

## Computer insecurity

**A R D Norman**

*Chapman & Hall, UK (1983)  
351 pp, £14.95, ISBN 0412  
22310 4*

We all depend on the secure operation of computer data systems. Sometimes these systems fail. Security may be breached by acts of God, wilful acts of people, negligence and systems failure. Adrian Norman's book attempts to give a complete treatment of computer insecurity.

The first chapter gives a list of features to enable the author to classify any failures in security: loss (such as unavailability of service, money or material stolen, deprivation of human or civil rights); peril (external accident, internal failure, negligence or crime); target (the computer system, its owners or users); motive (mischief, financial gain, power, industrial action or political protest); perpetrators (insider, outsider or, very often, unknown); victims (the user of the computer or those to whom the data refers); location and time.

The second chapter, which could well have been an appendix, gives an index to the hundred or so cases cited in the following chapter according to this classification. This third chapter, which takes over half the pages of the book, is a marvellous source of information on actual or possible failures in computer systems. They include examples of hardware failure, fire, incompetent programming and analysis, theft, fraud, vandalism, sabotage, mischief, extortion, accident and hoax. Some cases have not been verified by the author, but they are included in the book because they give the reader information about possible breaches in security.

Many of the cases cited refer to the spectacular — large frauds (Equity

Funding involved one thousand million dollars); theft (a New York credit card racket involved one million dollars and the perpetrator was brought to justice by the Mafia who 'rubbed him out' for not sharing his spoils); and sabotage (the destruction of data and programs by terrorists at the Philips company of Toulouse, France).

Other cases cited are amusing, such as when a cable was chewed by a dog, or unusual, as in a Tokyo factory where a worker was crushed to death by a robot. I am not sure whether the lecturer, a friend and ex-colleague of mine, was foolish or brilliant to set his students the task of breaking the security of his polytechnic's computer system. It proved fairly easy to wipe out master files. I would be interested to hear the views of the computer manager.

If you are caught for fraud, a good ruse seems to be to claim that you had only wanted to show how insecure the system was. Being a good programmer may also help. After being fired from his job for defrauding the company, one employee was re-employed on contract as 'the company needed good programmers'. Presumably many fraudsters and thieves possess the skill not to be caught and many crimes are not brought to light. Computer criminals, even when detected, are not often taken to court by their victims because of the costs of prosecution, particularly in terms of bad publicity, and the legal uncertainty, as the technology has run ahead of legislation.

Surprisingly, perhaps, few cases relate to the sufferings of the general public through misuse of personal information by corporations or governments. Cases quoted do include 'old chestnuts' like the problems with DVLC and those of the Post Office who, when setting up

the post code system, did not realize that there was no motivation on the part of the letter-writer to use the code.

The final two chapters discuss reasons why security was breached, followed by a discussion on the ways in which computer risks can be minimized. Although much space is devoted to preventing spectacular crimes, consideration is also given to the inclusion in systems of simple procedures to prevent everyday failures, in particular those resulting from poorly designed and tested application programs, poor standards, and poor validation and auditing procedures. These are equally important in microcomputer-based systems and mainframe ones. Many users of microcomputer systems assume that they can cut security costs by the same percentage as they cut the costs of the hardware, a recipe for disaster.

There is a growing awareness by governments, companies and trade unions of the vulnerability of computer systems. Total reliability is impossible in theory and too expensive to pursue in practice. Instead, an acceptable 'probability of failure' becomes the target. This can be reached if attention is given to the people within the organization, since breaches in security usually involve at least one inside man, as in cases of theft or fraud, or many insiders, as in cases of poor programming, analysis of auditing procedures. At least as great an emphasis should therefore be paid to the 'people side of systems' as to the hardware and software.

Adrian Norman's book is of interest to computer professionals and students. The cases prove an informative and amusing read. There are many lessons to be learnt, and the book should increase managers' awareness of the pitfalls and give them the means to avoid making the same mistakes.

*D E Avison  
Computer Centre  
University of Aston in Birmingham  
UK*

## Data protection: perspectives on information privacy

C Bourn and J Benyon (Eds.)

*University of Leicester, UK (1983) 101 pp, £5.00, ISBN 0901 50727 X*

This little book is the record of a conference at the University of Leicester on 11 May 1983, to discuss the legislative measures needed in the

UK to regulate the collection and use of personal information. Despite the commendable speed with which the book has been produced, it had already been overtaken by events when the conference was held, since the announcement of a general election meant that the Data Protection Bill then going through Parliament had failed. However, the

## The effect of new technology on libraries and information centres

B Naylor (Ed.)

*Library Association, UK (1982) 54 pp, £4.75, ISBN 0853 65925 7*

In 54 pages this pamphlet manages to cram in mention of a wide range of different technologies together with the advantages, disadvantages and difficulties involved in the application of such technologies in libraries and information centres. However, as one would expect from a document of this size, it can do no more than make brief mention of each. The range of the working party was extensive and it is hard to imagine more being fitted into the pamphlet than the editor has done. It is very readable and even though occasionally it does assume a good background knowledge on the part of the reader, it is still a pamphlet that most librarians and information officers in Britain will find valuable.

Nevertheless, I believe the pamphlet to be overpriced at almost £5, which is a great shame. At double its present size it could have dealt more fully with topics that deserved and sometimes needed fuller treatment. For example, micro-computers receive only one paragraph. Someone hoping to read about the possibilities of video discs as mass storage devices will be dis-

appointed, since no mention at all is made of them.

The terms of reference of the working party went much further than the results published here, and included a look ahead at likely new developments and their possible impacts on library and information services. The work reported includes no such flights of fancy; the Editor restricts himself to facts, some of which have already been overtaken by events. However, the only time I was at odds with the Editor was when he allowed himself some artistic licence in stating that components which 'formerly have occupied entire rooms are reduced in size to pinheads'.

In summary, this is a very useful though overpriced pamphlet that should be read not only by librarians and information officers but also by members of Government. Once again a call rings out for the national coordination of technology and information. There has been too great an emphasis on technology in the past and it should be recognized that, important as it is, technology is only a means of providing access to the essential end-product, information.

*B Gallivan  
National Library of Scotland  
Edinburgh, UK*

new Data Protection Bill going through Parliament as I write (December 1983) is sufficiently similar to the old Bill, and the questions which it raises are of sufficiently general relevance, that the book is still a useful one.

The book begins with an introduction by the conference chairman, Sir Norman Lindop, setting the scene for data protection legislation in the context of the government's wish to be able to ratify the Council of Europe Data Protection Convention. Paul Sieghart, who has for a number of years been involved as a lawyer with proposals for data protection legislation, then outlined (in non-legal language) various flaws in the Bill as proposed, arguing that the Bill will not meet the requirements of the European Convention. John Dawson of the British Medical Association followed, talking about the conflicting demands on the medical profession of confidentiality and public interest (for example, over infectious diseases).

The conference then split up into a number of groups for discussion. The remainder of the book is taken up with reports from the group chairpeople, followed by general discussion. Here a number of interesting points were raised; for example, could an employer use people's rights of access to information about themselves to demand information on, say, previous convictions?

There is no space in the book to explore in detail the many questions raised about privacy and data protection; for example, how the UK and Swedish experiences of data protection relate to the different historical attitudes to freedom of information (in particular, government information) in the two countries. However, despite this lack of depth, the book is a useful synopsis of issues in this important area, and can be recommended as a brief introduction to the subject.

*R G Garside  
Department of Computer Studies  
University of Lancaster, UK*

## The Telidon book: designing and using videotex systems

D Godfrey and E Chang (Eds.)

Reston, USA (1983) 309 pp,  
£35.95, ISBN 0835 97548 7

Books come in many varieties: some to be read, some for reference, others for scanning, or for study. Having recognized the particular type, a reader then expects an internal consistency, a homogeneity, within that context. In this case the homogeneity was not obvious. This can perhaps be attributed to the 23 contributors, some of whom wrote more than one chapter, with others contributing in teams to sections of a chapter. The editors obviously made some effort to ensure that contributors saw what was being written elsewhere, but this did not solve all the problems, although they do claim that chapters were written to be read independently.

This UK reviewer found that the book is essentially North American, with a heavy Canada/USA bias. In my British ignorance I had to learn quickly that Telidon is *not* the Canadian videotex system (as I previously thought), but is in fact a graphics protocol which can be used for videotex and other applications. Some authors wrote about it as a protocol; others in the context of its most usual application. Another problem.

After the introductory chapter, market factors were dealt with at length, followed by summaries of interviews with leading people in the Telidon business. There is another short chapter on hardware configurations followed by a longer chapter giving considerable technical detail of the graphics system.

Chapter Six has four sections on 'Making pages'. In the first the mediatics process is discussed. Jargon collectors should note that 'mediatics' is 'an electronic publish-

ing technique involving preparation of information displays on a screen for subsequent transmission to one or more receivers'. Some of this section is rather obvious, but the contributor gave a broader perspective than is generally found. The second section recounts experience at OECA (Ontario Educational Communication Authority) and the third section is about NATAL, a high level programming language for producing computer-assisted-learning materials. The final, very short section deals with encoding PDIs (Picture Description Instructions).

Chapter Seven is a short one on sending pages, and includes some basic general information on transmission. A long, sectionalized chapter follows on storing pages; the introductory section is basic, the next about a database management system, then implementations using UNIX and FORTRAN/PASCAL are described, and finally alternative strategies. Networks are introduced in Chapter Nine, and an open network for educational requirements is hypothesized. Chapter Ten on implementing the terminal is short as is the body of the final chapter on

buying hardware and software, which covers decoders, encoders and systems. This concludes with a list of useful names and addresses . . . . useful, that is, if you are on the west side of the Atlantic Ocean.

There is a reasonably long bibliography, but by this time you will not be surprised to learn that most of the references are American. To be fair, I doubt if authors from other countries have written much about Telidon, but further more general videotex references might have been included. I also found the citation method was in some cases irritating. For example, '[Gutenberg]' was cited in the text; the actual reference being '[Gutenberg] Godfrey, D., Madden, J., Parkhill, D.F., Ouimet, A. *Gutenberg Two*. Victoria: Press Porcepic, 1980'.

The book I am sure will be useful to North Americans, and also to anyone interested in the standard of graphics produced by Telidon. It is perhaps more comfortable to read only the chapters or sections that are personally interesting. In its entirety the variations of approach and style give a disorienting feel. I would have to categorize it as a book for reference or selective study, rather than a book to read.

P A Yates-Mercer  
Department of Information Science  
The City University  
London, UK

## Information science in action: systems design

A Debons and A G Larson

NATO Series E: applied sciences, No 59, Martinus Nijhoff, The Netherlands (1983) 864 pp, \$130.00, ISBN 9024 72808 8

'When you see the size of *Information Science in Action* you may conclude that you have made an

awful mistake' was the comment made by the review editor as I received the two volumes. On initial examination, the collection of papers, invited talks, tutorials and reports from working parties did look rather forbidding. However, it was an interesting topic and my curiosity was stimulated by the wide-ranging references at the ends of most papers. Particularly noticeable were references to classic cybernetics as

well as social sciences and management.

The two volumes were the result of the third NATO Advanced Study Institute held in Crete during August 1978. The Institute consisted of 100 or so scholars from several countries around the world who had met to discuss the progress made in designing information systems. The previous two Institutes on Information Science met in 1972 and 1974.

The editors have written an introduction entitled 'Information system design in context', which has an extensive base. This review paper suffers, as do most of the papers in the volumes, from the effects of too much structure. As a central and important overview this structure might have been an advantage. However, the result is to confuse rather than clarify the issues. The reasons for this confusion are that the method of delineating each subject does not remain uniform, and complex concepts are placed in an unnatural hierarchical format. Consequently the authors are enticed into expanding trivial ideas in order to support new headings, as well as being forced by the structuring to repeat contextual information. One of the most frequent of the issues is that expressed (with a certain lack of brevity) on p. 51 towards the end of the paper:

Some of those who clearly recognise the deficiencies of current system design practices lay the blame to the lack of theory that characterizes information system design in particular and information science in general.

... there is a plethora of theories from several disciplines that can be applied to the activities of information scientists. What is not available is the interpretation of these theories that is so vital to the future of information system design and information science.

The tutorials following this central review paper are too short to be useful. The main body of the volumes

consists of a collection of papers grouped under different themes. Terminology is discussed with the usual difficulty in grasping the essence of 'information' in a way that is coherent, consistent and useful in terms for creating a science. The papers represent many attempts at getting round, through and over this problem. There are those papers that appeal to the social sciences and management sciences in order to define information systems within the framework of human organizations. There are other papers that look to neurophysiology and general system theory (cybernetics) for design criteria. Many of the papers fail to extend these ideas into a viable scientific programme. They tend to present collections of categorical summaries based on hard experience and formed through common philosophical preconceptions.

At the end of the two volumes there are four working group reports. These

state the issues reasonably succinctly except for the report on 'Impact'. This is extensive, thorough and done with obvious relish. Unrestrained by the need for justification, the participants exercised their imagination by describing three possible worlds of 2025 AD that may result from progress in information science.

Did I make an awful mistake in choosing to review these volumes? Maybe, since they are best suited to those starting research in information systems design; particularly because they illustrate that the traditional scientific ethos seems to fall short of the problems encountered. For those not taken in by the confident presentations it may serve as a warning that information technology still remains untamed.

*T R Addis*  
*Department of Computer Science*  
*Brunel University, UK*

## UK library database system and union catalogues

**L Favret and T McSean (Eds)**

*Library Association Conference Proceedings in library automation No 3, Library Association, UK (1983) 95 pp, £8.00, ISBN 0853 65806 4*

Let me point out immediately that this seminar was called to discuss proposals: the UK Library Database System (UKLDS) does not yet exist. The proposal is to develop a common database for cataloguing and location purposes using bibliographic records from the British Library, the existing cooperatives and other participating libraries. This would include those retrospective automated files which are in acceptable form (although not necessarily to MARC standard). It would contain about four million records, with over 400 000 additions per annum.

The proposal paper is a seven-page outline document which has been widely circulated among librarians to encourage comment. This is presented first in these proceedings. The Director General of the British Library Bibliographic Services Division, Peter Lewis, who both chaired and introduced the seminar, pointed out that the UKLDS will not be a national database of all bibliographic records, but a more attainable system for limited functions. Feedback has been sought by the British Library from the library profession. This seminar sought to focus discussion. It was also made clear that the proposal would not supersede the existing online subject databases as offered by BLAISELINE and other hosts. It should provide an administrative database which will be of use for cataloguing purposes and for the

identification of holdings for reference or interlending purposes.

Verina Horsnell, Lynne Brindley and David Martin presented the background and an outline of a cooperative database of bibliographical records giving holdings information, and suggested how this would be developed. Stuart Ede and Tony Hall then examined the impact of the proposals on interlending generally and on the present co-operatives. Henry Heaney, Ian Swanson and Angela Haygarth Jackson discussed the proposals from the points of view of academic, public and special libraries, respectively. Support was general, but there appeared to be a degree of scepticism as to how useful and cost effective such a database would actually be. For example, it was questioned whether public libraries really needed such a high standard of catalogue entries, or could afford to make any input at that level although they

would be pleased to receive the output. It was debated whether the volume of direct interlending such a scheme might create would swamp certain larger libraries at the expense of their own clientele, as some suggested has been the case in America following the creation of a similar database on a commercial footing by OCLC (Ohio College Library Center).

Reported discussion is slight. It is unfortunate that the Introduction is not balanced by a concluding summary giving the feeling of the meeting. This does not come across well in the brief discussion notes. It is clear that the principle is still currently under discussion, although the Bibliographic Services Division of the British Library is developing the mechanics. The latter are not presented and appeared to cause a certain amount of concern — in particular, the economics of using such a database were queried, and its

impact on the interlibrary loan network, as well as on cataloguing, are recurrent themes.

An attempt was made to publish quickly, and consequently typing errors spelling mistakes and syntax errors mar the report. Discussion is far from detailed and non-librarians will have difficulty with jargon and abbreviations which are rarely expanded. However, with these reservations, this sets out to be a discussion document on a proposed database of a massive scale about which many professional librarians have already been asking questions. In setting some fears to rest the information presented raises other questions which will need to be answered clearly before such a database becomes operative.

*V J Nurcombe  
Kimberlin Library  
Leicester Polytechnic  
UK*

# calendar

<i>Date</i>	<i>Title</i>	<i>Organizers</i>	<i>Place</i>	<i>Other Details</i>
2-6 July	Research and Development in Information Retrieval	Contact: Prof. C J van Rijsbergen, Dept of Computer Science, University College, Dublin, Belfield, Dublin 4, Ireland	Cambridge, UK	
3-6 July	Information Comes of Age (1984 Revisited)	Contact: L McRostie, 1984 Annual Conference, Union Texas Petroleum Ltd, Bowater House, 68-114 Knightsbridge, London SW1X 7LR, UK.	Canterbury, UK	The information scientist as a professional; the politics of information; European information; tools of the trade
18-20 July	Conference on Knowledge Engineering and R & D	Contact: K M Eatough, R & D Research Unit, Manchester Business School, University of Manchester, Booth Street West, Manchester M15 6PB, UK. Tel: (061) 2738228 Ext 132, Telex: 668354	Manchester, UK	
24-27 July	9th Cranfield Conference on Mechanized Information Transfer	Contact: Cranfield Conference Secretariat, IEE, Savoy Place, London WC2R 0BL, UK	Bedford, UK	
27-31 August	10th International Conference on Very Large Data Bases	Contact: Mr R Iau, Singapore Computer Society, Shing Kwan House, 4 Shenton Way, Singapore 0106	Singapore	
29 July- 2 August	World Conference on Computers in Education — WCCE/85	Chairman, WCCE/85 Organizing Committee, Dept. of Computer Science, Christopher Newport College, Newport News, VA 23606, USA	Norfolk, USA	
4-7 September	First International Conference on Human-Computer Interaction (Interact '84)	The Institution of Electrical Engineers, Savoy Place, London WC2R 0BL, UK	London, UK	Human factors in system development; design and evaluation methods; human-computer interface design; impact of computers on human behaviour; human aspects of new horizons
18-21 September	Aslib 57th Annual Conference on Information Management	Contact: Ms S Jespersen, Professional Development Group Manager, Aslib, The Association for Information Management, 3 Belgrave Sq., London SW1X 8PL UK. Tel: 01-235 5050, Telex: 23667	Norwich, UK	
20-22 September	Advanced Information Technology SRI Conference 1984	Contact: M Hall, SRI International, NLA Tower, 12/16 Addiscombe Road, Croydon, Surrey CR0 0XT, UK. Tel: 01-686 5555 Ext 309, Telex: UK 946125	Cambridge, UK	The role of logic in intelligent systems, computer science and the new techniques, advanced programming environments, AI applications, natural language processing, robotics
21-22 September	Indexing in Perspective	National Federation of Abstracting and Information Services, 112 South 16th Street, Philadelphia, PA 19102, USA	The Hague, The Netherlands	Vocabularies used in indexing, systems and formats, effects of indexing on retrieval process
25-30 September	IFIP '84, Network in Office Automation International Symposium	Institute of Mathematics with Computer Center, Symposium Secretariat, IFIP/Network '84 Sofia, 1090, PO Box 373, Bulgaria	Sofia, Bulgaria	Network architecture, microcomputer networks, personal computers in office automation, integrated office systems reliability, interfaces
3-5 October	Second Symposium on Empirical Foundations of Information and Software Sciences (EFISS)	Contact: Prof. Pranas Zunde, EFISS Symposium Organizing Committee, School of Information and Computer Science, Georgia Institute of Technology, Atlanta, GA 30332, USA	Atlanta, USA	
9-11 October	RoViSeC 4	Contact: IFS Conferences Ltd, Kempston, Bedford, UK	London, UK	
21-25 October	47th ASIS Annual Meeting	Automated Office, 3401 Market Street, Philadelphia, PA 191 04, USA	Philadelphia, USA	

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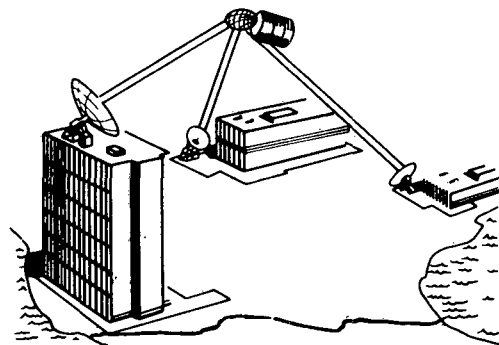
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