COMMUNICATIONS LAW BULLETIN

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The Communications Law Bulletin (CLB) is now the official publication of the Communications and Media Law Association (CAMLA). It is expected that future issues of the CLB will be upgraded in format and presentation. It is also hoped that the range and quality of articles accepted for publication will expand to appeal to professional (and perhaps academic) readers.

THE INTERFACE BETWEEN COMPUTERS AND COMMUNICATIONS

Susan Nycum

This topic is very difficult to get one arms around. It is so broad and technical in its nature it's rather like being cosy with an elephant.

TECHNOLOGIES

Diagram I

- Hardware
  - Supercomputers
  - Mainframes
  - Mini-computers
  - Workstations
  - Micro-computers
- Software
  - Systems Programs
  - Application Programs
  - Switching
  - AI
  - Neural
  - Data Base Management

(Diagram I cont'd)

- Semiconductor chips
- Communications Technologies
  - Media
    - Wire
    - Fiber Optics
    - Microwave
      - Satellite
    - Cable
    - Radio
      - Cellular
  - Protocols
    - International
      - OSI
      - ISDN
    - Industry or Governmental Agency
      - SNA
      - DECNET
      - TCP/IP
      - MAP/TOP

The Communications Law Bulletin welcomes articles, case notes, letters, news items, notes on recent publications, details of forthcoming events and other contributions. Forward all correspondence and contributions to: **The Editor, PO Box K541, Haymarket, NSW 2000. Registered by Australia Post - Publication No NBG 44174.**

—In This Issue—

COMMUNICATIONS LAW BULLETIN

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Ergonomic Essentials

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Many, many layers of different technologies intersperse and Diagram I is a point to point representation of these technologies. The reason the area has progressed so quickly is, I believe, that technologies are moving so quickly. These technologies are several, they are diverse and they are growing apace in ways which affect not only each other but other aspects of the community: social, regulatory, legal. Some of the computer technologies are probably very well known to us all; certainly the hardware is. It seems that about every ten years there's a new generation of hardware, the most recent one being the **work station** that now fills that slot between the **micro-computer** and the **mini-computer.** At the software end, the systems programs and application programs conveniently divide the world. But inside that division there are many new things happening almost as we speak. Switching programmes, which are of obvious interest to the telecommunications environment; artificial intelligence (AI) which has been around for a while but which is finally catching on and becoming a reality in the business community, allowing such applications as a doctor in a remote area being able to access a data base and ask "He has the following symptoms. What is the problem and how do I treat it?."

Neural Software. This is a new one even for the technologists. This is a type of software that recognises patterns and its obvious application would be in the analysis of photographs from satellites - a clear implication for the military.

Data base management enables us conveniently to handle vast amounts of information. A new technique recently developed is Hybocard. Hybocard will allow us to manipulate small, discrete parts of data and place it as we wish. If I wish to write a book I am going to decide what I've got on my card file and what I've got in my many pieces of paper and where I should put it-in Chapter 1, Chapter 6 or in a footnote. Very helpful.

The other technology that fits in here is the **Semi-Conductor** technology. Semi-Conductors make it possible for us to move it from computer rooms the size of a large conference room, to the capacity to store four million bites on my fingernail. Absolutely incredible when you think about it, but everyday to those who work in the environment.

The **communications technologies** are no less marvellous in the development and enhancement that has happened in very recent time. From just having **wire** we now have **fibre optics, microwaves, satellites, laser optics, cable** and **cellular** forms of communication.

Then there are the **protocols** that allow us conveniently to link things together. At the international level the standards are set by the I.S.O. and the I.S.D.N. (Integrated Surface Digital Network) which will be in place here in Australia and operational by Telecom in early '89 and will allow us to put just about everything in one protocol. In the U.S. we have several industry and government protocols as well. There's SNAR from IBM, DECNET from Digital, TCPIP which is the follow-on to the government operated Arpernet and then MAPTOP, a joint venture between General Motors and Boeing which allow the engineering and manufacturing floor to talk to the front office.

CERTAIN CURRENT APPLICATIONS

Diagram II

International Networks

"Wired" Country or "Wired" City

"Smart Buildings"

Telephone Systems

Electronic Mail

Surveillance and "Beeper"

Transactions

EFT

POS

Robotics

Other

Certain of the current applications include **international networks.** You can call one of them the telephone, just one of the many multinational networks in place. Then there are specific ones such as SWIFT, the International Electronic Funds Transfer Network. There are concepts which have almost reached reality; **wired countries** or **wired cities.** France is very nearly in that situation and Singapore is moving very quickly towards it. In the US we are not so fortunate because of regulatory reasons or otherwise. We don't have a wired country or wired city capability. But we do have **wired buildings** where we share tenants' services with vast apartment and other complexes - some hundred wired buildings. Then there are **telephone systems.** In fact, we can think of the concept of the wired person. I was at a cocktail party the other day when one of the guests showed me a telephone in his pocket. It had a little spacey look to it because there was an antenna that went up and he looked faintly Martian. Nevertheless, it worked! and instead of rushing at the break for the pay telephones as the rest of us have to do he simply went into a corner, sat down conveniently and telephoned his office.

Electronic Mail, Video Text Applications, Teletext. The capability of **surveillance** and **beeper.** (Beeper being the opportunity to plant a bug on the target and have that target followed discreetly and from a distance but within a fairly broad range.) And then there are the **transactions** that we now take for granted and which were not possible ten years ago which, in fact, were hotly debated whether they ought to takeplace at all. Such things as electronic funds transfer, point of sale and the factory aids that we've come to rely on and which have made such a difference in the marketplace

robotics; facsimile ... I'm told now that people are taking their telex numbers off their business cards and letterhead because fax is so convenient and so pervasive. Soon low cost fax will be present on all our desks and tabletops.

CERTAIN SOCIETAL ISSUES

Diagram III

Societal Protections

- Protection of the Press
  - Media Satellites
  - Desk Top Publishing
- Protection of Speech
  - National Security
  - Commercial Speech
- Protection of Privacy
  - Data Base
  - Beepers
  - Voice Call
  - Satellite

Questions of Sovereignty

Developing Countries

The first is **protection of the press.** You know that freedom of the press has always been a tug of war. This has not been totally changed but it has been influenced by the coming together of communications and computers. For example, it may soon be possible for the media to have its own satellite and then, when something happens in a remote but dangerous part of the world it will be possible to have that satellite see what's going on and tell the press rather than having to put correspondents there on the scene. On the other hand it is conceivable that from some vested interest points of view the press will know too much and have to decide when and what is it going to publish.

At the other end of the spectrum, however, is the concept of desk-top publishing and all its implications. It means that the press, which historically has not been regulated because it had control over the content of its carriage, may now have the responsibility for the content but not have the capability of control. The two-edged sword of freedom of the press is thus now changing a little.

Protection of speech is one of the most treasured freedoms in the United States. Here national security interests are beginning to override some of our traditional feelings, particularly in the scientific community, because of the concerns of transporter data flow of secrets that are important to the national defence. There has been a particularly noticeable increase in restrictions in commercial speech because of telecommunications, as a famous United States Supreme Court case demonstrated. This severely restricted freedom of speech in the commercial area and I will talk about that a little later.

Then there is the **protection of privacy.** I think the reason that things are different since the development of sophisticated telecommunications is that the expectations of privacy now have to change. Whereas we all felt that there was a zone of privacy around us that was fairly secure, now it is not so clear. My backyard and what I might be growing in it or doing in it may be now visible to people who are getting photographs from satellites, and the beeper technology may make it possible for people to know my whereabouts when I, looking over my shoulder, cannot see that they are watching me.

Then there are **questions of sovereignty,** particularly in the surveillance area and in data protection. There is concern, amongst legislators, that control may be slipping away. The developing nations are also very interested in access to these technologies and to the businesses and the opportunities that they represent.

SELECTED BUSINESS ISSUES

Diagram IV

Centralize v. Decentralize

"Cream Skimming"

Barriers to Entry

Acquisition

Strategic Alliances

Restraints on Competition

You are all obviously quite familiar and aware of the respresentative business issues in this arena. For example, it is now possible to make a decision whether to **centralise or decentralise** a company based not on cost and not on technology, but simply on management style, because with our little telphones, our hypercards and our laser storage, each one of us could be a totally centralised system. We could work at home, we could work in an office, we could be on the road as outside salesmen and all be as close to each other as we are here. There are other concepts such as **"cream skimming"** where the government takes care of, say, the rural communities and the outside groups find the quarters and the areas where there is great business opportunity to offer their products and services in a telecommunications environment.

But it is not as simple as just deciding to go this way, because there are many **barriers to entry.** One of these is cost. Anyone who has thought about putting up his own satellite realises that this can be a very difficult proposition and can be a very expensive proposition. I am informed that Aussat costs $500,000,000 to put up. Some of the private satellites range as high as $200,000,000 or $300,000,000. It takes more than just a privately financed organisation to do so. Regulation is another barrier to entry and it is not entirely true that one can tell what is regulated where because of the differences from country to country - the EEC has a different model from the US.

There is the corporate culture to be considered. For example, since the cost of entry is high and it is often necessary or desirable to seek a strategic partner, it's imperative that you be able to live together. We have had that experience in the US when CBS Columbia Broadcasting System, IBM and Aetna Life Insurance got together in a satellite venture. They have three very fine, very effective and very different cultures and the stresses and strains were well known. And of course there are also trade barriers. In **acquisitions** we often find that there is some strategic movement happening in the industry. In the United States, for example, IBM has just completed its 100% acquisition of a corporation which makes telecommunications equipment and has a 60% interest in MCI. It is interesting that on the other hand AT&T is entering into business with the Sun Microsystem which is a workstation company. So there are a number of different **alliances** going on. Finally, there are **restraints on competition.** One just doesn't enter in, even after finding a way to handle the cost. There are regulatory restraints in the US heavy anti-trust considerations and of course there is always the competition from government subsidised organisations and in many other cases government monopolies. Sometimes there is a total exclusion because of the controls over the networks occasioned by national security.

REPRESENTATIVE REGULATORY ISSUES

Diagram V

Regulation v. Deregulation

New Agencies v. New Jurisdictions

Allocation of Scarce Resources

Classification of New Products

e.g. Bulleting Boards - Common Carrier or Publisher

Education of Regulators and Compliance Personnel

e.g. Audit
Security
"Mail" Delivery

The representative regulatory issues are fascinating in that, at least in the US, traditionally we had print media, we had common carrier media and we had broadcasting. And the last two were regulated and the first was not. Now I ask "What is the difference between a message system which is stored and forwarded and message system, also electronic mail, which is an interactive computer system with little mailboxes on it?" One of these, the 'computer system' is not regulated; the other one, the 'store and forward' is. So there are questions of regulation versus deregulation. In the US there is a great movement towards deregulation and there is a movement also in that direction in the EEC.

There is a question of new agencies versus new jurisdictions. When electronic mail first became an interest of the legislature in the US it became obvious that there was a tug of war. The FCC (Federal Communications Commission), which regulates communications, wanted control over electronic mail because it said 'electronic' and the post office department said "What do you mean? That's mail. It should be our responsibility". Fortunately the E-mail or E-com which was the reason that they were going to get into this impasse has been bypassed. I am informed that instead of being interested in electronic mail per se, people are now more interested in what is done at the end of it. They are not sending letters, they are doing transactions, and as a result the post office has backed off.

There is also a change in what 'scarce resources' may mean. It used to be that the spectrum was scarce resource but now with cellular, cable, fibre optic and time displays broadcast, it is not so clear what is a scarce resource. Our FCC has declined to treat those traditionally and consider the need to have equal time considerations the way they have in the past.

In the classifications of **new products** what do you call a electronic bulletin board? Is it a common carrier which would be regulated but which would have no control and therefore no responsibility over the content of what it was carrying? Or is it a publication which is not to be regulated but which is to have responsibility for what is carried? In advising clients in this area we wish that we had a little more firm direction.

Then there is the question of **education of the regulators and compliance personnel.** I lived through the beginnings when the bank auditor in an EFT environment could no longer sit down and work through the papers but was faced with a black box that he had to come to, stop dead, and come out of hoping that in the meantime nothing untoward had happened. I have also lived through the phase of the night watchman trying to become a computer security expert. He would see someone at a terminal and not have the faintest idea of what he was doing. Was he stealing the assets from the bank or simply writing a letter? Of course the mere concept of the mailman carrying around electronic mail rather boggles the mind.

KEY LEGAL ISSUES OF THE MEDIA

Diagram VI

Ownership of Technologies

Patent/Trade Secret/Copyright/
Mask Work/Trademark

Acquisition of Products and Services

Sale and Purchase
License
Joint Ventures
Cross Licenses
Teaming Agreements
Other

Liability for Products and Services

AI
EFT
POS
Desk Top Publishing

Other

To:
- Third Parties
- Employees
- Partners and Co-Venturers
- Customers

Government Regulation

- Approvals
- Compliance

Crime

- Perpetrator Liability
- Victim Exposures

Dispute Resolution

The legal issues that arise out of this background fabric are interesting and varied. First and foremost is the issue of **ownership of the technologies.** It is clear, I think, that what makes the world, or at least the telecommunications part of the world, go round these days, is the intellectual property that is contained inside the media. Consider, if you will, a computer that does not have any software or a satellite which doesn't work. They're inert - they're just salvage value. It is the intellectual property that gives them the competitive edge, that gives them the reason, the command value; it's the invention, it's the knowhow, it's the showhow, it's the business experience and expertise that make companies successful. It is fortunate that there are a number of good intellectual property protections available which, in a combination of patent, copyright, trade secret, maskwork protection, trade mark and unfair competition can protect the technologies and those who have invested in them and used them.

One vital thing to remember, however, is that you have to plan ahead. If you do so and keep the plan in place there is much opportunity to have your valuable asset protected for as long as its useful life. Unfortunately, people don't always plan ahead and those of us who have technology companies as clients may be well advised to learn from the mistakes of others.

For example, there is a company in California called Dolby Systems Incorporated. It has a wonderful technology and the company has been able to make sales of over $100 million in just a few years. But it started out wanting to become a standard and when you want to become a standard you have to give away a few things and what it gave away was the way its interface worked. It went so far as to say in its initial public offering prospectus that the company had placed the language in the public domain (one of the company's goals was to promote the Postscript language as a standard for the representation of the printed page). Somewhat later it regretted that and in an editorial in Mac Week, which is obviously a Macintosh related publication, there was an editorial stating that Dolby wants to go back on the Postscript rules. Dolby's leaders had been universally acclaimed for having the foresight to place the Postscript language in the public domain and it was pivotal in making that an industry standard. Now, it seems, Dolby would have us believe that the notion that the Postscript language is in the public domain was due to the imprecision of a Dolby spokesman! That's wonderful if wishing could make it so, but unfortunately, under copyright laws, once something is in the public domain, it remains in the public domain. I think that it will be an uphill fight!

There is another important issue, and this is the acquisition of products and services. There are numbers of different acquisitions in place now - there are strategic alliances, there are corporate partners, there are joint ventures, there are teaming agreements.

I would like to talk for a minute about one technology transfer in which I was involved. Our client is an Asian country, which is interested in becoming a wired country and part of that process was to take place by acquisition of strategic technology from a California start-up company. The company is a small one and its only asset is the technology. We were

a group of people who were the government, the government research department, the government research laboratory and five of the largest businesses in the country. We wished to have the capability of acquiring a licence to the technology, training to use it, manufacturing rights and the rights to resell the end resulting product in a certain part of the world. One of the things that a good contract does is to have a blue print of what you are doing and to fairly allocate the rest. There were two risks as it came down. There was the risk to us that this emerging company technology wouldn't work. We have all been through that and know that the question is often not, "Will it fail?" but "When it will fail?". When one is in the potential situation of paying up to $100 million for a product and also representing the government it might be rather unpleasant, to say the least, if there was a failure of performance. On the other hand, the small company's total asset was the intellectual property represented in that technology and they were considerably concerned that the technology would come out, get to the public domain or into the wrong hands and would result in the loss of further royalties. So we had two risks to balance: one from us that it wouldn't work and one from them that we would allow leakage of the technology.

Accordingly, we structured an agreement which had warranties and representations on these issues going in two directions to balance the relationship and we had limitations of liability to further balance the relationship. We knew, of course, that if their product did not work there was no way that they were going to be able to make us whole. On the other hand, they knew that if we let the technology get out there was no way they could make us pay for all their lost future products; but to the extent possible we were able to make the playing field level for both of us.

Then we had to figure out how to best handle payment. Now obviously we had money. They had the technology and we didn't want them to get so much up front that they wouldn't be interested in finishing the job. This is something that is inclined to happen, particularly with bright engineers who get interested in something else and want to get on with that rather than finishing the work that you require. On the other hand, if we were too mean to them they wouldn't have enough money to pay their bills and they probably would lose their key people, so it was necessary to structure what was just the right amount and to negotiate a balance and a sharing of the risk there too. Along with every other agreement we had to contemplate the termination provisions. Many technologists become very excited at the beginning of a relationship. They know that this is going to be a marriage that will last forever and they never think about an ante-nuptial agreement. As a result there is no termination provision in many of these contracts. There are times when you simply change your mind and for a fee you ought to be able to get out of it without going to court, so we negotiated, not only what the termination would be, but the rights on termination. One of the things that was important to us was that we not pay royalties for ever and ever if they decided not to stay in the business. We made provision that if they didn't stay in the business for any reason other than our fault, that we would have the right to continue using the technology without further obligations. We knew that there were bound to be stresses in the relationship but we didn't want war.

What we wanted was a way to continue to work together as we ironed out the problems so we set up several tiers of what I would call an alternative dispute resolution. These were intially in the hands of the technical and business people responsible for working things out, and then at ever increasing higher levels as the controversy escalated. Finally we determined that "in the unlikely event" that there was a total disruption to the relationship we would have arbitration. Since there were two different jurisdictions, if we were going to bring arbitration, we had to do it in their country and if they were unhappy with us they would have to bring the arbitration proceedings

in our country. Since it is essentially an up hill battle to be in the home town of the adversary, we considered that to be a further deterrent to any unpleasantness on either side.

Finally, we put in what is frequently done in software based contracts (and in most technologies today software is at least a critical part, if not a major part) and asked if we could have the software and source code. They said "Well, yes, you probably want my mother-in-law too!" so as a result we settled on a software escrow. The source code was placed in an intelligence software holder and we had provisions for getting access to the software in the event of their inabiltiy to continue. One of the things you must remember when dealing in the United States is that our bankruptcy laws are tricky and they are not very good to licensees. If there is anything in a contract which remains executory at the time of the bankruptcy the trustee has the ability and the right either to enforce the contract or to renege on the part or all of it at will. It was important, therefore, to consider what would happen if the triggering event for this escrow was a bankruptcy. Very likely the bankruptcy trustee would not care to go along with it so we had to make it a triggering event which was short of the bankruptcy. It is reassuring to know that in situations experienced in the US if the product of service fails that the contract itself may sometimes be avoided. Which leads me to the next topic, which has to do with liability for **products and services.**

Many different liabilities can arise in an artificial intelligence environment, an electronic funds transfer environment, point of sale, desk-top publishing, communications and computers generally. These liabilities may be for physical damage. Consider my friend who was doing a private launch of a satellite. He had got every single clearance he could think of, he was fully funded, he had insurance in place, he had liability disclaimers, he was all set. But when the satellite blew up on the launch pad he found out that he had failed to obtain an environmental impact clearance from the local municipality in which he was launching the satellite. It was an unpleasant and expensive oversight. Currently, we know that there is a satellite which seems to be losing orbit and we have all been warned that it is likely at some point to come down through the atmosphere in chunks. I was immediately reminded of "The Gods Must be Crazy". What would one do with a bit of satellite that couldn't be done with a coke bottle? There are also physical injuries relating to computer systems in electronic funds transfer areas. For example, machines are unattended and are known places where people obtain money and areas where people can be mugged. Computer screens are alleged to cause damage to some people. We have never seen any hard data that suggests that this is the case, but there is always the possibility that someone will be disadvantaged. Then there is the robot. It is a wonderful thing in the manufacturing facility but I was sitting at the breakfast table one morning looking at the headline in our San Francisco newspaper that said "Japanese robot stabs worker to death". I was horrified and turned inside to the financial pages for light relief, and there was a proud headline: "US robots - just as good as Japanese"!

There is the damage that comes when the product doesn't work. I am informed that there is a satellite that has been launched by the Germans and French which, when it got up there was essentially useless - the shutter wouldn't open. There are numbers of computer systems which over the years have been held not to work. If, because of overzealousness in representing what the product will do, there is a certain expectation which is not fulfilled, there is the capability (often used in the US) to allege that there has been fraud in the inducement, resulting in a contract which is void but with damages due. In most of these cases the loss is consequential. It is not just that you have paid for something that doesn't work but that you have sustained loss from not being able to go through with the transaction. One of the famous early cases concerned a

wire EFT transfer between Chicago and Switzerland where the telephone lines connected but the message was never received.

KEY LEGAL ISSUES OF THE MESSAGE

Diagram VII

Privacy and Data Protection

Ownership of Data

Liability for Incomplete, Outdated or Incorrect Data

Standard of Care of the Provider

Security

Access

Applicable Law

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THE HISTORY OF SOFTWARE PROTECTION

Martin Greenstein

The history of software protection dates back to the early days - seven or eight years ago. It's interesting in that it puts into perspective the "look and feel" expansion of the copyright doctrines; the expansion of protection of software under the patent laws we see today. If you go back to the video games of the late 1970's and early 1980's, you find software being protected essentially as audio video works. These were, in essence, cartoon characters. They were the games that were placed and were the original user-interactive interface. In playing the game you controlled the programming. These could be protected under traditional copyright principles, not as software, but as visual works.

The personality of the characters themselves add copyright features similar to cartoon characters and greeting card characters. One of the early cases concerned a take-off deal with the personality of the little animal that went around and ate the person it was chasing. The look of the eyes as it was about to seize upon the character was pointed out by the court as one of the infringing features. The code itself was irrelevant; it was the original "look and feel" doctrine.

The US courts moved from that into protection of the more traditional software. They first dealt with the issue of what code is and whether it is protected as a literary work. I should mention as a preliminary note, however, that the US Copyright Act, which was passed in 1976 (effective in 1978) after several decades in the making, did not specifically mention that computer programs are copyrightable. The regulations certainly provide the mechanism for recording registration for computer programs but the Act itself doesn't specifically say so. In fact, the '76 Act didn't even mention the words "computer program". It took the 1980 amendments to bring in an oblique reference to the fact that software was protectable by copyright. Even then they did not do

it by saying so expressly; they did it by defining some of the things you cannot restrict with the copyright, namely, the right to make an archival backup copy of the software and a recognition that in executing a computer program the very first thing you do is load it from a disk or tape into memory and therefore make a copy of it - the original copyright infringement. That thing itself, a copy necessary to the functioning of the machine, was held not be an infringement of the copyright.

It was not a big jump to recognise protection for **source code** because it is a literary work. Granted that it is in a language with a very small syntax and very few vocabulary words, but it is a readable work. **Object code** was a different situation however, and the court struggled with that for a period of time, eventually deciding that either under the concept of a transalation or an adaptation or some transformation, object code would be protected. Copyright Office actually will accept object codes which it cannot read. It prefers to accept source code deposits for copyright registrations, but will accept object code deposits. They can't read them but they accept them under what is known as **rule of doubt**. If you tell them that it is copyright material, tell them it is a program, they will accept it because you told them so, but then the burden is a little higher if you have to go and sue on that registration later. All of that, of course, presumes you understand that in the United States it is possible to get certificates of copyright registration. It is one of the few countries that actually does accept deposits and issues official-looking certificates for copyright registration.

Having passed the object code barrier, the courts then had to deal with another form of object code, **ROM base code**, which was internal to the machine. ROM base code had a different set of problems. It is suspiciously similar to patent protection. After all, what you've got is a piece of hardware. It's internal to the machine. There were other types of computers - analogue computers to be specific. You don't program an analogue computer - you build it, you wire it. That principle applies to digital computers as well; you can do anything in a program if you have enough wire. Actually, you hotwire the machine. When you stick a chip in the machine and tell the Copyright Office that it's really a program, it's very difficult to distinguish that from a wiring pattern that has to be in a chip, that would be protected under the patent laws. Nonetheless, the courts got past that and Apple Computer, Inc. v Franklin Computer Corporation*[1] and some other cases have accepted that object code, even if it is on a chip in ROM, would be protectable.

The last jump was into **micro-code**. THAT decision is a bit on the rocks right now because of a peculiar situation in the States. But the decision is basically sound and it will be followed again by the next court. It's not an intellectually interesting decision, however. I do not find anything particularly notable in the concept that micro-code would in fact be protectable. Micro-code consists of the micro-instructions that are inside a micro-processor that the assembly language causes to execute the individual gates and registers, and move bits of information around the micro-processor chip. That pretty much exhausted the limits of the question of protection by copyright at the time. You must keep in mind, however, that whilst all this was developing the computer industry itself was changing.

Before 1975 most software was developed in-house. Mainframes were designed by the large companies that owned the mainframe. There was almost nothing you could buy off the shelf. Anything needed to run the computer came with the computer, (the so called "bundling" that caused IBM some problems in its early days). From 1975 till 1980 (or so) most software sold was mainframe software and it was sold to large companies. It was fairly expensive software, and was sold by individual licence agreements. They brought you an agreement anywhere from one to twenty pages, your lawyer looked at it, probably didn't understand

it, said okay and then signed it. It gave you very good trade secret protection but no one worried about copyright protection. Buyers were companies of repute and were not likely to duplicate the software. In any case you couldn't sell it on the market because nobody could really use it and if a couple of hundred copies or five hundred copies were sold that was a lot. People knew who the customers were and if some customer showed up with a copy and they weren't the licensees it was very easy to find them.

The real change in software came in the 1980's with the advent and expansion of PCs, when software became a mass market item and less expensive. New techniques had to be developed to distribute software. It was no longer possible to have a separate licence agreement with every PC purchase. People came up with the concept of a "shrink wrap", or as it's called in the U.K. and in Europe, a "box top" licence that purported to create a licence by virtue of breaking the cello wrap and opening the package. That concept has not been tested in the States and is of doubtful validity in other Commonwealth countries. Friends in civil law countries tell me that there is no question that it would be invalid. The only thing left was copyright protection. So the courts began to address the issue of copyright protection more and more.

Having dealt with whether or not something should be protected the next question is: How far does that protection extend?

Again the early cases were easy. People copied the software, no question about it. The really interesting questions came about in conversions of software to run in different environments. The so called "look and feel" series of cases actually began with a case back in the late '70s that went the other way. Whelan Associates, Inc. v Jaslow Dental Laboratory, Inc.,*2 is the case best known throughout the world in establishing the "look and feel" principle. The case never mentioned the "look and feel"; it talks about the structure, sequence and organisation. There was a companion case, SAS Institute Inc., v S&H Computer Systems Inc.*3 That was a District Court case with very similar facts and a very similar outcome. Both of those cases involved computer programs to operate dental laboratories, which put to rest once and for all the often held notion that the copyright laws have no teeth!

Another case, Broderbund Software Inc. v Unison World Inc.*4 expanded the "look and feel" doctrine. From the standpoint of business software it was less interesting than Whelan. Whelan dealt with the conversion of a program to run under a different system. The Court went through it and determined that the structure, sequence and organisation of the file structures and the flow of information from module to module in the computer was identical. Broderbund had a similar analysis but it dealt with a graphics program to print greeting cards called "Printshop". There were graphics aspects to it and the Courts have found it much easier to deal with the "look and feel" of graphics than the "look and feel" of words on the screen.

In both Whelan and Broderbund there was a common thread. They were business deals gone bad. In each instance, the bad guy had some kind of a business contractor arrangement to do a conversion of the program, had access to the source code and tried to adapt it for a different system. The deal went sour, the parties had a fight and lost through default. The bad guy lost. The courts awarded relief to the person that should have lost but they then had to fashion that relief into something that fell under the copyright laws because that is where the main claim rested.

A later case, Digital Communications Associations Inc. v SoftKlone Distributing Corporation*5 again concerning a clone, didn't really have a bad guy. There was no business deal gone sour. It was a legitimate clone situation where someone decided to make a program that emulated 'Crosstalk', a very common and well respected communications package. In this case, there was no access, there was no attempt to convert; it was built as a clone and marketed. They called it "Mirror". The company was called

'SoftKlone' so you knew they were trying to position it from a competition standpoint as head-to-head clone competition. There was another aspect of DCA v SoftKlone that didn't exist in the others. The plaintiff had a copyright registration from the Copyright Office on the main screen of the program. The Court found that that main screen, the user interface, the Log-on screen was highly creative, even though it was a collection of words. It talked about the commercial value of that screen to the product. But what it was really finding was that you can build the same program, but if you absolutely copy the same screen you have violated that copyright certificate - that registration. They awarded relief but it was fairly mild relief. It ordered the rearrangement of some of the words on the main screen. Some of the words changed were fairly descriptive but the requirement was that they had to change the screen around. It turned out that the company had already decided to change the screeen and had ALREADY brought out the second version of the program which turned out to be a tremendous success.

Now let us look at the Lotus situation. You have doubtless read about the Lotus cases against Paperback Software and a product called TWIN from Mosaic software. Lotus, earlier criticised for the filing, came out saying, "We're not claiming copyright on spreadsheets, are not claiming copyright on the two line command interface. We're bringing this law suit because the defendants have taken ninety-nine percent of our program". That's in contrast to some of the clean clones that we'll talk about a little later that actually added enhancement. It's interesting in the Lotus case because as early as January 1987, a couple of weeks before the suit was filed, Lotus was saying that they would be bringing a motion for preliminary injunction to take the product off the market. It still has not been done and the case is sitting there in discovery - in the early stages of discovery and pleadings. U.S. litigation is very slow.

There are a lot of dangers in the broad "look and feel" approach, that have been read into Whelan and some of the other decisions. Part of the danger is not focussing on what exactly are the protectable elements. All Karate games look alike because it is Karate, so the second Karate game shouldn't be a "look and feel" infringement of the first just because it has someone who rolls, kicks, punches and does the things it is expected that Karate does. Yet one court found an infringement because of the overall effect; what they call the total concept and feel. (That's the real "buzz" word that the Courts picked up from some earlier cases in the graphic arts area.)

All spreadsheets look alike. You can begin to confuse the patent standard with the copyright standard if you don't focus on where the protectable elements are. Copyright protection then can get too broad.

Susan Nycum talks about Dolby and Postscript and dedication issues. It is every software vendor's dream that his program becomes the standard in the industry. Once it happens, as it happened with Dolby, they want to grab it back; they don't want it to be the standard anymore. Software vendors in the early days encouraged people to put out utility programs - they even encouraged what would later be considered trade mark infringements. The Ashton Tate Data Base, for instance - there was a whole line of utilities that came out with "little d this", "d you tell" or "d you print". Dolby claimed trademark infringement by Ashton Tate. Another client programmed Turbo Pascal in its earlier days. People cut out "Turbo this", "Turbo that" programs. That client would now like all other Turbo users to disappear.

Software is evolutionary, not revolutionary. A lot of people believe the "look and feel" cases are situations in which large companies with a lot of economic muscle and the ability to pay a lawyer can harrass smaller companies into making changes. But the development of software is an evolutionary process. The MacIntosh, which was Apple's machine, came from a laser which, in turn, came from early Xerox work. Lotus copied the whole concept of Icons and Visi-

calc and made an overall copy of its spreadsheet. Lotus later bought Visicalc and the remnants of Visicorp (which produced Visicalc) are now suing Lotus for "look and feel" infringement of those pieces that they claim Lotus forgot to buy from them. When DRI went head-to-head with Apple over the Gem system, there wasn't an actual law suit but there were negotiations that led to a change in the "look and feel" of the DRI Gem screen by something as momentous as changing the shape and configuration of a garbage can, which was one of the Icons that were used. Not particularly important cases, but evidence of companies at battle. DRI was a fairly large company and it's often said that when elephants fight it's only the grass that gets trampled. That's not particularly true when big companies fight little companies and the "look and feel" issue has the potential for allowing very broad, undefined claims that can ramble on for years. In this business if you inhibit someone's sales for a period of time, technology has passed them by. That's one of the claims that Mosaic made in its suit.

If you look ahead and try to predict where we are going with "look and feel", take a look at translations and adaptations of programs which I believe would almost certainly be considered an infringement. In the Whelan/Broderbund standard the structure, sequence and organisation are the same. When you translate to a different operating system of language, as those technically trained will know, you actually have to do a bit of redesigning of the program, but you still have to start with the basic structure, the same file instructions and the same organisation of a program.

On the other hand, if you just look at file structures and say "Hey! it's got the same file structure so it's an infringement!" you've got a real problem because you can't exchange data between programs, you can't import and export data at some point, matching up the file structure, taking it in and then changing it. So that's much too broad a standard to use.

If you re-code a program from functional specifications only I believe it will not be held to be a "look and feel" infringement. That's the "clean room" situation. It will be extended more and more into the software field, where people will look at the functional specifications, go back and re-code the program.

If you copy the screens identically you are certainly running the risk of infringement, particularly if the screen is a very complex screen. You have a real functionality issue because there are some things that you have to copy; there are some words that you have to use. Others you clearly don't have to use. If you copy the screens identically and they are complex screens the court will probably find an infringement on some kind of equity issue, particularly if you go out and market your product, positioning it as a 100 percent clone. If you take a close look at the way clones are being marketed now, none of them are really clones; they are all work-a-likes that have added something different ... it's the evolutionary process. Developers are trying to position their products as something better, built upon what went on in the past, similar but not identical. The enhancement is probably known as infringement.

COMMAND STRUCTURE

Command structure is an interesting issue. If your commands are very complex and you copy the entire set you run the risk of the Courts finding copyright infringement. There is no copyright for individual words. On the other hand, there is clearly copyright for a collection of words - that is the essence of copyright. A collection of words, language, a book or an expression in a language is fine. A collection, however, should have to convey the expression, the essence of copyright. You are protecting the expression, not the idea. As a command language and expression as it is implemented it is probably protected but the language taken as a whole is probably not. It is more functional than it is an expression. The commands themselves - the individual commands - are clearly utilitarian

and functional. Your utilitarian and functional aspects are generally not protected by the copyright laws of the United States and the rest of the world.

In the command structure, you come up against the "dedication of a standard" argument again. A lot of command structures are in essence languages. dBase and some of the largest Data Base programs are essentially languages. Languages are generally not copyrightable. A big controversy is brewing in the United States now over the Data Base language or d-Base. The users group wants to establish standards for the d-Base language. Ashton Tate, which in its early days tried to do whatever it could to encourage that to be become the standard (but never actually said so, never made the Dolby mistake), is now taking the position that it does not want a users group defining what the d-Base standard is. If they allowed that they would run into the anomaly that d-Base IV (when it comes out) might not be d-Base compatible. Someone else is defying the standard.

It is my view that the concept of "look and feel" is going and that, as an issue, it will fade in the future. It will be presented in a different environment at least.

The MacIntosh has become a very serious business machine. You don't really hear about "look and feel" issues in the MacIntosh environment. That's because it's the machine that provides the interface, not the actual user programs themselves. Now, as the IBM environment moves past MS-DOS into windows presentation and manager with Gem becomes more popular, you are again going to have a machine defined, or at least an operating system defined standard interface, so you lose the issue whether one program interface is the same as another program interface and again, "look and feel". We're really talking about the user inerface; the work-alike MacIntosh programs work alike because Apple defines the interface. In a sense "look and feel" is the price we paid for MS-DOS allowing IBM to buy MS-DOS for fifty thousand dollars or so in the early days.

Talking about copyright on screens, there is an interesting issue with the U.S. Copyright Office right now dealing with the layout and the form of text on a screen. If we're talking about graphics, there's no problem. The Copyright Office registers graphics screens. They are just artistic works, so there is no issue at all.

In defining structured sequence and organisation in Whelan's case, the Court commented on the screens, but commented on them quickly in passing as evidence of what must be in the computer program. It was further evidence of the infringement. It was not an infringement itself to have a similar screen. One of the early cases in Texas in 1978 clearly limited protection to the source and the object codes and not the input formats - the screens themselves. The Copyright Office for awhile did register textual screens as copyrights separately from the programs. They stopped doing that, however, after Whelan's case.

In Digital Communications Associates v SoftKlone*5 the Court held that the underlying software does not protect the screen. There again, the plaintiff had a separate screen registration issued before the Copyright Office stopped it. The Copyright Office was then faced with a dilemna. It had stopped issuing registration certificates and the Courts said, "Hey! you need these things, in fact that's why you win - you have a registration". People, like Lotus, were clamouring and saying, "We want our screens registered". The Copyright Office published a notice in 1987 and said that it would hold hearings in September and October and take comment. It is now chewing on the results of that hearing and the submissions received trying to make a decision as to whether or not it will allow the registration of screens. Apple said that screens should be registered and submitted several different programs that created the identical screen programs written in different languages to prove that the screen depiction is totally separate from the underlying code. Lotus took the position that it was not necessary to register screens because they were

covered by the underlying program.

In its early days Apple did not worry much about registering the screens. They were much more interested in pushing the MacIntosh display graphics as a standard. There is some question as to whether or not Apple just dedicated that standard or whether there was an implicit licence to MacIntosh developers to use the interface. Lotus, on the other hand, which took the position that it shouldn't have to register screens, had tried to register its screens and had been turned down by the Copyright Office because of the view that the screens were included in the underlying programs. My own view is that the Copyright Office will try to find a compromise and it will allow you to submit screen layouts as part of your registration to make sure that they're protected. If the screen is really a detailed screen it may find enough creativity to allow registration.

These battles, as well as other developments in the States, have led to renewed interest in patents for software. The US patent system was really in the doldrums in the early 1980's. Some sixty to seventy percent of the patents were held invalid when they got to litigation. The Government restructured the Patent Appeals system and created the Court of Appeals for the Federal Circuit from which all patent appeals are supposed to flow, in order to gain some consistency. The result has been a renewed interest in some significant patent decisions, e.g. Polaroid.

In the U.S. the laws are quite clear (sort of!). Software is patentable. Inventions are covered by patent law. But you have to keep in mind the three N's. The invention has to be Non-obvious, Novel and Not-described-as-software!. You can register a patent for software if you describe it as a computer and it's a program controlled operaton. The programmed computer, not the program - is a machine which implements a process. That was determined in 1981 in a U.S. Supreme Court decision.

Pitfalls in patents, however, are fourfold. You cannot get a patent on a principle of nature, like a mathematical algorithm. You can't get a patent on a method of doing business. You can't get a patent on the method of selling hamburgers for fifteen or twenty cents by putting up golden arches and having them ready when people walk in etc. You can't get a patent on mental steps or thought processes and you can't get a patent on the arrangement of printed matter.

However, you can get a patent on a machine that implements a mathematical algorithm e.g. a machine to break code or predict weather. You can't get a patent on a method of doing business but patents have issued on the cash management account for Merryl Lynch that maintains accounts for people and sweeps money into a interest bearing account so that you always have zero balances at the end of the day! As long as it's described as a system, the buzz word for a machine that does this, you have a chance. An old mental step case in the Patent Office involved a fairly complex process of drilling a bunch of bore holes and analysing data and looking for anomalies in the data to determine if there was oil down below. The patent application was turned down as being a "mental step". A fairly recent patent application for a similar process implemented by a computer was successful. It was patently distinguishable! Patent recently issued to IBM for a user interactive screen that had the patentably novel idea of highlighting the spots where you had to enter data, doing a check and if the data checked, taking away the highlighting.

Patents are expensive, they are territorial and they don't apply anywhere other than where you apply for them. They are fairly easy to hold invalid and there is a tremendous paucity of ability to search the software field in the Patent Office. On the other hand, once issued you can take your patent and go around "beating on" people for fairly inexpensive licences ($25-50,000). Given the cost of U.S. litigation, it's easier to pay the licence than go to court, so there can be some real value in getting patents in the first place. Patents are also fairly easy to avoid in most situations. If the patent is too broad it's almost certain that it will

be held invalid later. There is a "doctrine of equivalence" principle in patent law and there have been some recent decisions that have narrowed the application of the doctrine considerably.

BUREAU OF CUSTOMS AND THE INTERNATIONAL TRADE COMMISSION

Section 602 of the Copyright Law allows the Bureau of Customs to seize infringing copies if your copyright is registered and you deposit copies of that registration with the Bureau of Customs. Customs can also act on registered trademarks seizing infringing goods. The Semi-Conductor Protection Act has that provision as well but the Customs Department has decided that it will not seize infringing mask works unless there is an Order of Court or the ITC ordering it to do so. That may seem like a very unfair decision but if you think about it, you can look at a trademark and determine that this is a Gucci wallet or alternatively an infringing Gucci wallet. You can actually look at some copyright material and make some kind of decision. It's a little harder to envisage Customs Agents peeling back the layers of a chip and trying to decide whether it really infringes mask work. So, as we don't have the resources to adjudicate this or test it, right now we'll just wait for Court to tell us.

For tax reasons, a lot of the French perfume manufacturers sold the U.S. trademarks and distribution rights for the French perfumes to U.S. companies. Then they turned around and shipped the perfumes back into the United States anyway so the Congress in its wisdom said, "Hey! We will pass some laws that by virtue of depositing the trademark with Customs will hold the stuff up at the border".

The International Trade Commission (ITC), is a quasi-judicial body pursuant to s337 of the Tarrif Act 1930. It has the power to take action to protect American industry from unfair trade practices and methods of competition and it deals with copyrights, trademarks and patents. It's of interest for a couple of reasons. U.S. Courts are very slow. The ITC has, by the terms of the Statute Act, to render a decision within 12 months, or 18 months if it's a complex case. More importantly though, its Statutory Mandate is not to dispense justice and be neutral as is the Court, but to protect U.S. business. It is also an executive rather than a judiciary branch body and it was and is extensively used in the patent field because the Courts have been so willing to declare patents invalid. There is an understandable reluctance for a sister executive branch agency to rule that the Patent Office - another executive branch agency - made a mistake and should not have issued patent. There was a law suit filed against the U.S. Patent Office a couple of years ago for infringement of a patent in a filing system. The U.S. Patent Office, in its wisdom, raised as one of its defences that the patent was invalidly issued!!!

An ITC proceeding is an action **in rem**. You don't need the defendant present. You can issue an order excluding seven hundred computers labelled such and such. (Most other litigation requires you to have the defendant in court or at least requires you to be able to get jurisdiction for the defendant.) It's a highly political mechanism because it involves or includes the provision for Presidential veto. The President does not have to give any reason for his veto other than that it is in the interest of the country.

In addition to finding an infringement or violation the ITC has to find the infringement or violation as likely to injure or destroy effectively a U.S. industry. It also has to find, as a pre-requisite, that the relevant U.S. industry is economically and efficiently operated.

One of the leading ITC cases in the computer industry was an Apple case, Personal Computers and Components thereof. It's interesting because in the early days of Apple compatibles if you did an absolute check on the code it was something like eighteen percent identical. If you took into account location shifting and moving modules around a little bit you came up with something like twenty-five percent identical. The ITC would dissect the program and of the seventy routines in the Auto Start

ROM and the Apple Soft (the leading software there) there were thirty-two that Apple described as the most useful. Of those thirty-two, twenty-three were copied virtually identically.

Customs and ITC differ also in their exclusion abilities. It is possible to bring in ROMless mother boards through Customs. If the infringing ROM isn't in there it doesn't matter that there is no other use for the thing. Customs can exclude only the action infringing product. The ITC, on the other hand, can take a look and, under principles of contributory infringement, determine that there's nothing else you can do with an Apple mother board other than put infringing chips in it when it gets here. But that's not true of an IBM board because you can buy other copies of MS-DOS. You can buy Phoenix ROM Bio-Chips and put those in there, so an IBM mother board does have non-infringing uses that can't be excluded, whilst an Apple mother board does not.

COMPUTER CRIME

Computer crime can be made to fit into a couple of traditional categories of wrongful acts; criminal acts that just happen to use the computer as a tool or crimes that are uniquely computer based. There is some specific Federal Legislation. One piece unplugged a hole in the Telecommunications Act that made it illegal to eavesdrop on a telephone conversation but not illegal to eavesdrop on data communications. So they unplugged that hole and now it's illegal to eavesdrop and pick up that stuff as well. There is also Federal Computer Crime Legislation that makes it illegal to break into Government computers or deal with computers for Federal Banks. (Federal Banks are different from State Banks, and are regulated by Federal Legislation.) Basically the principle is that all power resides in the States unless it's been expressly granted to the Federal Government. Unless the crime is against a Federally chartered bank or affects interstate commerce, such as the telecommunications system, the Federal Government has no power to act. What you find in computer crime legislation in the United States is a series of state laws that are beginning to fall into conformity as the States learn from one another.

One of the traditional problems was that theft of goods was well-defined. Theft of services was also well-defined in a lot of States but when you steal computer time you are not stealing goods - the computer still has it all; you are stealing services. Even the theft of services laws don't work so well if all you are doing is going in there and browsing, because you haven't taken anything of value. If you are going to enchain something and gain by it, it can be fraud but if all you are doing is going in and having a look around there may not have been a crime at all. So it's very difficult to write appropriate legislation.

1 Apple Computer Inc. v Franklin Computer Corporation United States Court of Appeals for the Third Circuit 714 F.2d 1240; 70 ALR Fed. 153; 219 USPQ (BNA) 113

2 Whelan Associates Inc. v Jaslow Dental Laboratory Inc. United States Court of Appeals for the Third Circuit 609 F. Supp. 1367 (ED Pa 1985); 797 F.2d 1222; 230 USPQ (BNA) 481

3 S.A.S. Institute Inc v S. & H. Computer Systems Inc. 605 F. Supp. 816 (MD TENN. 1985)

4 Broderbund Software Inc. v Unison World Inc. United States District Court for the Northern District of California, 648 F. Supp. 1127; 231 USPQ (BNA) 700

5 Digital Communications Associates Inc. v SoftKlone Distributing Corporation United States District Court for the Northern District of Georgia, Atlanta Division, 659 F. Supp. 449; 1987 US Dist. LEXIS 3701

6 "Personal Computers and Components" Investigation No. 337-TA-140, VSITC Publication 1504, (VSITC, March 1984)

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TELECOMMUNICATIONS IN THE COMMON MARKET

Joachim Scherer

The growing interdependence between data processing and telecommunications has led, in all the Member States of the European Community, to considerable re-regulation or, at least, to political discussions about regulatory reform in the telecommunications field.

The Commission of the European Communities, which is both, a legislative and the executive organ of the EEC, is now actively participating in the movement toward re-regulation of the telecommunications sector in Europe.

This re-regulation concerns mainly four areas:

(1) **Telecommunications Networks**

Telecommunications networks - or "facilities" - are the technical infrastructure, that is the lines, the microwaves, the satellites, the cables over which telecommunications services are provided.

(2) **Telecommunications Services**

Telecommunications services are provided via the telecommunications network infrastructure. They encompass, of course, POTS - that is, "Plain old telephone service" - but also data services and other, more enhanced services such as videotext services, electronic mail services, message storage and forwarding services, and other services combining telecommunications and data processing functions.

(3) **Provision of terminal equipment**

With the merging of telecommunications and data processing known as telematics (la télématique), such terminal equipment has become more and more sophisticated and multifunctional.

(4) **Organisational Structures**

Re-regulation of the telecommunications sector concerns the organisational structures of the traditional providers of telecommunications networks, services and terminal equipments: that is, the national Telecommunications Administrations or PTTs.

At the core of the European Communities' telecommunications policy stands the Green Paper published by the Commission of the European Communities. Its official name is "Green Paper on the Development of the Common Market for Telecommunications Services and Equipment".[1] Technically, it is a communication which was adopted by the Commission and submitted to the Council, where the governments of the Member States are represented.

The Green Paper is based upon the premise that the creation of a supranational, internal market, that is, a market without national boundary lines impeding the free trade of goods and the free provision of services requires, by necessity, the creation of a supranational market infrastructure, including supranational telecommunications networks and facilities.

In view of the political goal to achieve the European internal market by the end of 1992, the Commission has given a high priority to its telecommunications policy and has already started to implement its Green Paper.

The Green Paper is a **policy** paper.

In essence, it is characterised by four main positions which define the scope of re-regulation of the European telecommunications enterprises.

(1) The **de jure** network monopolies of the national Telecommunications Administrations are permissible under European law and will, in essence, be tolerated by the Commission.

(2) The **de jure** service monopolies of the Telecommunications Administrations will be restricted.

(3) The **de jure** terminal equipment monopolies of Telecommunications Administrations will be abolished.

(4) The organisational structures of the national Telecommunications Administrations will have to be adapted to the newly developing market structures.

I. Telecommunications Networks

The Commission's Green Paper accepts the exclusive right of Telecommunications Administrations to provide network infrastructures.[2] A Member State may choose a more liberal regime, for example a duopoly of network providers, as it is the case in the United Kingdom. However "the short and long term integrity of the general network infrastructure should", according to the Commission, be safeguarded.

The policy decision in favour of **de jure** network monopolies is a consequence of the commitment of both the Commission and the EC Member States to the co-ordinated introduction of an Integrated Services Digital Networks (ISDN).

According to the Commission's policy proposals, the ISDN will become the Community's "open network infrastructure" over which services will be provided. This network integration strategy requires that the "financial viability" of the Telecommunications Administrations be safe-guarded in order to ensure both the investments in network infrastructure and the provision of "public service" obligations.

At first glance, the existence of national telecommunications network monopolies would appear to be a blatant violation of the Treaty of Rome which guarantees, in its Article 59, the freedom to provide services.

From a legal point of view, however, the Telecommunications Administrations' exclusive right to provide telecommunications network infrastructures is justifiable under the Treaty of Rome. In particular, the Treaty allows exemption of public undertakings from the competition rules if and when the operation of services of general economic interest by public undertakings is endangered.

Arguably, the provision of a modern telecommunications network infrastructure is such a "service of general economic interest". It may justify exemptions from the freedom to provide services, guaranteed in Article 59 of the Treaty, if it can be demonstrated that network competition would "obstruct the performance, in law or in fact", of the particular public service task assigned to the Telecommunications Administrations.

With respect to satellite services, the Commission proposes to restrict the scope of the Telecommunications Administrations' monopolies. The Green Paper suggests that two-way satellite communications systems "should be allowed to develop European-wide services and where the impact on the financial viabilty of the main provider(s) is not substantial".

This policy decision is the result of technological and legal considerations. From a technological point of view, satellite systems may be considered part of the network infrastructure or part of the provision of telecommunications services. Article 59 of the Treaty guarantees the freedom to provide transborder satellite services. Consequently, a Telecommunications Administration will, in general, have to license two-way satellite telecommunications systems for the provision of transborder services. However, if it can show, on a case-by-case basis, that the operation of the satellite system in question would "obstruct the performance, in law or in fact", of the Telecommunications Administration's public service task, the licence could be denied.

In summary the European telecommunications network infrastructure will essentially remain the exclusive domain of the Telecommunications Administrations. Europe is on its way towards a highly integrated telecommunications network.

II. Provision of Telecommunications Services

The EEC policy concerning telecommunications services is based upon a distinction between reserved services and competitive services. With respect to the re-regulation of the provision of telecommunications

services, a comparative analysis shows that one of the crucial problems which regulators are facing, is to draw the boundary lines between services which should be provided on the basis of a **de jure** monopoly and services which should be provided on a competitive basis.[3]

In the United States, the Federal Communications Commission (FCC) has drawn a regulatory boundary line on the basis of technological criteria. The FCC has distinguished "basic" and "enhanced" services on the basis of technologically defined service functions. "Basic" services were defined as services offering a pure transmission capability over a communications path that is virtually transparent in terms of its interaction with customer supplied information. "Enhanced" services were, by contrast, defined as any service other than basic services.

As the American experience has shown, technological boundary lines are in constant need of re-regulation and adjustment to new technological developments. The Commission has therefore chosen a different approach. The European boundary line between telecommunications service providers will be drawn on the basis of social and political considerations, namely a consensus that:

- certain telecommunications services should be provided on a universal basis (i.e. with general geographical coverage to all users on reasonably the same terms, regardless of the user's location);

- the financial viability of the Telecommunications Administrations should be secured in order to ensure both the provision of universal services and their ability to innovate the telecommunications system.

At present, the only "obvious candidate" for the reserved services category, according to the Commission, is voice telephony. Consequently, all other telecommunications services may be provided on a competitive basis. Voice telephony currently accounts for 85-90% of all telecommunications revenue of the European Telecommunications Administrations.

The evolving regulatory regimes for telecommunications infrastructure and telecommunications services provided via this infrastructure and the evolving boundary lines between reserved services and competitive services will necessitate new technical standards. They will have to define the components of both infrastructure and services, their respective technical specifications and their functions. Furthermore, these standards will have to define the technical and legal interfaces between "network" and "services".

The EEC Commission has announced that these legal interfaces will be defined by European rather than by national law. The legal instrument which the Commission intends to use is a Community law directive on Open Network Provision (ONP). A directive is a regulatory instrument under European law. It is, in principle, not directly applicable in the Member States but requires national legislation implementing it. In the language of the Treaty of Rome, a directive "shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods" (Article 189(3)).

The overall goal of the ONP Directive, according to the Commission, will be to ensure fair and open access to the European telecommunications infrastructure for users and competing service providers. In particular, the following main issues will be tackled by the ONP Directive:

- technical network specifications concerning standards and interfaces offered for interconnection;

- access conditions for providers of transborder telecommunications services, in particular

  - general tariffing principles for access by users and providers of competitive services,

  - rules concerning the "unbund-

ling" of tariffs for "bearer" and "value-added" service features;

- "general principles" for the provision of leased lines;
- usage-restrictions in order to protect "reserved services".

A crucial question will be whether or not the Commission is empowered to enact the ONP Directive on its own or if such a Directive has to be enacted by the Council on the basis of a qualified majority of the Member States. Given the diverging regulatory approaches of the Member States, the Council's participation in preparing the ONP Directive could result in lengthy bargaining.

Provision of Terminal Equipment

With respect to the provision of terminal equipment by Telecommunications Administrations there is a development, in most Member States, toward competitive provision of most if not all types of terminal equipment. At present, the scope of the terminal equipment monopolies of the national Telecommunications Administrations varies greatly. The Commission's proposed policy attempts to foster and co-ordinate the development toward competitive provision of all types of terminal apparatus. For a transitory period, exclusive provision by the Telecommunications Administrations of the first conventional telephone set will be tolerated. An extension of the exclusive right of a Telecommunications Administration to provide telecommunications terminal equipment may arguably violate Article 37(2) and 86 of the Treaty of Rome: the Commission has already used these Treaty provisions in proceedings concerning attempts, by the German Federal Post Office, to extend its terminal equipment monopoly to cordless telephones and to modems. Both cases were settled without formal decisions, but the attempted extensions of the terminal equipment monopoly were withdrawn. When the Commission ordered the Belgian government to abolish the monopoly of its national Telecommunications Administration concerning modems and telex terminals, the Belgian government refused to comply. As a consequence, the Commission has now started a formal procedure for violation of the Treaty of Rome which may eventually be decided upon by the European Court of Justice.

In its legal battles to liberalise the terminal equipment markets, the Commission has argued that the exclusive provision of terminal equipment by a national Telecommunications Administration will impede imports between Member States and thus infringe upon Article 37 of the Treaty. Furthermore, exclusive provision of terminal equipment by the network provider could constitute an unlawful tying arrangement under the competition rules of the Treaty. The political question faced by European policy makers is whether or not the Commission should continue its case-by-case approach to the liberalisation of the terminal equipment market.

The alternative to this very time-consuming approach would be a directive, defining the technological and legal interfaces between the telecommunications networks and terminal equipment attached to them.

The Commission appears to be willing to take this second approach and preparatory work for a terminal equipment directive has already begun.

Concomitantly, the body of secondary European telecommunications law concerning type approval of terminal equipment is growing. At present, European producers of terminal equipment are faced, in the twelve EEC Member States, with twelve different type approval proceedings for their products. As a consequence, there is hardly a common market for telecommunications terminal equipment.

As a first step for the establishment of such a market, a Council directive has established the principle of mutual recognition of type approval for telecommunications equipment. According to this directive, the Member States are obliged to recognise certificates of conformity issued by another Member State for a certain type of apparatus. Such apparatus must, however, meet "common conformity technical standards" upon

which the Member States have to agree. The Commission's political goal, as announced in the Green Paper, is to replace this cumbersome procedure by the principle of unrestricted mutual recognition of type approvals. As a consequence, a European producer of terminal equipment would have to undergo only just one type approval proceeding in a Member State. Once type approval was granted in one Member State, all other Member States would be obliged to recognise its validity without further ado.

Regulatory Framework

What are the consequences of these policy decisions concerning networks, services, and terminal equipment for the organisational structures of the national Telecommunications Administrations?

Two consequences are prominent:

- the organisational boundary lines of the national Telecommunications Administrations are changing;
- the regulatory system of telecommunications regulation is shifting from an organisationally oriented to a procedurally-oriented system.

With regard to the organisational structures of national Telecommunications Administrations, there is a clear trend, in the EEC Member States, toward separation of regulatory and operational functions. In short, Telecommunications Administrations will no longer be both referee and player in the telecommunications field. It is considered to be a prerequisite for fair competition that regulatory functions, in particular licensing, control of type approval and mandatory specifications, frequency allocation and surveillance of usage restrictions, are organisationally separated from the operational functions of providing telecommunications networks and services. The Commission's powers to enforce such structural separation requirements - which could easily infringe upon the Member State's prerogative to determine their organisational structures of government - are, however, weak. As an additional obstacle there is Article 222 of the Treaty of Rome which provides that the Treaty is not to "prejudice rules in Member States governing the system of property ownership". This provision leaves the determination of the appropriate ownership of Telecommunications Administrations - in particular whether they should be publicly or privately owned enterprises - to the Member States.

The European Commission may wish to deregulate the **de jure** telecommunications monopolies existing in most of the Member States, but it cannot, under the Treaty of Rome, privatise them.

Re-regulation and privatisation are, not only in regulatory theory but also in the real world of Community law, like chalk and cheese.

But structural separation is not the only means to ensure fair competition. The antitrust provisions of the Treaty enable the Commission to screen the behaviour of dominant undertakings including Telecommunications Administrations as far as they may be considered as "undertakings" under Article 86 of the Treaty. The Commission could thus scrutinise the behaviour of Telecommunications Administrations with respect to:

- extensions of the network monopoly
- extensions of the service monopoly;
- regulations of network access;
- tariffing decisions with respect to competing service providers; and
- cross-subsidisation.

The second consequence for public enterprises in the telecommunications field is that the changes within the national regulatory system of telecommunications lead to a more procedural model of regulation.

The traditional model of telecommunications regulation in the EC

Member States was organisationally-oriented. Telecommunications policy was formulated and implemented by public enterprises, the PTTs, which were characterised by a specific organisational structure.

In the European tradition, these Telecommunications Administrations were:

- public entities, that is organisations characterised by public ownership;
- connected to the government by financial, personnel, and organisational ties;
- furnished with a double **de jure** monopoly status concerning both the provision of telecommunications networks and services as a "public service" (service public).

This organisationally-oriented model of telecommunications regulation through public enterprises is being gradually replaced by a procedural model of regulation through regulatory bodies which have been established in the United Kingdom and in France and which may be established in the Netherlands, Belgium, and the Federal Republic of Germany.

Conclusion

The Green Paper contains far-reaching proposals for re-regulation of the European telecommunications sector. It does not present the concept of a supranational telecommunications authority formulating and implementing a supranational European telecommunications policy. Rather it is an attempt to harmonise and to co-ordinate existing national policy approaches and to enhance the integration of the telecommunications sector as a major part of the internal European market.

Footnotes

1 Published as: COM (87) 290 final

2 For a more detailed analysis of the legal framework of European telecommunications policy under the Treaty of Rome see Joachim Scherer: 'European Telecommunications Law' in European Law Review 1987, pp#354-372.

3 For a comparative analysis see Joachim Scherer: 'Nachrichtenubertragung und Datenverarbeitung' in Telekommunikationsrecht, Baden-Baden 1987.

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MICHAEL LAWS RETIRES (Cont'd from p32)

astonishing capacity for new, creative and innovative thought.

That capacity he generously shared with others outside his family. Mind you, he always served to ensure that his family would retain and improve its position in the broadcasting world, to ensure that the climate in which it has to operate would be favourable. But in doing so, he widened the horizons of many others involved in the broadcasting world.

Others have joined him since to help with the care for this growing family, quite a few of its children have grown up and lately Michael's role became much more that of the grandfather, who is always there to impart his wisdom and share his experience and knowledge. It is that wisdom, experience and knowledge that we'll miss. That and his complete and absolute dedication to public broadcasting.

I, and many people with me, will miss his friendship, loyalty and constant support. We all thank him for that.

Ada Hulshoff is Executive Director of the Public Broadcasting Association of Australia

THE PRIVATISATION OF TELECOMMUNICATIONS IN THE UK - A PRACTICAL EXAMPLE

John King

In November 1984 the shares of British Telecommunications plc were floated, representing the first of the large privatisations of public sector companies that have taken place in the United Kingdom. Although changes had taken place in telecommunications elsewhere, particularly in North America, the privatisation of British Telecom (BT) and the liberalisation of the UK telecommunications market surrounding that event was truly a pioneering action. For the first time we had seen the transformation of one of the largest public sector corporations into the private sector. In the three years that have followed we have learned a great deal in the UK and it is evident from the conversations that I have had with many countries around the world that our experience has created great interest.

I would like to review briefly the background to the strategy in the UK, then go on to review phases of change that covered the preparation period before privatisation, the privatisation event itself and the three years of experience that have followed, not forgetting a look forward to further possible changes in our regulatory environment.

The paper will then assess the impact of the UK changes on the "stakeholders" and conclude with some observations that may be of benefit to other countries now considering a change in their telecommunications environment.

The Political Background

The election of a Conservative Government in 1979 and its re-election in 1983 and 1987 has created a period of continuity in the UK strategy in respect of the public sector. In particular, a number of philosophies have emerged which have affected the role of many public sector corporations.

Our currently elected Government believes that competition is beneficial to the health and wealth of the nation, and liberalisation, which is the word we use for the introduction of competition, has taken place in a number of sectors, notably in telecommunications and in the financial structure of the City of London. It is Government's view that they should be involved in governing and not be actively involved in the management of business, so that as a second objective there has been and continues to be a push towards business coming under private sector management.

A third objective involved wider share ownership. Until the early 1980s individual ownership of shares in companies had declined, the only significant participation being indirect through pension and other funds. In the same way that Government had embarked on a program to increase house ownership, particularly related to the sale of local authority-owned properties, the Government wished to encourage individuals to own more shares, and the privatisation of large public sector corporations was seen as a convenient vehicle to achieve this objective.

The table below shows the major privatisation events that have taken place in the United Kingdom and it can be see in that the first of the major sales was that of the privatisation of British Telecom in 1984.

PRIVATISATIONS IN THE UK

	Government Shareholding Sold	Amount Raised	Year of Flotation
British Aerospace	50%	£150m	1981

Cable & Wireless	49%	£225m	1981
	28%	£275m	1983
Britoil	51%	£550m	1982
Enterprise Oil	100%	£390m	1984
British Telecom	50.2%	£3,900m	1984
British Gas	97%	£5,400m	1986
British Airways	100%	£900m	1987
Rolls Royce	100%	£1,360m	1987
British Airports Authority	100%	£1,270m	1987

Why was telecommunications chosen as the first of the large privatisations? It is my belief that telecommunications represents a natural choice for a move into the private sector as the industry is subject to a number of driving forces. In the first instance there is a well-known and well-understood phenomenon of the convergence of the technologies of data processing and telecommunications and the two industries that hitherto have been quite separate are moving rapidly together. This convergence involving the whole area of information technology is irresistible and will continue to confuse the technological boundaries of definition between the industries.

Secondly, the user is becoming more and more dependent on telecommunications to be an effective competitor in whatever business segment he operates. Many businesses and organisations now seek a tailor-made solution appropriate to their business activity which embraces information systems made up of data processing and telecommunications activities. Therefore the user is seeking flexibility in the development of a solution for his business, and necessarily needs to capitalise on the services provided by both the data processing and telecommunications suppliers.

Unfortunately, a third driving force operates in the opposite direction since from a regulatory point of view there is a divergence between the data processing and telecommunications industries. Whereas data processing is an open, competitive, innovative environment, telecommunications remains a monopolistic and heavily regulated activity. This divergence which is inhibiting the achievement of user wishes can only be resolved by change in the regulatory environment. Although it could be argued that one solution is to create a heavily regulated data processing industry, this is not really in tune with current thinking, and the only obvious conclusion is a de-regulation or, in other words, a liberalisation of telecommunications so that an environment of greater freedom, innovativeness and participation by the private sector can take place to bring it closer to the style and indeed the dynamics of the data processing industry.

Further, telecommunications is now perceived as an essential element in national infrastructure as a support to the economic well-being of a country, irrespective of the state of economic and political maturity.

In putting these driving forces together one is left with the need for a political resolution of the problem, because regulatory change is required, and it was this environment, consistent with the general strategies of our UK Government that I mentioned earlier, that led to the choice of telecommunications as the first major privatisation of a public sector corporation. It is as well to remember that the thinking and preparation for the change in the UK was initiated in the early 1980s, so that we can now look back on seven years of experience of a particular solution applied to a specific country environment.

The Phases of Change

1980–1983

The development of the new telecommunications environment in the UK took place during this period and involved much public and private sector debate over the options being evaluated and considered, involved argument in Parliament leading up to the passing of the new Telecommunications Act and the change of status of British Telecom to British Telecommunications plc in the middle of 1984. As this paper is directed towards an understanding and appreciation of a real privatisation example, I do not wish to spend much time addressing the arguments over the options that were available to Government in the early '80s. However, it may be worth commenting on one or two major items as they do re-appear in the consideration that others are now addressing.

There was much discussion over whether British Telecom should be split up or not, and it is worth noting that the size of British Telecom is close to that of any of the US Regional Bell Operating companies. It was felt that splitting it into smaller units would be inefficient, and there was much resistance from within the Company itself to the problems of handling two changes simultaneously, not only from the public to the private sector but also encompassing at the same time the break up of an integrated organisation.

Secondly, the capital restructuring of the Company was a major task in arriving at the appropriate debt/equity relationship that on one hand had to recognise the prior Government investment in the organisation and, on the other, a ratio that would be appropriate for the Company to be able to fund itself in its future growth and development in the private sector.

Thirdly, the concept of Licences in which the ex-monopolist and others could operate had to be carefully structured, so that each had both obligations and opportunities that in total could best serve the public interest.

Finally the issue of national interest was of course key and a number of measures were incorporated in both the Telecommunications Licence and the Articles of Association of British Telecom to ensure a degree of protection. For example, that no single shareholder can have more than 15% of the shares, that two of the non-executive Directors are Government appointed, that the Chief Executive should be a British citizen, and the existence of a golden share held by Government to be used to resist any unacceptable change in the Articles of Association of the Company (in other words any major change to the mission of the business).

It is important to understand that in parallel to the vigorous debate over the nature of the new telecommunications environment, certain steps in liberalisation had already taken place, such as the rapid introduction of competition in customer premises equipment, the emergence of a new network supplier, Mercury, and the introduction of competing cellular radio operators. And BT itself began the massive restructuring necessary to prepare for privatisation and subsequent existence in the private sector. The Chairman of the Company, Sir George Jefferson, who had come into the organisation in 1980, set about changing the Company from the top, organising it in divisional terms, introducing outsiders into the Board of Management, and interweaving throughout the structure outsiders, particularly in marketing and finance, with the existing staff. The massive task of creating a management accounting process, which did not exist at all, was initiated, coupled to heavy investment in related data processing activity. In terms of new personnel, it is interesting to note that of the top 600 directors, managers and professionals in the Company today, one quarter of them have been recruited from the outside since 1983. So the period 1980–1983 was one of great change within the Company in an external environment that was increasing in competitive terms and in which the regulatory environment was yet to be finally defined.

1984

1984 saw the finalisation of the Licences, and the clarification of the

structure of British Telecom in readiness for flotation. However, the major issue during the year was the whole program related to attracting investment and a heavy public relations and advertising campaign was initiated in order to present the Company to the public as well as to institutional investors. This was unknown territory as never before had an attempt been made to sell shares in a large organisation on such a wide basis. The concept of Roadshows was created and teams representing Company management and advisors carried out local and international tours to present the nature of the Company and the details of the flotation offer.

The rest is history in that the flotation was an enormous success, not only raising nearly £4 billioln for the Government, but attracting over 2 million individual shareholders, not forgetting 96% of Company employees who also became shareholders. There was of course much argument after the event surrounding the setting of the offer price of the shares, but it must be remembered that there was tremendous risk involved in that there had been no track record of a flotation of this size. On balance, it was probably more important for the flotation to be a success at the expense of the price being perhaps a little generous. The subsequent large privatisations that I mentioned earlier have followed a very similar pattern to that pioneered by the team handling the flotation of British Telecom.

The other major event in 1984 was the establishment of the Office of Telecommunications, OFTEL, the independent regulatory body set up to supervise the implementation of the new strategies and Licences in the United Kingdom. In the search for greater competitiveness and greater freedom in an exciting area of technology it is perhaps regrettable that, because of the imperfections of natural competition, regulation is still required and the establishment of a watchdog necessary to ensure that all parties follow the rules and user interest is protected.

By the time British Telecom was privatised the process of liberalisation was well under way and competition existed in a number of areas. The second licensed fixed network operator, Mercury, was of course still at a very formative stage. The Licences awarded to British Telecom, Mercury and others were established in such a way that for the hitherto monopolist, British Telecom, many service obligations were included and for the newcomers an extensive degree of opportunity provided for entry into the market.

1985-1988

The last three years really represents the real-life experiences of a privatised telecommunications operator functioning in an increasingly competitive environment. Although the second licensed fixed network operator, Mercury, remains very much smaller than British Telecom, the interconnect agreement between the two operators ensures that Mercury can obtain access to many BT customers, even though it may not be providing the local access itself. Whilst Mercury is in its growth phase, capitalising on the fact that it can utilise the very latest equipment, British Telecom has been passing through a massive modernisation program catching up on the under-investment of prior decades when the Company was under Government control and repeatedly restricted in its capital investment programs. The extent and pace of this modernisation program is often seriously misunderstood and today the Company is spending each day £6 million in new capital programs and installing two new digital exchanges somewhere in the country. In order to be fully competitive in meeting the demands of its customers, British Telecom was faced with an issue over its strategy for sourcing of supplies and has moved towards competitive bidding for public switching, buying not only the System X digital exchange (in which it had invested a large amount of R&D for its development), but also a locally supplied version of the Ericsson AXE10 which we call 'System Y'. This competitive bidding environment has assisted the Company in securing deliveries of public switching at a more competitive price.

The pricing regime that was developed in 1984 gives an opportunity for British Telecom to enjoy the benefits of efficiency. This is achieved through controls on a basket of our charges which ensures that price increases on a year-by-year basis are 3 percentage points below the level of inflation (measured by our Retail Price Index). Within this basket we have the opportunity to rebalance our tariffs and have done so as the returns on assets involved in local and long distance traffic were wide apart. This method of price control, as opposed to a limit on return on equity, ensures that overall the consumer is protected because in real terms telephone charges decline, but at the same time enables the operator to enjoy the benefits of efficiency improvements derived from use of better equipment and improved working practices.

Another aspect of existence in the private sector has been the ability of British Telecom to develop strategies for new businesses both at home and overseas. The Company has embarked on two major programs of development, one in the area of information systems and services, not only producing new value added services on a local and international basis, but also the provision of specialised systems and products in a number of areas. Included in this development was the acquisition of 51% of Mitel, the Canadian based manufacturer of PABXs and related systems, which not only gave the Company access to an excellent product development company, but also access to a number of overseas markets where the Mitel products were already installed. A second axis of development was to take the experience and expertise of the Company into other parts of the world and establish the Company's presence within overseas countries. British Telecom is now very active in projects and opportunities in many countries, particularly the developing countries, in consultancy, turnkey projects, management contracts and equity investment.

The excitement of privatisation in 1984 may well have led to unreasonable public expectations of a rapid transformation of both the performance and attitude of the ex-monopolist. This year there has been criticism of the quality of service provided by British Telecom, some inaccurate and uninformed. Underlying the criticism there have been problems that the Company has had to handle. Partly these have been derived from an unfortunate strike in the Spring of this year, but more generally related to the problem of migrating from an old network to a new at an extremely rapid pace, we believe unprecedented in any country. The Company has been taking vigorous steps to establish and publish the quality of service standards that we are aiming for and it is our expectation that the criticisms will disappear as we reach the quality of service that the public deserves. However, I believe it is important to put in perspective the fact that the privatisation of the Company cannot be expected to cure the errors and deficiencies of the past overnight, and certainly the principle of privatisation should not and must not be discredited simply because a privatised company has not been able to produce a perfect service instantaneously.

1989 +

1989 will represent five years of experience of our current regulatory environment and the rules established at privatisation envisaged a review at this time. The first five years will represent a process of progressive but persistent introduction of competition whilst enabling British Telecom to continue its process of modernisation and change, and enabling the new entrants to become effective and established in the market place. The process of compromise that is inherent in the structure of our current regulatory environment is also helpful in minimising disruption in the market place. The issues that are now starting to be discussed in terms of the regulatory environment post 1989 include the areas of continuation, or not, of the duopoly in fixed network operations, the revisiting of the pricing control mechanism, RPI-3, the question of resale of basic communications facilities closely related to

definition of value added services, and the delicate issue of quality of service in that the regulator is under some pressure to establish mandatory performance standards for operators.

The outcome of these deliberations is uncertain with many parties having an interest in proposing changes to the regulatory environment. What is certain however is that the process of change will continue and the telecommunications environment in the UK, already a very open and competitive one, will continue to give greater choice and flexibility for the consumer.

Assessment So Far - Stakeholders

In trying to assess the experience of privatisation of telecommunications in the UK it may be helpful to view the experience from the standpoint of a number of "stakeholders" in the business. I define as stakeholders: customers, shareholders, employees, the Government, regulators, suppliers, competitors and the media.

It is probably true to say that **customers** have yet to experience the full benefits of change as our program of modernisation of the network, so badly needed, is somewhat incomplete and the objectives of the Company to perform to the standards of the top telecommunications operators in the world is probably not possible until around 1990. However, customers do have a much wider choice of equipment, both for business and for residential purposes, they can access a second fixed network supplier, they do have a choice of mobile communications from two aggressive competing companies (in one of which British Telecom has a major part to play) and in real terms telephone charges have declined thanks to the RPI-3 formula embodied in our Licence. Apart from the short-term disruption in service standards during 1987 there has been steady improvement in both the provision times for new lines and services, and our ability to respond to faults.

As far as **shareholders** are concerned, until the events of October 1987, those who bought British Telecom shares at flotation time at 130 pence, were seeing the value of their shares roughly doubled and a yield on their investments exceeding the average for the UK stock market. Today the company is viewed as a defensive investment and retains the attributes of both a utility and an information technology company which is somewhat unique, particularly as the Company has heavy research and development activity relatively rare for a telecommunications operator.

Employees, many of whom for the majority of their working careers have been in a Civil Service environment, have encountered a major cultural change. Although many of them certainly did not ask to be moved to the private sector, they have adapted remarkably well and many welcome the freedom and opportunity that is now possible in operating in the private sector. The balance between the role of management and the unions has progressively changed in that, prior to privatisation, managers were rather more administrators and the unions acted as the major path of communications to employees. Today it is the managers who manage, and it is the managers who communicate with the staff. Unions retain an important role in the organisation and much debate continues over changes in working practices which are so essential to the future efficiency of the organisation. Flexibility in employment terms and conditions have been introduced, particularly for the more senior staff. So far, staff turnover has been largely through natural wastage, although the full impact of reduced manpower levels will not be felt until our modernisation program is complete. A major ongoing issue is the resolution of the problems inherent in historic inefficient practices that result from decades of negotiations over the responsibilities of each job grade. The Company is encouraging greater flexibility and attempting to introduce a system of remuneration that rewards performance rather than automatic annual increments. It is particularly encouraging to report that notwithstanding the original purchase of company shares, when 96% of employees participated, around 40% of our staff contribute regular savings each month to a share

save scheme which gives them the option at the end of a specified period of having the savings back with interest or convert them on an option basis into Company shares. One must note that this is in sharp contrast to the advice of the unions at the time of flotation when employees were recommended not to take up the share offer.

The **Government** has received £4 billion for the sale of its 51% holding, and has declared its policy in the future to sell off all or part of the remaining 49%. In addition, through dividends and taxes, in 1986 alone we contributed £1.4 billion to the Treasury so the Government should be more than satisfied with the financial impact of the privatisation of the Company. Despite holding 49% of the shares and nominating two Directors, it is important to understand that the Government does not interfere in the day-to-day decision making of the Company, and the relationships between the Company and Government are those shared by other large responsible companies rather than any particular relationship derived from the historical State ownership. Also the breakthrough in individual share ownership achieved by the British Telecom flotation has led, with the other major privatisations, to nine million individual shareholders, more than double the level in 1983. Few would disagree that British Telecom today has a new drive and commercial vigour resulting from the opportunities and responsibilities of operating in the private sector.

What about the **media?** It is bad news that sells newspapers, not good news, so that we as a large and well-known organisation have been subject to a heavy media attack in 1987 related largely to the issue of quality of service. This is frequently connected to the size of profit we make and the figure of £2 billion profit before tax has been described as an obscene figure. What is so often overlooked is that, in terms of return on capital, it is a perfectly acceptable level as our turnover is nearer £10 billion. It is encouraging to note that the regulator has stated publicly that he is satisfied that the level of profits we earn are reasonable for the type of industry in which we operate. However the media have chosen to take the absolute value of profit and compare that to criticism of the service that we provide.

The UK **regulator,** the Director General of OFTEL, has himself pioneered a new environment and not only has responsibility for ensuring that the Licensed operators obey their rules, but follows very closely the interests of the users to be satisfied that competition and user choice is real. The regulator is politically and financially independent of Government, and he exercises his independence vigorously. His view of the experience of the last few years will of course be a major factor in recommendations for any change in the regulatory environment post 1989. Equally, regulators in other countries are impacted by the changes in the UK. For example, the erosion of the traditional bilateral agreements between telecommunication operators has been accelerated by changes in North America and the UK, and OFTEL is continually sought by others who are exploring the possibilities of change within their own countries.

It is probably an understatement to say that the telecommunications supply industry in the UK was rather unenthusiastic about the changes, simply because so many of them had a large captive customer in British Telecom, which to say the least made life comfortable. The disadvantage of a large captive customer at home is that enthusiasm for exporting is diminished. There are already significant signs of change of attitude from the UK based industry, now that the home market is open to many suppliers and the proposed rationalisation of the industry reflects not only changes at home, but the nature of the worldwide telecommunications market. To be fair, the UK telecommunications industry does operate at a great disadvantage in that the market at home has been liberalised and is competitive whereas so many markets around the world remain heavily protected and the barriers for entry are very high.

It may surprise you that I include **competitors** in my list of

stakeholders but as the dominant supplier of telecommunications it is our policy to compete firmly but fairly in the market place the standards we set both technically and commercially are of significance to competitors, particularly those that are small and operate in narrowly defined sectors of the market. British Telecom welcomes competition. It is our firm belief that it is an essential spur to change and the creation of an innovative approach within the Company.

Observations

In trying to learn from the UK experience, let me preface my remarks by saying that there is no single correct solution for implementation, but it may be that the pioneering that has taken place in the UK can be of help in the development of new approaches in other countries.

The transformation in the UK is not yet complete, particularly in regard to the technological, organisational and cultural aspects of British Telecom. In any case, the goal is continually moving.

There is no doubt that the maturity of the country, and in particular the maturity of the telecommunications network, is a very significant issue in determining a future program of change. For example, the introduction of competition, not just in equipment but indeed in networks, is both feasible and practicable in a country with a mature network. It does however become rather more difficult in a developing country where the main priority remains the development of the main telecommunications infrastructure.

The term 'privatisation' has, I suspect, been somewhat misused and it seems to me that for the developing countries the issue is how effective access to private capital can take place to speed up the enhancement of the national telecommunications infrastructure, be that on a national or perhaps a regional basis. This is a separate issue from that of the restructuring of the PTT, where the natural desire is to create a spirit more related to the commercial world than the Civil Service environment. I believe that the restructuring or commercialisation of the existing operations is appropriate in any case and more importantly is a prerequisite to the successful privatisation of the state owned enterprise, either wholly or partly. The transfer of the state telecommunications operator from public to private status will only be truly effective when the style and efficiency of the organisation can be demonstrated to be attractive to the private investor. The dilemma of course is how you motivate such an organisation to change in the absence of competition. The experience in the UK is that competition is an excellent agent for change.

John King is Managing Director of the Overseas Division of British Telecom, P.O.C.

MICHAEL LAW RETIRES

Ada Hulshoff

Michael Law has left many friends, the PBAA, ACLA and the other Australian causes he has at one time or another got himself involved in, to return to his native England and retire.

No one would argue his retirement isn't more than deserved. No one would argue either, that his retirement leaves a huge gap in the life of a number of organisations and people, most of all the PBAA.

Michael is the undisputed father of public broadcasting in Australia. There were others there with him to share the hard work, pains and joys of gestation and birth, but he stayed to hold the baby. Let me qualify that: he did much more than just holding it. He nursed and cared as the public broadcasting family grew, he mopped up many messes, washed his fair share of dirty linen, but most important of all, he nourished and kept on nourishing this broadcasting family with his

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