with expert systems and decision-support systems to aid both organizers and players, and multimedia to give greater realism. Gray's cost-accounting game actually runs on microcomputer networks, and he sees no reason why games could not be run with 200 teams and 1,000 globally distributed participants.

I found the quality of papers variable. Some seem a little out of place in the collection. One or two would have benefited from strict editing for length. There is no index. But these things aside, the book provides a rich source of ideas from experienced designers and users of educational simulations and games. We in ALT, who sometimes perhaps focus too narrowly on the design of software rather than the design of broader learning experiences involving computers, might be able to use some of these ideas.

Robert Ward, University of Huddersfield

Simulations – a Handbook for Teachers and Trainers by Ken Jones, London, Kogan Page (third edition), ISBN: 0-7494-1666-1, 1995.

As a teacher, how well do you prepare your students for the workplace?

Few would deny their ability to convey the basics of their own special subject. However, the social context in which professional graduates find themselves involves a variety of different behavioural skills, often beyond the technical aspects of the degree subject they have read. In attempting to prepare students for a life in a workplace that is dependent on communication and negotiation skills, where they are largely self-motivated, and perhaps expected to perform single-handed in strategic positions, benefit can often accrue from the experience of a simulation, described by Ken Jones as a classroom event in which (1) the participants have functional roles – survivor, journalist, judge, fashion designer, Prime Minister; and where, (2) sufficient information is provided on an issue or problem to enable the participants to function as professionals, using real-world ethics.

If an appropriate level of autonomy is granted to the participants, such events permit powerful learning by one's mistakes, making them well worth pursuing in most learning areas. And the immense effort of creating a satisfactory simulation can be relieved by use of published simulation material: Jones refers to several sources, including his own previous work in this area.

Following a thorough grounding in the characteristics of simulations (where the objective is to experience professional activities) and contrasting these with those of a game (where the object is generally entertainment), Jones goes on to describe how simulation was first used in war and business before being transferred to the educational arena. Personal development and social/cultural awareness are other applications that can benefit from a classroom simulation. Indeed, it seems difficult to imagine an area of learning that would not benefit by this immersion technique.

For anyone with an interest in design, choice or use of these activities, this little book holds a real wealth of information in an entirely readable format. While many authors have attempted to formally assess the value of simulation in education, there is arguably more to be gained from the flip-side: using simulation in assessment

rather than assessing simulation. A major role of classroom simulation lies in student-evaluation – for example, of oral skills and behaviour.

However, one note of caution: a section on computer-assisted simulation presents this only as a supporting device for the perceived primary role of simulation: human interaction, not as a cost-effective technological simulation of complex systems in training prospective users. Jones concentrates on the social and behavioural aspects rather than the recent innovations of simulation in physiology or surgery; situations where the ability to learn by one's mistakes has naturally been somewhat problematical and limited to unfortunate animal work. A reader of modern simulation will find little here to inspire confidence in computer technology providing virtual learning environments for those heading for careers in control of large or vital systems such as trains, boats and aeroplanes, power-generation plants, hospitals, or even electronic design. Perhaps this is due to a risk of over-simplification in simulations of this type, and the relatively recent introduction of computer-simulation and modelling techniques for such specialized training functions.

Nevertheless, if you teach any subject, and hope in vain that the students will somehow absorb the so-called transferable skills of communication negotiation and/or the art of listening, then this book will be of considerable value.

George Kernohan, Queen's University, Belfast

Design and Production of Multimedia and Simulation-based Learning Material edited by Ton de Jong and Luigi Sarti, Dordrecht (Netherlands), Kluwer Academic Publishers, ISBN: 0-7923-3020-X, 1994, 253 pages.

This book is a collection of papers by different authors chiefly from within the DELTA (Developing European Learning through Technological Advance) programme, which aims to facilitate the use of information technology in learning through the development of more effective design, production, and delivery. Thirty projects are funded under DELTA, and eight of these are covered in this book, though in order to provide a broader view of the current status of research into learning and technology within Europe, three other projects which lie outside the DELTA programme are also included.

The book has an introduction, followed by 11 chapters, each focusing on a different project. In the introduction, de Jong and Sarti focus on current trends in the design and production of computer-based learning material. Design and production are defined, and related to the contributions presented later in the book. A distinction is also made between 'general' courseware and simulation-based training material. Again, the concepts are related to the individual contributions made later in the book. The introduction ends with a brief description of each of the contributions which make up the work. This is useful in a book of this kind for several reasons: it provides a conceptual framework for the reader, and it allows the reader to rapidly gain a detailed overview of the contents of the book, and to focus in on areas and issues of specific interest. Such a useful introduction is all too often omitted from books consisting of collections of papers.

The range of projects covered in the book is diverse, but all address the issues of design and production at some level, and a number of papers deal with both these issues at a significant level (Barker; van Rosmalen; de Jong *et al*; Verreck and Weges). Barker, for example, outlines models for both learning design and for interactive learning environment implementation. Other papers tend to centre primarily on either design or on production issues: a strong emphasis on design issues is particularly notable in some contributions (Grandbastien and Gavignet; Mispelkamp and Sarti; and Tait), while a focus on production can be found in others (Ulloa; Benamou and Celentano; Busch *et al*; and Hartel).

A key problem with books created from collections of papers is the lack of continuity and structure. Authors' styles vary, and they are producing essentially stand-alone pieces of work. This means that such books are less amenable to a 'cover to cover' approach, and considerable effort is required of the editors in order to structure and sequence contributions. Although in this particular book some structure is provided by the introduction, it would have been useful if some form of sub-sectioning had been applied so that readers could more immediately focus into areas of interest to them. Sub-sections are not used and, as a result, the order in which papers are organized is not immediately obvious.

Although all contributions are project-based, it is interesting that they successfully address underlying conceptual issues and problems. As a result, this book will be of general interest to anyone involved in the design and production of computer-based learning materials.

Stephen Richards, University of Teesside

How to Motivate People by Twyla Dell, London, Kogan Page (second edition), ISBN: 0-7494-1823-0, 1995, 96 pages.

This is one of the books in Kogan Page's Better Management Skills series. It is designed to be used as a self-study guide, and offers managers a series of practical tips on how to increase employee commitment.

It centres on Maslow's Hierarchy of Needs, and the theoretical base on which the book is founded is thus very narrow. Dell does not deal with the work of many of the motivation theorists which would be expected to be part of a general text on the subject (e.g. Herzberg, McGregor, McClelland), and because of this the book cannot be considered an in-depth treatment. However, through the clever use of activities and exercises, Dell brings the reader face to face with the realities of their personal management style and the expectations of their subordinates.

The book has four parts, which lead from theory to practice. One immediate criticism is of Part 3, entitled 'Five Steps to Success'. It is wise to be somewhat sceptical of any book which purports to have the answer to management success. Perhaps it would have been better for Dell to use a more considered approach, drawing readers into full knowledge of the complexity of motivation theory, and to introduce them to the range of methods available to create an atmosphere within an organization where motivation is encouraged.

Another possible flaw is the assumption that employees are capable of achieving 100% productivity in the workplace. I have the niggling feeling that if we could get 100% effort out of staff in the academic workplace, they would be unlikely to give the extra 50% to 60% which is necessary for the survival of higher education. This highlights an obvious weakness in the book – that of how to motivate staff where a significant proportion of their effort depends on goodwill – a weakness no doubt brought about by the author's experience in running a commercial company where motivation factors (e.g. bonuses, perks and promotion) are more readily available than in education. But perhaps it is too much to expect Dell's book to cater for all eventualities.

Part 1 ('Close the Commitment Gap') introduces the reader to Maslow's Hierarchy of Needs, and begins the process of applying this knowledge to the reader's specific circumstances. The exercises in this section are geared to creating awareness of how one, and one's subordinates, are performing.

Part 2 ('How to Empower Staff') seeks to convey the three phases of empowerment, which in the opinion of Dell are 'to give someone the power to: judge – act – command'. As with Part 1, the practical exercises are immensely useful, enabling readers to understand their particular management style, and how they might best empower those members of staff for whom they are responsible.

Part 3 consists of those 'Five Steps to Success'. Although 'instant success' books of this nature abound in the area of management, this text does contain some very practical wisdom. The five steps which, in Dell's opinion, will lead to success are: Learn to Lead; Examine Expectations; Act as Though You Care; Respect Employees as Professionals; and Never Stifle Personal Growth – not exactly 'earth shattering', but they do offer some common-sense tips towards creating a more contented, productive workforce.

Having confronted the reader with the basis of motivation theory and its application in the workplace, Part 4 ('Practise What You've Learned') attempts to ensure that what has gone before is not forgotten, but is put into practice.

This book is aimed at anyone who has staff who are under-producing in the workplace, either by an act of will, or by being prevented from doing so by circumstances or lack of training. The practical, well-thought-out exercises are useful in forcing managers to be honest with themselves in establishing reasons for lack of motivation. Although they are designed to be used by individual managers, some would also be extremely useful in gaining the opinions of the workforce. This would require some re-wording, but as all the exercises are brief, it would not present too much of a problem.

The book would have benefited enormously, however, from the addition of a bibliography, which would have added weight and authority to the arguments postulated. Readers would then have become aware that the ideas are based on sound theory, as well as practical experience.

Brian Sloan, Napier University, Edinburgh

Evaluating and Assessing for Learning by Duncan Harris and Chris Bell, London, Kogan Page, ISBN: 0-7494-1301-8, 1994, 204 pages.

Good teaching requires evaluation. This means measuring how well the teaching is going, and identifying areas that need to be improved. Evaluation can also identify what the learners need

to know. But an easy criticism of any book on evaluation is to ask what evaluation the book itself has undergone. How well have the authors addressed the needs of the readers? Did they elicit the views of readers? It would seem that the ideas Harris and Bell present have been developed through discussion and criticism with teachers and learners. Each section has a discussion on 'difficulties and criticisms', so their ideas do indeed seem to have been evaluated. And the book is in its second edition, so there has been plenty of time for evaluation. The structure of the work has been retained, but it has also been built upon: this second edition has more pages, case studies have been expanded, and sections rewritten and extended. This has improved an already good book.

The authors anticipate that the readers of the book will include mature students on advanced courses, tutors of advanced courses, teachers or groups of teachers undertaking curriculum development, and groups of trainers undertaking development of training material.

There are five sections, each with some suggestions for group activities, the discussion on difficulties and criticisms mentioned above, and a useful annotated bibliography. Harris and Bell attempt to cater for different types of learners by providing overviews in the form of concept maps, and also a conventional table of contents.

The book is centred on the needs of the learner, providing practical, well presented ideas on how to assess and evaluate learning. This is not, however, a how-to guide; rather, it is more of a discussion of the issues necessary for an effective learning environment. Much of the discussion is on the context of learning, with some advice on how to assess or evaluate.

Section 1 is devoted to the needs of the learner. The types of learner follow Honey and Mumford's 1982 classification of 'activist, pragmatist, reflector, and theorist'. Harris and Bell describe how each type of learner would learn best, then go on to describe different types of learning. There are many ways of describing these, but whatever the terminology used, most readers will be familiar with memorizing, decoding, and creating. The type of learning I was not familiar with was termed 'loving'. This is the learning that occurs in groups, and Harris and Bell suggest that it is necessary for the individual and other members of the group to identify each learner's needs rather than depending on learning that is driven by the teacher.

Section 2 deals with evaluation, and fitting the system to the needs of the learner. It is where the underlying theme of the book is discussed. Needs analysis will help to avoid a mismatch between the learner and the content or the approach to learning. One of the methods discussed is the Delphi procedure, a way of collecting information and combining ideas from a number of individuals. The information collected is fed back to the group to get more information and to refine ideas, the process continuing for as many iterations as necessary.

In Section 3, the authors address the topic assessing for learning, and for me this section was the core of the book. I wanted to find out how to assess learning, and I was looking for techniques that I could use to identify learning gains, techniques that would show that the learners' ideas had changed, that their understanding had developed, or even that knowledge had been gained. However, the section focuses on reasons for assessment. It seems that learning is more complex than my ideas would allow. Cook-book techniques to assess learning are likely to miss important points, because issues central to learning have not been addressed. Harris and Bell discuss why, how and what you should assess. They assert that assessment should be focused on active involvement by the learner on learning. Their philosophy is to feed back information to the learners, assisting them in learning and giving them responsibility for their own learning and assessing.

In Section 4, entitled 'Role of Learners and Teachers', Harris and Bell adopt a musical metaphor for teaching: composer, conductor, performer, critic; and summarize the learners' role as receiver, detective, generator, and facilitator. They take the view that much of the communication between teachers and learners should be through the medium of assessment and evaluation.

Section 5, 'Meeting the Needs of the Learner', discusses different forms of teaching and learning. Harris and Bell develop a model in which there is two-way communication between teacher and learner and also between learners. They stress the importance of group work.

The learning context and evaluation are intertwined: the context will limit the evaluation that can be applied. This book discusses the context, and explains appropriate evaluation and assessment. An ideal learning situation for Harris and Bell would be one in which the teacher negotiates the learning task and assessment strategy, and resolves between them the best approach for the learner.

A ripping good yarn? No, but it is clear and readable, with case studies and different approaches to revive waning interest. I would recommend it for anyone who is interested in improving teaching and learning.

John Milne, University of Aberdeen

HTML Manual of Style by L. Aronson, Emeryville CA, Ziff-Davis Press, ISBN: 1-56276-300-8, 1994, 132 pages.

The Internet and World Wide Web (WWW, or the Web) have now become valuable learning, teaching and training resources. Consequently, over the last few years books on these topics have become very popular. Essentially, these deal with three basic issues: the underlying theoretical and technical matters relating to using distributed networks; accessing Internet and Web services; and Web publishing. An important aspect of publishing material on the Web is the use of an appropriate markup language so that search engines and Web browsers (such as Lynx, Cello, Mosaic and Netscape) can access the information and interpret it in the correct way. The markup language used on the Web is HTML (HyperText Markup Language) which, through the use of an appropriate DTD (Document Type Definition), is essentially a subset of the ISO 8879 standard SGML (Standard Generalized Markup Language). Obviously, anyone wishing to publish material on the Web will find some knowledge of HTML useful. This monograph provides a helpful introduction to the topic.

The book contains just four chapters, plus three appendices and a subject index. The opening chapter ('What is HTML?') is very short and provides a brief introduction to HTML, hypertext and hypermedia, Mosaic, the Web and the Internet. Chapter 2 is more substantial, and is devoted to the HTML (Level 2) language itself. It covers such issues as HTML syntax, formatting tags (for headings, paragraphs, lists and styles), anchors and links, images, and forms (which facilitate input from users). In Chapter 3, the author discusses how to write HTML documents. The chapter is organized into four major sections which together cover such issues as general principles, identifying good HTML style, how to create a home page, and the conversion of existing documents into HTML format.

The final chapter is by far the largest, and is devoted to a series of eight case studies. In each case study, the author describes various existing Web pages accessible, then goes on to discuss the HTML encoding underlying their appearance. The examples presented in this chapter include a personal home page, typical home pages for small and large organizations, an electronic brochure, a Web survey, and pages for a number of subject guides and specialisms. The site addresses (URLs) for the examples are given and, surprisingly, they can all be accessed relatively easily. I used a full-screen, text-based browser (Lynx) to access them. Indeed, I explored the home pages described in the book using an old DOS-based computer (an Amstrad 1640) as a remote terminal running at 1200 Baud (using VT100 emulation). Not surprisingly, however, most of the pages (except the Web survey) were in many ways different from those described by Aronson. Obviously, since the book was originally published, much of the material has been updated and restructured.

I was interested to find (p. 107), the example used to illustrate the home page for the San Francisco Bay Area chapter of the ACM's Special Interest Group on Computer-Human Interaction (BayCHI) was advertising a talk entitled 'Too Much Hypertext or Too Little?' by Jacob Nielson (to be given on Tuesday, 11 October 1994). When I accessed this same page a year later (while writing this review) I was excited to see the BayCHI page advertising a lecture to be given by two of my HCI 'heroes' (William Buxton and Stuart Card) entitled 'Radical Human-Computer Interaction' – scheduled for Tuesday, 10 October 1995 at 7.30 pm! Wouldn't it be lovely if the Internet could be used to transmit this lecture 'live' to interested people in Europe? Unfortunately, herein lies some of its basic limitations. Maybe the future information Superhighway will provide enough bandwidth for this type of thing to happen. Who knows?

In addition to the case study examples described above, the three appendices at the end of the book are also very useful. The first provides a quick reference guide to HTML (based on the HTML 2.0 DTD specification). The second gives an overview of HTML+, describing many of the features and extensions that are to appear in new versions of the language. The third appendix gives details of various HTML resources (such as guides and references, browsers, conversion tools and list-servers), many of which can be obtained using the Web itself. Unfortunately, since the book was published, the info.cern.ch documents have been relocated to www.w3.org. This meant that my initial attempts at accessing some of the guides and references failed when I entered the URLs quoted by Larry Aronson.

Overall, although the book has some very minor limitations (such as out-of-date URLs and the occasional spelling error), I found it quite interesting and fairly easy to read. The author is thorough in his explanations and has chosen some good examples in order to illustrate the points he wanted to make. It is my belief that the text will make a useful first reader for those wishing to launch themselves into markup techniques and Web publishing. It is also a book that I would definitely recommend to any student who wants to find out about HTML and what it has to offer.

Philip Barker, University of Teesside

Film and Television in Education edited by Chris Dry, London, Chapman & Hall (Bluprint), 1995, ISBN: 1-857130-16-2, 341 pages.

This is the second edition of the Handbook of the British Universities Film and Video Council (BUFVC). The first edition dates back to 1991; this new one is more extensive. It consists of about 100 pages of short articles on various aspects of film and video as educational media, including (but by no means limited to) the new digital-video technologies of the last few years, and about 200 pages of Directory. The Directory consists of reference entries on a wide variety organizations whose business, in one way or another, is audio-visual, and on distributors of film, video and related media, classed by subject. There are also lists of sources of multimedia products, library suppliers of audio-visual materials, equipment suppliers, European audio-visual projects, and courses and events. Supplementary information includes a section on media legislation and reports, and one on the activities of the BUFVC.

In all, then, this work offers a pretty wide coverage of the field, and could be very useful to developers of courseware, who would do well to keep it on their shelves. For instance, if you need some top-quality sound recording, some 1-inch video mastering, some graphic design, some professionally produced video sequences, or just the loan of a good camcorder, you will certainly find good sign-posts in its pages, as you will if you want to know your nearest audio-visual centre (university or otherwise) and precisely what it has to offer. Equally, if you need to know exactly what a particular audio-visual organization can do for you, from the Arts Council of Great Britain to the Writers and Scholars Educational Trust, you will find enough to give you a fairly good idea, as well (of course) as all relevant contact details. ALT is there too, I am very glad to say. Also of interest to many ALT members will be the lists of UK distributors (116 pages, making up the largest section of the Directory) and what they can offer – everything from educational CD-ROMs and videos for sale or hire (there is a good list of available catalogues, too) to printed publications on resources.

The articles preceding the Directory are of varying interest to educationists. Some, meant of course for non-specialists, merely re-state themes (such as interactivity and technology) which will be well known to ALT members. Others, however, offer interesting insights into aspects of educational technology not often dealt with in journals and newsletters about computers and education, such as the future role of educational television, or the history of moving pictures and education (a short but excellent contribution by Murray Weston, the Director of the BUFVC), or how to research film and television collections in Europe).

Thus, this handbook, while primarily of use a reference work, also offers a good overview of audio-visual aspects of educational technology. It is certainly worth adding to one's collection, and is the sort of thing which will come in useful when you least expect it.

Gabriel Jacobs, University of Wales Swansea

Multimedia Technologies and Future Applications edited by Damper, R.I., Hall, W. and Richards, J.W., London, Pentech Press Publishers, 1994, ISBN 0-7273-1320-7, 267 pages.

This book is the proceedings of the IEEE (Institute of Electrical and Electronics Engineers) International Symposium on Multimedia Technologies and Future Applications, held in 1993. As such, it is an eclectic collection of papers on the development of multimedia technologies and their applications, ranging from theoretical overviews to highly technical reports.

It consists of 19 papers by different contributors from industry and academe, representing a wide variety of backgrounds, from engineers to linguists, computer scientists to broadcasters, publishers to human-factors experts. This may seem a disparate group, but in fact it actively reflects not only the breadth of the appeal of multimedia technologies and techniques at the moment, but a general consensus in almost all disciplines that we are on the brink of a multimedia revolution. It also demonstrates the often claimed 'interdisciplinary' nature of multimedia in that the techniques perfected in one

discipline are often applied in other, quite different, areas.

The papers are divided up into four sections. Each contains a helpful introduction which summarizes the content of the papers which follow, and which help to put them into the context of the work as a whole. These introductory chapters are a very useful addition when material which is comparatively so varied in scope is represented in one publication. Another useful aspect is the inclusion of an introduction or abstract at the start of each individual paper. I have one minor quibble, however, with the lack of chapter numbers within the individual sections. This makes cross-referencing rather difficult – the editor of Section 1 himself confused the sequence of two chapters in his introduction.

The collection begins with an introductory and general foreword looking at the implications of multimedia in publishing, and comparing the information revolution which is facilitated by multimedia to the technological revolution created by Gutenberg. This is a concise and clear introduction to the many political and social issues intrinsic to the 'multimedia revolution'.

Part I, on Core Technical Issues, is primarily concerned with data compression, particularly with reference to image quality and speed of delivery. Although at first frankly terrifying in its technical complexity to the reviewer with a non-technical background, it quickly becomes apparent that issues of data, image and video compression are something all of us involved in multimedia development need to be appraised of, and this collection provides an excellent overview of the problems and some possible solutions. The first paper presents an identification of the components necessary for a systems approach to solving the problems of standardization across machines and networks using multimedia communications. Having identified with the systems analyst, recognizing that their concerns are of interest to all involved in multimedia development, we can more confidently approach the following papers. These include a new technique for high speed image coding, an overview of design issues pertinent to the development of a low bit-rate audio/data/video multimedia system, an exploration of an algorithm for image coding which could help solve problems of storage and compression of images, and a practical technique for image processing with an origin in pure mathematics which is compared to more conventional coding methods based on simulation results. The final paper in this section describes Acorn Replay, software-only full-motion video from CD-ROM, a patent-pending technique which has the potential to be used in the production of low-cost educational software. All six papers in this section deal with highly complex technical issues in an clear and easy-to-follow manner. They are as good a summary of complex techniques as I believe will be found in one volume.

Part II, on Audio-visual Delivery Systems addresses implementation problems inherent in audio-visual systems in the digital domain, especially processing power and bandwidth. The first paper describes a collaborative project to develop a multimedia environment which will allow high-quality video, data and audio connections between remote sites using ISDN, supporting a multimedia system in both local and remote networked environments. This is followed by an overview of a technique to store high-quality picture information in a way that is compatible with the needs of distributed multimedia environments. This paper characterizes the components of, and interactions within, a multimedia environment. The final paper in this section, entitled 'The multimedia microwave oven' is the perspective of a television producer looking at the new multimedia communications systems which are set to replace what was not so long ago the only audio-visual system in use – broadcast television. This is a reflective paper in the 'where are we and how did we get here?' mould. The author (MacGregor) reflects upon the political, social and cultural implications of the adoption of multimedia technologies, and surmises the infrastructure required before the 'multimedia revolution' – which we are constantly reminded is upon us – can really begin.

Part III, entitled Human-Computer Interface, looks at the 'human' issues – how people interact with technology – rather than the technical concerns of the previous sections. All the papers in this section address the issues involved in creating high-quality multimedia materials, paying particular attention to questions of why and for whom this material is created. In his thoughtful paper, 'Not a cottage industry: understanding the scale of multimedia production', Bruce Ingraham addresses the myth that multimedia is a quick and easy solution to educational problems. As the developer of *France InterActive*, Ingraham is well placed to realistically assess the real cost and scale of developing intelligent educational multimedia. His argument is that the investment in educational technology must include an investment in the structures, skills and

tools to support its use for real benefits to be gained. Other papers in this section report on specific ways in which human interaction can assist in the development of multimedia technologies, including voice and facial image integration for person recognition, interaction between a patient and psychiatrist to analyse the use of video telecommunications, the way in which users interact with audio and visual information in the workplace, and the perceptions of language, sound and vision which may contribute to the development of formal and effective multimedia applications.

Part IV, Applications, presents examples of applications in use at the moment, any or all of which may well become prototypes. All represent examples of good practice in the use of multimedia for specific tasks, practical or pedagogical. Again, contributors come from industry and academia. There is a description of a system in use by Lloyds Register to enable users to make quick and interactive decisions about damage on board a ship, and a contribution describing the Microcosm project, addressing media integration issues within open-media systems. The papers in this section illustrate what Wendy Hall herself says in her introduction to this section: multimedia applications are today much more than simply presentation systems. Multimedia information systems are merging with computer technologies to the extent that soon the two will be inseparable and interchangeable.

Multimedia Technologies is a timely collection, one which demonstrates the huge impact of multimedia technologies on so many disciplines. It demonstrates clearly that there is more to multimedia than theory – that there is a need for the techniques used in multimedia development to catch up with the technology available. Multimedia is a term which is bandied around to the extent that it seems to mean all things to all-comers – few of us stop to think about the technical issues which are so crucial in successful development and implementation of multimedia. This collection makes no claims to being exhaustive, but is a valuable snapshot of the state of play in the technological developments which make it possible for us all to look to the use of multimedia in our own disciplines.

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