included the same programs, written in MicroCOBOL, running without any conversion traumas on Intel, Motorola and Zilog microcomputers.

Management Systems and Programming Ltd., UK, made much of their successful data dictionary system Datamanager, and also featured their other packages, Testmanager, the testing system for improved programmer productivity, Projectmanager and Strobe.

A surprising company exhibiting in the Technology Corridor was Pilkington PE Ltd., UK, who were demonstrating the use of glass fibres for transmitting data as light signals. Optical fibres offer a number of real performance and cost advantages over conventional data-transmission systems; one notable advantage being their security from electrical interference and from bugging.

Conclusion

Datafair 77 was a mixed conference and exhibition, with the emphasis being very much on major policy issues rather than the technical aspects of computing. Perhaps it was for this reason that the attendance was disappointing, but the British Computer Society should be congratulated on mounting a conference that successfully highlighted the major issues facing governments and society today.

D Firnberg
National Computing Centre
Manchester, UK

Trans-national data regulation

7–9 February 1978, Europa Hotel, Brussels. Organized by Online

The advances of modern technology have created information-handling capacities that would have been unbelievable only 20 years ago. The expanding flow of national and transnational data has brought with it complex social and economic problems relating to the desirability or otherwise of regulatory legislation.

The purpose of the conference was to investigate the potential risks of nonregulated information flow, to take a critical look at prospective legislation and to assess the potential effects on organizations.

Information, communication and international commerce

The computer itself may be neutral, but, because of its effect on society, for instance on privacy issues and on the labour market, it may be necessary to regulate transnational data flow to administer society in the interest of its citizens.

The role of the Conference Europeenne des Administrations des Postes et des Telecommunications in data communications was outlined by R Grainson, Regie des Telegraphes et des Telephones, Belgium. Data communications standards, customer services and facilities and tariff structures are studied, together with line specifications, multiplexing, subscriber equipment, signalling and circuit switching, packet switching, standards and protocols, e.g. the CCITT Recommendations X.3, X.28 and X.29 developed for Euronet. The PTTs of the UK, Spain, France, the Netherlands and Belgium have provided or will provide packet-switched networks within the next four years and are also considering circuit switching, and those of the Nordic countries, W. Germany, Switzerland and Italy have provided or will provide circuit-switched networks, and are considering packet switching. The most important task for the CEPT in the near future is to formulate a solution allowing the interconnection of all the Western European public switched data networks.

All the member states of the OECD are working on, or have passed, legal regulations against personal-data misuse. Dr Gerhard Stadler, Federal Chancellery, Austria, outlined the common principles, which are that the subject must be offered access to his data and the opportunity to correct or erase it, and that there must be some supervisory authority. International legislation is needed to deal with such problems as the overlapping of national regulations and legal systems, and of applying national laws in the data exporting or importing countries. Several international organizations are working on relevant international agreements, including the ITU, the UN, the Council of Europe, the European Parliament and the OECD. International regulations could be based on the following guidelines (suggested by the Swedish Data Inspection Board to the OECD): information should not be used for any purpose other than that decided in its country of origin; persons having legitimate access should observe secrecy; unauthorized access should be subject to legal penalties; reasonable security measures should be employed; reliable and continuous movement of information should be assured; and, in general, individuals should have the right of inspection of personal data.

Kerstin Aner, Swedish Government, described the current revision of the Swedish Data Act of 1973, which is specifically addressed to the protection of privacy. Various questions are under discussion, such as should trade unions be able to influence personnel files and other uses of computers at work? Should a private organization be able to keep a file of individuals that it has no real and close connection with? The use of data for social research and for statistics, group privacy, and the use of public records for commercial purposes are being considered. Welfare-services data illustrates the problem of 'soft data', i.e. data that look like facts but are actually judgements. National computer laws may contradict each other, and so international data conventions should be produced that ensure that the privacy of the individual is protected while a

free flow of information is maintained.

Prof. F A Bernasconi, Intergovernmental Bureau for Informatics, Italy, outlined the work of the IBI, which is an intergovernmental organization that supplies technical support to developing countries to help them implement their informatics policies. It deals with such topics as the impact of computers on society, indigenous industries, informatics and telecommunications. Its aim is to help developing countries attain the same degree of national self-sufficiency in information capabilities as the others. The Third World has problems that are very different from those of the developed industrial countries, and faces economic and solidarity issues that may mean that its policies will not follow the same lines. It is important, therefore, to take a global view when considering possible future transnational dataflow legislation.

P Onstad, Control Data Corporation, USA, represented the views of the US data-processing services industry. The industry feels that national privacy protection laws might create unintended disharmonies and disruptions of international information-flow business, and that national laws should be harmonized to create international cooperation to avoid this. They also feel that new data-transmission methods, such as value-added networks, should supplement the traditional full-period transparent private-line channels, not replace them.

Transnational data communications traffic

Richard Butler, International Telecommunication Union, Switzerland, explained how the demand for data transmission services caused by the increase in computer communications has meant new demands on the world-wide telecommunications network. Problems are caused by the economic necessity to adapt existing telecommunications systems, which were designed for analogue telephone traffic. A new generation of digital switching systems has, however, been specially designed for data transmission. New transmission media, e.g. optical fibres and lasers, are being developed, and wide-band interactive systems and services, such as teletext and Viewdata, are being introduced. The ITU is the sole forum for the regulation of international telecommunications, and the CCITT formulates recommendations relating to data-transmission equipment and system standardization and to tariff principles. The International Telecommunications Convention provides that Members may stop virtually any type of communication that may appear dangerous to the security of the state or contrary to their laws, to public order or decency, and establishes the right of a Member to suspend international telecommunications services. The user has the right to private and uninterrupted communication, but these rights are subordinated to those of governments. Also, those administrations who do allow the transmission of coded messages may require the sender to lodge the key with them, and so the user's privacy is entirely relative.

Tim Johnson, Logica, UK, explained that, since most of the PTTs now installing circuit-switched networks state that they intend to provide packet interfaces as well, interworking between networks should be possible. Developments that should contribute to the establishment of a proper international public data network covering Western Europe are: database access services that are already available between several European countries and the USA, the Euronet project, the Nordic data network, and the plans to link networks using German EDS technology. The PTTs have licensed certain community networks for specialized functions, e.g. SITA and SWIFT, and time-sharing bureaux and private data networks also exist. These network operators are anxious that the PTTs may force private circuit users to transfer to public data networks, which would be disastrous for PTT–customer relationships – fair competition would be the best solution. Little information is yet available about the volume or pattern of international dataflow, but it is clear that very large volumes are necessary to make network use economically viable. Many users must have smaller applications awaiting the availability of a public network.

Canadians occupy more than 10% of the Earth's inhabitable land mass with 0.5% of its total population, and also have to contend with many natural geographical barriers to communications. They therefore place great importance on communication systems, and invest more money in them than in any other industry. Palle Kiar, Trans-Canada Telephone Systems, explained how Canada has two coast-to-coast digital computer communications services, which has encouraged the development of applications such as banking, manufacturing, retailing and wholesale distribution, trucking and insurance. Transaction-oriented traffic has great growth potential, and, to facilitate this, packet switching networks were introduced. Canada works hard to promote internationally approved standards, and the link between Canada's Datapac and Tymnet and Telenet in the US was the first transnational interworking of public packet-switched networks using X.25.

There is less international data traffic today than is indicated by the size of the potential market. Philip Walker, Telenet Communications Corporation, USA, suggested that this is due to excessive rate levels, lack of technical standardization, lack of innovation and organizational resistance to change on the part of the European PTTs. A leased voice-grade channel costs $1090/month between New York and Los Angeles, and $8683/month between London and New York. The CCITT-approved modems in use in Europe are not compatible with the North American Bell System modems. The fact that the carrier or PTT at each end of an international telecommunications route must jointly agree on any change often means a lack of innovation. The view of Telenet is that problems have been caused by the European PTTs failing to pass on to users the economic benefits of packet-switching technology. The PTTs in the CEPT have, say Telenet, forced the US packet networks to interconnect via the four US international record carriers, with consequent increases in costs and transmission times, and reductions in reliability. Telenet's sug-

gestions to solve these problems include the idea that a single US entity should be created to negotiate a blanket agreement for each class of service with a particular country, and that any US carrier should be able to interconnect directly with any country.

Crossborder data regulation issues

Hans Peter Gassmann, OECD, pinpointed some of the international policy implications of the rapid growth in transborder dataflow, which has generated new jobs and new business. The OECD is coordinating a study to quantify the economic benefits of information activities. The growth in computer communications is now 20–25% per year, and such great changes in data communications technology are taking place that old rules no longer apply. International legislation must be developed by the industrialized Western democracies. Computing services have reached the stage where they will have to assume similar burdens and responsibilities to those of telecommunications services, as computer and telecommunications technologies continue to merge.

Torsten Larsson, Central Administration of Swedish Telecommunications, described the setting up of the Nordic public data network, to be operated by Denmark, Sweden, Norway and Finland. The Swedish Telecommunications Administration and the Swedish Data Inspection Board have cooperated from an early stage to identify areas of special interest from the privacy point of view and to devise appropriate national safeguards.

Information has now become a prerequisite for the administration of society. Allan Eriksson, Swedish Ministry of Defence, described how vulnerable the information society is to the misuse of data. Computerization presents new and efficient methods for creating confusion and chaos in the community with very little effort, since the production of services, the distribution of goods and services and economic transactions are increasingly handled by computers. Havoc could be created by damaging control computers, and personal information registers could also be misused by any aggressor. The vulnerability of computer systems could therefore be used against the community in situations ranging from peace, through terrorism to full-scale war, by forces inside and outside the country. International data communications bring fresh problems that could affect emergency planning. An increasing number of registers and databases are permanently kept abroad, and an increasing amount of processing is done abroad, and so countries must depend on political conditions in other states.

Adrian Norman, Arthur D Little, UK, had prepared a spoof feasibility study on the establishment of a 'data haven' that was designed to spotlight some of the issues of possible cross-border data regulation avoidance. conclusions of the 'study' were that there were no insurmountable barriers to the establishment of a data haven operation. An offshore island, for instance, could be found with good telecommunications links, and hardware and software easily purchased and developed. Data about identifiable individuals could be legally collected in some form in nearly every country, and piecemeal data could be aggregated in the haven without breaking any regulations. The risk of prosecution could be made to fall on the customers or brokers, not the operator. Ultimate users of private data could bypass most conceivable barriers set by national or international agreements, and data smuggling would be so easy that no government would ban it, or prevent people going abroad to look up off-shore databases. All they could do would be to prosecute the data users.

Prof. Jon Bing, University of Oslo, gave some examples of privacy issues in transborder dataflow. In some instances, personal information is transported across territories without being used or processed, and special provision should be made to facilitate data throughflows, which may be crucial to the establishment of international data networks. In Sweden, legislators have ensured, through licensing clauses, that a credit agency operating in the country has a legally responsible company within the country's jurisdiction. Through sanctions against that company, control of data processing outside the country may be achieved. Norway would like to be able to legally govern personal data processing, regardless of where the processing takes place, for all persons domiciled in Norway. Direct national regulation of transborder dataflow is an effective way of obtaining privacy control, and another useful more indirect way is through granting licenses to companies operating personal files.

Government initiatives in data protection

Alan Benjamin, Computing Services Association, UK, outlined the CSA's proposals for controlling transnational data communications and protecting privacy: any organization that wishes to trade in a country must declare to the data-protection authority of that country the name of the organization to whom correspondence and any legal sanction may be applied; that organization shall be subject to that country's legislation (thus the point of responsibility is fixed, regardless of where the data is actually processed); the organization may decide how and where to have the data processed, but must specify the identity of the processing organization and the processing location to the data-protection authority; before issuing a licence to an organization, the authority must satisfy itself that the processing will be carried out with acceptable security. A statutory authority, independent of government, should be set up in each country to act as a licensing body, and the actions of the authority should be subject to normal judicial procedures.

The Council of Europe's data-protection principles were outlined by Dr Frits Hondius. The law has to balance the rights and freedoms of the individual against the common interest, and the disclosure and dissemination of information against exclusivity, secrecy or confidentiality. The Council has developed recommendations, addressed to governments, aimed at providing common safeguards that respect the right of individual privacy and prevent unnecessary divergencies between national legal systems. The principal

provisions are that computerized information should satisfy objective standards, for instance in being accurate and up-to-date, and subjective standards, with regard to how it is gathered and used. It is recognized that, in general, individuals should have the right to know if information is stored about them and what it is, and should have the right to demand the correction of inaccurate information. Data processing staff should observe rules of ethical conduct, and data security should be observed for every databank. At the moment, the Council is spelling out its resolutions in detail, and transferring them from rules of voluntary conduct into obligatory rules. An international Convention will be drafted in 1980.

Various alternatives are available for the operation of transnational computer communications systems, and Dr Rein Turn, TRW Defence and Space Systems Group, USA, described in detail possible implementations of transnational privacy and security requirements. For instance, proposals have been made that identifiable personal information should not be transmitted to a country where privacy protection is not comparable with the home country. The sovereignty of a country may be eroded when large amounts of data about its citizens are processed and/or stored abroad. Computer communications networks should be established to reduce the dependence of any country on any other single country. Techniques now exist for satisfying most of the data security requirements, but their implementation may be hindered by lack of standards. Encryption as a technique may be difficult to use if PTTs insist on being able to monitor transborder traffic.

Dr R Schomerus, Bundesministerium das Innorn, W. Germany, explained how the Federal Data Protection Law operates. The law does not contain any specific provisions regarding the permissibility of transporting personal data abroad, but the national internal regulations apply. The main criterion is that the recipient of the data can demonstrate that his interest in the data is justified, and that it will not harm any interests of the individual concerned that warrant protection.

The operation of Swedish Data Act was described by Jan Freese of the Swedish Data Inspection Board, which administers the act. The principle on which the act is based is that, in general, everyone should have the right to know what is on record about them, and have the right to correct it. Anyone who wishes to set up a personal file must first obtain permission. Keepers of data must not release any information about a person if they suspect that it will be put to incorrect use. Anyone who infringes the provisions of the act may be fined or imprisoned.

Services and user response

John Eger, formerly of the US Office of Telecommunications Policy, felt that the regulatory moves already made and those pending could only be negative, slowing down or obstructing the free flow of information, rather than protecting society, and that legislation must be harmonized internationally into a global information policy, or the forest of incompatible national regulations will effectively bar transnational dataflow.

William Combs, Tymnet, USA, explained the history and operation of Tymnet, the value-added packet network, and Dr James Castle, HB Network Information Services, outlined the operation of the Honeywell Mark III services. Both authors put forward the point of view of the commercial network operator in calling for transnational data legislation that protects national security, national economies, domestic employment and personal privacy, but does not interfere with normal business operations or damage profits.

Dr Takeshi Utsumi, Global Information Services, USA, described the work of the international Global Systems Analysis and Simulation (GLOSAS) Project, the purpose of which is to help decision makers in government and industry evaluate the results of possible policy decisions by countries on their energy, resources, pollution and domestic economies, and international trade and monetary systems, by using global computer networks, satellite telecommunications, computer conferencing and worldwide distributed computer simulation modelling. The initial development stage involves cooperation between Japan and the USA. Later it is planned that simulation models of other countries will be integrated, and multinational interactive energy simulations will be developed to aid consensus on global policies.

Assessing data regulation trends for government and corporate planning

William Fishman, US Office of Telecommunications Policy, went beyond the industrial and commercial aspects of international data exchange to discuss the broader issues of free information flow, and took as his example direct television broadcasting, i.e. television signals received directly by home antennae from satellites. The US, the UK and a few other states believe that little or no international program control is necessary; the USSR, other Eastern Bloc countries and many Third World countries believe there should be significant controls; and a few other countries, led by Sweden and Canada, are attempting to find a compromise. This is a sensitive and important political and economic issue.

Russell Pipe, European consultant, concluded the conference by reviewing the issues raised and calling for prudent realism in the consideration of how to incorporate changes in organizations. The dislocations may be troublesome and expensive, but the long-term effects will be more international collaboration and harmonization, and a balance of freedom of information with the international public interest.

Amanda Harper