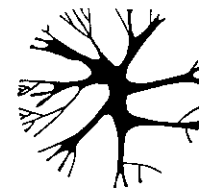


COMMUNICATION RESEARCH TRENDS



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Satellites for Development, Broadcasting and Information

The symbol of the 'global village' is the communications satellite. For over twenty years, ever since the USSR launched Sputnik in 1957, the USA and the USSR in particular, and other countries too, have been devoting ever more financial and human resources to the building of ever more elaborate satellite systems. Today a host of communication satellites are positioned in geostationary orbit 22,282 miles (35,860 kilometres) above the equator. The globe is encircled by a communications network that links the most distant parts of the earth in a matter of seconds.

A communications satellite system consists of three parts. The transmitter on the ground sends a signal to the satellite in space which receives it, amplifies it, switches it to a different frequency, and retransmits it back to earth. Each satellite has a number of channels (transponders) which carry voice, radio, data, or television signals. The great benefits offered by satellites are their capacity to carry large amounts of data (users of the RCA Satcom satellite for example can transmit 60 million bits of information per second via one of the satellite's 24 transponders), and their ability to provide communications services (e.g., Telephony) over large distances cheaply.

The idea of satellites for long-range communications was first put forward by Arthur C. Clarke in 1945. He pointed out that three satellites positioned over the Atlantic, Pacific and Indian Oceans in geostationary orbit could cover with their beams almost all the inhabited areas of the earth. Today that vision has been realized. Today too, it seems as if a new era of satellite communications is beginning: across the world there is talk of satellites that will be able to beam TV programmes directly into people's homes. The direct broadcast satellite (DBS) has become in its turn a symbol of the programming abundance that new technologies of all kinds (video, cable, videotex, etc.) seem to offer.

This issue of TRENDS looks at the range of political, educational, social and cultural issues raised by satellites, and looks at the way in which satellites have been used in the service of development, broadcasting and information transfer.

Can Satellite Communications Serve Development?

Heather Hudson: "Satellite Communication and Development: A Reassessment". Unpublished paper, 1983.

Heather Hudson looks at the history of satellite applications for development purposes: for education, health care, social services, rural development, cultural enrichment, and divides it into three distinct phases. Up until 1970 the potential of satellites for promoting development was conjectural, between 1971 and 1977 a host of experiments sought to test the conjectures, and from 1977 onwards there has been an increasing growth in the number of operational satellite systems designed to serve development goals.

Hudson points out that the "experimental" era from 1971 to 1977 followed upon a decade when satellites were seen by educators, communicators and development planners alike as the ultimate "magic multiplier" able to transmit television to receiving sites throughout a nation or across a continent. The intellectual fashion of the time stressed the role of broadcasting as a catalyst to development, but tended to ignore the interactive capabilities of satellites: their use for telephone services, teleconferencing and data transmission.

Two of the most important experiments of the 1970s, the Indian

Satellite Instructional Television Experiment (SITE) and the Pacific Education and Communication Experiments by Satellite (PEACESAT) illustrate the two major approaches to satellite uses in development. SITE was a project to broadcast development messages, PEACESAT was conceived as an "alternative" model of development, stressing interaction and two-way communication and information flow.

SITE: Satellite TV in Rural Villages

SITE lasted one year, from August 1975 to July 1976. The Indian government was able to obtain a loan of the US Applied Technology Satellite (ATS-6), which was used to broadcast programmes directly to villages across India. The satellite ground segment (antennae, TV receivers) and the TV programming were designed and supplied by Indian institutions. Coordination of the project was undertaken by the Indian Space Research Organization (ISRO).

In purely technical terms SITE and the ISRO emerged

triumphant. Some 2338 rural villages scattered across India were each provided with a community antenna and TV receiver and were enabled to receive four hours of programming daily. In terms of SITE's developmental objectives the results were mixed. SITE's objectives were firstly, to contribute to family planning, improve agricultural practice, and contribute to national integration; and secondly, to contribute to school and adult education, teacher training, to improve occupational skills and health and hygiene.

According to Agrawal,¹ none of the objectives of SITE was fully realised, though evaluation did show that, for example, the teacher training has been useful, and that women benefited most from the information on health, nutrition, and family planning. However, it was observed that "television viewing" did not increase the adoption or use of family planning methods."

This disjunction between viewing and behavioural change points to some key problems which SITE's technical success has tended to hide. In a study which looks at the SITE experience in its social and cultural setting, K.E. Eapen points out that SITE made no apparent changes in the decision-making structures of the villages.² The most frequent viewers were drawn from the lower status groups and from among the women. However, as these people had no power to influence the course of village life, the traditional permanent values of leadership, status and structures remained as before.

PEACESAT: Developing an Alternative Model

PEACESAT links some 17 ground stations located in various countries in and around the Pacific. Using the US Application Technology Satellite (ATS-1) launched by NASA in 1966, PEACESAT members can engage in audio conferencing and classroom sessions to exchange information on a variety of topics, ranging from educational sessions to promote breast-feeding and improve mother and child nutrition, to formal classes on accountancy and exchanges on ocean management and the control of diseases.

One objective of PEACESAT was to demonstrate how a satellite network using low cost earth stations could be controlled by a cooperative community and used to meet educational, medical and communication needs in a vast sparsely populated region. PEACESAT was presented as an alternative interactive model in contrast to traditional models of development broadcasting.

To date the only serious detailed evaluation of PEACESAT has been done by Christopher Plant.⁴ Plant studied the patterns of use and the relationship between the users of the network, paying special reference to use by people of the Pacific Islands. His analysis revealed that the metropolitan earth stations of Honolulu and Wellington used 54% of all air time, initiated 67% of exchanges (and chaired 75%) and accounted for 80% of all messages. US nationals accounted for over 40% of air time, with men accounting for over 30%. Overall there were twice as many men as women using the network, though among the Pacific Islands the sex ratio was more balanced. In terms of air time Caucasian dominance over Pacific Islanders was in a ratio of 4:1.

National Politics and Domestic Satellites

I. Serving the Nation by Satellite?

Chris Duke, *Impact of Modern Communication Technology: I: Australia*. In the early years of the space race only the Soviet Union and the USA had the technical capacity to construct and launch space vehicles, including satellites. In the 1960s and 1970s, however, other developed nations, especially France, Britain and West Germany,

The Limitations of Satellites in Development

Eapen's admonitions are placed in a wider and more theoretical context by Neville Jayaweera, in a recent paper.³ His thesis is that Third World governments' and development agencies' fascination with the supposed benefits of satellite technology more often than not stem from the erroneous assumption that developing countries' poverty is caused by a lack of communication, so that it can be alleviated by supplying more information. In Jayaweera's view, the root causes of poverty are structural inequalities of wealth and power at both national and international level.

Jayaweera argues that the fascination with satellites has resurrected some of the older models of development first expounded by Schramm and Lerner et al. in the 1950s and 1960s. That 'dominant paradigm', which saw development as 'modernization' on a Western industrialized model and which gave pride of place to mass media as stimuli of the development process, had been replaced in the 1970s by demands for structural reform, embodied in concepts like the New World Economic Order and the New World Information and Communication Order. As the 1980s open Jayaweera sees the satellite providing planners and governments with a technological excuse to avoid needed structural change.

Models of Telecommunication Development

Plant's analysis raises many questions about the long-term usefulness of projects such as PEACESAT to the promotion of indigenous development. In a short article,⁵ Lamberton looks at three models of telecommunications development and asks if improved telecommunications services can narrow the gap between industrial and developing countries.

Apart from the PEACESAT model, Lamberton considers the commercial model and the GLODOM model. The commercial model is exemplified by the experience of Papua New Guinea (PNG) which modernized its telecommunications system with World Bank aid. The result is that PNG now has an efficient system geared to the needs of business with interests overseas and to its 8 main cities. However, the 85% of the population that lives in the rural areas remains bereft of modern communications. The commercial model simply reinforced an existing pattern of development which favoured the urban areas.

The GLODOM model is a recent proposal to persuade developed countries to set aside part of their foreign aid budgets to provide facilities on their domestic satellites for use by developing countries, or better still, to provide a separate global system for them.

In Lamberton's view all three models fail to take sufficient account of the fact that provision of advanced communication technology to developing countries though modernising their telecommunication systems can retard the development of indigenous appropriate technologies. He argues that closing the so-called communications gap between developed and developing countries, can open up a "suitability" gap retarding developing countries' long-term technological development.

(New Communication Order: 1) (Paris: UNESCO, 1979)

sought to establish their position as space powers. At the same time countries such as Canada, India, Indonesia, Australia and Brazil, all countries with the problem of communicating over vast distances, began to plan for their own national satellite communi-

cation systems. Canada was first in the field, with its Anik-satellites, while in 1976 Indonesia became the first country in Asia to have its own domestic satellite, Palapa I.

Indonesia's success occurred about the same time as Australia too was beginning to think about a domestic system. Duke's analysis of the national satellite debate which took place in 1976-1978 illuminates the conflicting political and social interests surrounding the technical question whether or not to invest in a satellite. In the end, Australia decided to launch a domestic satellite system (AUSSAT) in 1985. It will consist of two operational satellites, and one major feature will be HACBSS (Homestead and Community Broadcast Satellite Service) operated by the Australian Broadcasting Corporation, which will broadcast radio and TV programmes directly to isolated homesteads equipped with their own earth stations.

Who Will a Satellite Serve?

In planning the Australian satellite system (AUSSAT) much attention was paid to the Canadian experience of providing services to its northern territories. This interest, coupled with an acute awareness, for both cultural and political reasons, of the needs of Australia's own outback, meant that remote communities were assured of favourable treatment. In addition, one of the strongest arguments put forward by the commercial TV interests lobbying for the creation of a satellite commercial TV network was that about 1.4 million people or 10% of the population were either deprived of TV or suffered poor reception because of their location. Equal access for all Australians to colour TV was the cry.

On the other side public interest groups lobbying for the satellite system to provide a range of educational, health, welfare and information services, urged that other minorities and non-commercial users not in rural areas be not forgotten. They pointed out that the elderly, the handicapped, those needing educational or other services, women's groups, and ethnic minorities, etc., should also be given access to the satellite. One could not simply equate access with reception of commercial TV.

Duke's analysis points up the key questions raised by the Australian satellite debate: what kind of society will a satellite foster, and who will determine the socio-cultural consequences of reliance on satellite technology? Why does Australia need a domestic satellite, and who for? In a similar vein, Brian Walsh argues that instead of trying in advance to deduce specific satellite options appropriate to Australia, it would be better to create a set of general rules derived from technological development so far and try to relate those to broadcasting and communication needs.⁶ Walsh also contends that undue emphasis on overseas experience, e.g. in Canada, can hinder Australians from thinking through their own solutions.

Brazil: Political Independence via Satellite?

The countries of Latin America are acutely aware of US technological and political dominance in the field of space. According to a recent wide-ranging article by Hector Schmucler,⁷ countries such as Brazil have long cherished the idea of becoming less dependent on the USA, and even of building up their own indigenous space industry.

Brazil, like Canada and Australia, covers a vast and often inhospitable territory and terrestrial communications in many areas are difficult. In addition as a "developing" country, Brazil could make good use of a satellite system for educational development purposes. Not surprisingly, therefore, Brazil has decided to launch its own Sistema Brasileiro de Telecomunicações por Satélite (SBTS) in 1985.

Brazil invited tenders to build SBTS from international consortia. The rival bidders were the US-Canadian consortium of SPAR-Hughes and the US-French combination of Ford-Aerospatiale. It was finally decided that SPAR-Hughes should build the satellites

and that the French Ariane rocket would be used to launch them. In addition to ensuring that Brazilian industry would be subcontracted part of the work of constructing SBTS, Brazil agreed that French expertise would be used to help build a new rocket launching base near Alcantara, and the Canadian government agreed to buy some \$200 million worth of Brazilian products.

II. Europe: Satellites and the Space Industry

Les Enjeux de l'Espace. Cahiers Français, No. 206-207, (Mai-Septembre) 1982.

French space policy has been the most consistent and well supported in Europe. As several articles in *Les Enjeux de l'Espace* make clear from 1962 onwards, the French goal has been to open up a world market for space products developed in Europe. According to one recent estimate an annual market of ten thousand million US dollars can be expected in telecommunication and broadcasting satellites alone in the 1990s.

Though France was determined to retain its freedom of action in space policy, it recognized, as did other European countries, that in order to successfully challenge US and USSR domination of space, there must be joint ventures and cooperation. However, the history of European space cooperation has revealed how difficult it is for strongly nationalistic and competing industrial and economic goals to be harmonized.

The Politics of Space

In his detailed analysis of the politics of European space cooperation,⁸ Michael Schwarz sees a future of a mixture of national and bilateral space projects, with possible intra-European links through industrial groups and increased competition within Europe. He also shows how many satellite projects have been undertaken simply to provide aerospace firms with experience in constructing the hardware which they hope to sell in the future.

Thus, for example, there is considerable doubt about the need for the L-Sat direct broadcasting satellite now being developed by the European Space Agency (ESA). L-Sat was started after West Germany and France decided in 1979 to pull out of the ESA H-Sat broadcasting satellite project. Because British industry had heavily invested in H-Sat's success, the British government joined with the Italians to promote the new project. Meanwhile, France and Germany agreed to develop a bilateral direct broadcast satellite system (2 satellites) to be called TV-SAT, in order to help gain a share of the future market for broadcasting satellites and receivers.

NORDSAT: From Culture to Industry

The ways in which cultural and industrial policy can conflict and converge is neatly illustrated by the history of the NORDSAT project. An article by Kerstin Lindgren⁹ traces the way in which a cultural policy entered the realm of industrial politics. NORDSAT was a proposal that the Nordic countries (Norway, Sweden, Iceland, Finland and Denmark) should have a direct broadcast satellite system that would enable radio and TV programmes from each of the five countries to be beamed to the viewing public in all of the Nordic area. The aim was to increase Nordic cultural unity. There was no obvious commercial advantage or interest in the scheme.

NORDSAT aroused little public enthusiasm, but when a report on the project was published in 1979, Nordic electronic and aerospace firms became interested in the possibility of using the construction of a Nordic DBS system as a way of entering the space equipment market. At the same time, and for the same kind of reasons, Sweden began its Tele-X telecommunications satellite project. As Lindgren shows, Swedish industry is hopeful that if Tele-X is a success, it will eventually be the model for a true NORDSAT system. However, it still seems that in spite of all industry's and government's interest, the public as a whole remains unenthusiastic about the possibility of more TV programmes.

III. USA: Deregulating Direct Broadcast Satellites

Don R. Le Duc. *Direct Broadcast Satellites: Parallel Policy Patterns in Europe and the United States*. Unpublished paper, 1983.

In the past two or three years US private industry has been lobbying the Federal Communications Commission (FCC) for permission to go ahead with the development of direct broadcast satellites, which would enable home owners to receive TV signals by means of their own rooftop antenna. In late 1980 the FCC began to consider the regulatory implications and in June 1982 it decided that nine companies proposing to set up DBS systems could begin work. The DBS regulations impose very few restrictions on DBS operators: there are no limitations on the number of channels or systems that can be owned by a single entity and no technical standards must be observed except those required by international law. Each DBS system will only have to comply with those laws that relate to its activities as a "common carrier" or broadcaster.

The Convergence of US and European Policy

These FCC decisions, according to a recent article by Don Le Duc, could be seen simply as another manifestation of the trend towards deregulation and reliance on market forces to determine communication policy. He argues, however, that the US policy has several parallels with recent European policy positions. In both Europe and the USA governments tend to place the development of national technologies and the desire to control the DBS frequency spectrum space, above any wish to preserve the public service aspects of domestic broadcasting. Thus European governments cheerfully contemplate DBS systems which may undermine the finances and siphon off the audiences of existing broadcasting institutions by making much more television programming available across

national boundaries. And the FCC is prepared to see local broadcasting stations threatened by the existence of nationally distributed DBS programming. In both cases, broadcasters have found that government commitment to satellites has seriously eroded support for traditional culturally oriented, public service policies.

Will DBS Meet Public Needs?

A sharp critique of the FCC's approach to DBS regulation is provided by Armando Valdez,¹⁰ who argues that reliance on market forces will lead to a limited range of programming and information services provided by DBS. DBS operators will compete fiercely for the larger, already well served urban tv markets, and the audience in the rural remote areas will be bypassed. Thus, for example, one DBS operator, Satellite Television Corporation, proposes to initiate service by mid-1984 with the entire service dedicated to serving the Eastern time zone, which contains over 51% of the nation's population. Valdez also notes that DBS is entering an already media rich environment and will have to compete with a host of services, particularly video and cable.

In order that DBS potential for serving geographically dispersed, small, specialized audiences be realized, Valdez proposes that DBS operators be obliged to provide a range of free programming access to consumers as a portion of their total services. The programming could be of specialized content (e.g. educational, public service) or directed to specific groups (e.g. children, women, ethnic minorities). The long-standing US goal of a diversity of communication channels cannot be met simply by increasing the number of standard TV, film and video programmes available.

International Cooperation and Conflict in the Satellite Arena

I. Organizing Global Satellite Communications

Marcellus S. Snow. INTELSAT: "An International Example" in symposium on Satellite Broadcasting and Communication Policy. *Journal of Communication*, Vol. 30, No.2 (Spring) 1980, p. 147-156.

The growth of national satellite systems and the proposals for regional systems (e.g. in Africa (AFROSAT) and the Arab countries (ARABSAT)) are direct challenges to the existing arrangements for international satellite communications. Attention is now being focused on the future role and policies of the International Telecommunications Satellite Organization (INTELSAT).

INTELSAT is a global satellite commercial telecommunications network that by means of 16 satellites in geostationary orbit above the Atlantic, Pacific and Indian Oceans, links 375 earth stations in 140 countries. Set up on the initiative of the USA in 1964, INTELSAT has 106 countries as members, though the major financial investors are the USA, Britain, France, West Germany, Japan and Canada, who together hold just over 50% of the shares.

INTELSAT: A Model of Cooperation?

Marcellus Snow points out that INTELSAT has proved to be a very economical means of supplying satellite services across the world. As an organization it is a good example of how very many different countries from the developed and developing world, and from different political camps, can cooperate internationally. By sticking to a careful interpretation of its commercial function, INTELSAT has managed to avoid being damaged by political conflicts. It seems that INTELSAT and international organizations which may be modelled on it can only be expected to achieve limited goals of technical success or efficiency.

This understanding of the valuable but limited role which INTELSAT can be expected to play is confirmed by Snow's observation that INTELSAT's very success has encouraged moves to disrupt the system. By providing concessionary transponder rates for domestic use of its satellites, INTELSAT allowed countries to experience the benefits of satellites for domestic communications.

This in turn encouraged them to develop their own systems independent of INTELSAT.

Another view of INTELSAT is expressed by Georg-Michael Luyken.¹¹ He emphasises the extent to which the organization serves the economic needs of the US and other developed countries. Firstly, the 800 pathways between earth stations show a "one-sided orientation towards American and European coverage zones", while only a few countries are linked to their neighbouring regions. Secondly, the costs of using the system are still a major obstacle to many potential users in the Third World. Finally, the satellites link together the political and economic capitals of the world, but less economically important regions are far less well provided with telecommunications facilities.

II. DBS: Free Flow vs. National Sovereignty

Kathryn M. Queeney. *Direct Broadcast Satellites and the United Nations*. Alphen aan den Rijn: Sijthoff and Noordhoff, 1978.

Luyken's criticisms of the structural bias of global satellite communications in favour of the industrialized countries is echoed by those who champion national sovereignty against the free flow of information in the direct broadcasting debate.

The arguments over direct broadcasting by satellite have taken place since 1963 in two main fora: the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) and the International Telecommunications Union (ITU). In addition, the United Nations Educational Scientific and Cultural Organization (UNESCO) had an influence through its sponsoring of meetings and publications from 1965 onwards, to examine the potential political, cultural and scientific impact of satellite broadcasting.

The issue of direct broadcasting was discussed within the UN in relation to developing principles of space law. The ITU was

concerned with the allocation of frequencies and orbital positions for broadcasting satellites.

Debating DBS in the UN

As Queeney shows in her analysis of the debate within the UN up to 1977, states tended to adopt one of three basic positions towards direct broadcasting by satellite. The Third World and the communist countries argued that states should have to give "prior consent" to satellites broadcasting into their territories, otherwise their sovereignty would be undermined and their people and culture might be exposed to propaganda, advertising, foreign tv programmes and other undesirable matter. For the Third World in particular, satellite broadcasting seemed just one more cultural, political and economic domination.

Led by the USA, most of the Western states championed the principle that there should be no barriers to the free flow of information between peoples. The US was especially firm in opposing the principle of "prior consent".

A third group of countries led by Sweden and Canada proposed a compromise in which states involved in regional systems of direct broadcasting would agree among themselves to allow broadcasting across frontiers.

While these political discussions were going on, however, the issue was being resolved in a technical framework within the ITU. At the World Administrative Radio Conference for Space Telecommunication (WARC-ST) in 1971 it was agreed that countries would take "all technical means available to reduce to the maximum extent practicable" spillover of the satellite's beams into other countries' territories unless prior agreement has been reached.

In the US view, this technical agreement was a sufficient safeguard against the danger of unwanted DBS transmissions. Other countries did not agree however, and in 1982 the UN adopted a series of resolutions endorsing the "prior consent" principle.

Reconciling DBS and National Laws

Western Europe is one area where the proliferation of national DBS systems will pose many legal and institutional problems. Because so many countries are crowded into so small an area, there will be extensive spillover of satellite transmissions from one country to another. Though the countries of Western Europe share certain political, social and cultural values in common, there are still difficulties arising from the different ways in which broadcasting is regulated in different countries. Some countries, for example, forbid broadcast advertising altogether, or forbid the advertising of certain products, e.g. cigarettes; others are much more liberal. If cable systems in one country are able to distribute programming originating in another country and received direct from a satellite belonging to a third country, who is to be responsible for ensuring that the programme content is in conformity with the laws of the country receiving the signal? Furthermore, how is copyright to be protected?

These kinds of questions are raised by Jost Delbrück, in his analysis of West German law and the issues raised by DBS.¹² Delbrück concentrates on trying to reconcile the international commitment to free flow of information with the right of each state to regulate its broadcasting system. These legal problems are being raised throughout Western Europe at a national and a European level, e.g. in the Council of Europe and the European Broadcasting Union.

III. Sharing Out Orbits and Spectrum for Satellite Communications

Martin A. Rothblatt. "International Orbit/Spectrum Development Policy and the Growth of Geostationary Satellite Communications". *Journal of Media Law and Practice*, Vol. 12, No.2 (September) 1981, p. 147-159.

Within the ITU much discussion has taken place about how to

guarantee equitable access to the geostationary orbit and the radio spectrum. Ever since the 1967 Outer Space Treaty there has been international recognition that space is a resource which is to be used for the benefit of all mankind. In terms of practical policies the issues have centred upon ways in which countries not at present capable of using the geostationary orbit (they have no satellites) or of exploiting the frequencies allocated to satellite communications can have their interests protected. At the 1977 WARC, the solution adopted in the case of DBS systems was to allocate each country in Europe, Africa and Asia (the Americas are meeting in 1983) a specific orbital position and a number of frequency bands based on each country's size, time zone, language differences, etc. In Europe this meant that each country from the Vatican City to France got five DBS channels.

Safeguarding Access to the Orbit/Spectrum Resource

A recent analysis by Martin Rothblatt of the whole question of orbit/spectrum development attempts to lay down some principles that would guide future policy making. Rothblatt looks at four possible options for orbit/spectrum development: the market approach, the rationing approach, the engineering approach and the organized participation approach. He rejects the idea of applying free market principles to space as unlikely to achieve international approval, and he finds the rationing approach adopted at WARC 1977 liable to unduly retard technological innovation and efficient use of the orbit/spectrum resource. In the engineering approach, rights to use a share of the orbit/spectrum resource would be acquired by being the first to use the share. However, in order to protect the interests of latecomers in the development of satellite systems, the first users would be obliged to reach an agreement with others wishing to use the same orbit or frequencies.

Looking to the future, Rothblatt sees the development of geostationary platforms or space stations. These platforms are really large computers capable of providing a multitude of communication and information services simultaneously to a great number of users. Each one will do the work of several present-day satellites. Rothblatt suggests that the use of such platforms could be managed by a new INTELSAT type of organization with the aim of providing all countries with equitable, efficient and economical access to the orbit/spectrum resource.

Dispersing Sovereignty via Satellite?

The political questions raised by technological advances are coming ever more prominent in research on satellite communications. Robert E. Jacobson, for example,¹³ has pointed out that the development of international satellite networks such as Satellite Business Systems, a subsidiary of IBM, COMSAT, and Aetna Life Insurance Company, is just as much a threat to traditional notions of national sovereignty as are DBS systems. Satellite Business Systems is a sophisticated digital communications system able to link up the offices throughout the world of transnational companies into an internal international network. What control can national governments have over the transfer of information in such a network? Indeed, to what amount of regulation should such systems be subject?

Satellite Technology Sidesteps Regulation

Anthony Rutkowski considers the ways in which advancing satellite technology is posing new problems for international and national systems of regulations.¹⁴ For example, the possible development of geostationary platforms will undermine existing regulatory approaches based on the 'service' concept. Distinctions between categories of satellite service such as fixed, broadcasting, maritime, common carrier, domestic, international, etc., will be impossible. Any user will simply convey to the computer on the space platform its instant communication or information-processing need and the computer (within a few microseconds) will aggregate the available resources for carrying out the task. These resources

include up-, down- and intersatellite-link beams of varying areas of coverage and capacity.

Because use of the platform's computer takes no account of distinctions between international and national services, and because the development of such platforms will probably require extensive collaboration between countries, organisations such as the ITU will be faced with even more problems of reconciling national self-interest with the exploitation of the orbit/spectrum resource in the interests of all.

- 1 Binod C. Agrawal. "Social Evaluation of the Satellite Instructional Television Experiment (SITE) and its Implications for the Future." Unpublished paper, 1980.
- 2 K. E. Eapen. "The Cultural Component of SITE". One of the articles in the symposium: "Satellites for Rural Development," *Journal of Communication*, Vol. 29, No. 4 (Autumn) 1979, p. 89-144.
- 3 Neville Jayaweera. "Communication Satellites: A Third World Perspective." Unpublished paper, 1982. (Jayaweera is at WACC, 122 King's Road, London SW3 4TR.)
- 4 Christopher Plant. "PEACESAT: A Classic Wolf in Sheep's Clothing: Evaluating Interactive Technology in Education and Culture." In Liora Salter, (ed.), *Communication Studies in Canada*. (Toronto: Butterworths, 1981), p. 147-160.
- 5 D. M. Lamberton. "From PEACESAT to GLODOM: Models of Telecommunications Development." *Media Information Australia*, No. 25 (August) 1982, p. 64-67.

- 6 B. Walsh. "New Forms of Broadcasting: RSTV & Cable TV — But what happened to the Satellite?" *Media Information Australia*, No. 26 (November) 1982, p. 31-35.
- 7 Hector Schmucler. "Veinticinco años de satélites artificiales." *Comunicación y Cultura*, No. 9, n.d., p. 3-76.
- 8 Michiel Schwarz. "The Politics of European Space Collaboration." *InterMedia*. Vol. 9 (1981), No. 4 (July), p. 66-71.
- 9 Kerstin Lindgren. "Sweden Turns from Nordsat to its Own Tele-X." *InterMedia*. Vol. 9 (1981), No. 4 (July), p. 56-59.
- 10 Armando Valdez. *Development of New Telecommunication Resources in a Deregulated Environment: An Examination of FCC Policy on Direct Broadcast Satellites*. To appear in *Proceedings from the Eleventh Annual Telecommunications Policy Conference*. Norwood, N. J.: Ablex, forthcoming.
- 11 Georg-Michael Luyken. "New Communications Technology and Global Information Handling". In Jennifer Slack and Fred Frejes, (eds.), *The Ideology of the Information Age*. Norwood, N. J.: Ablex, forthcoming.
- 12 Jost Delbrück. *Direkter Satellitenrundfunk und nationaler Regelungsvorbehalt: Umfang und Grenzen des transnationalen freien Informationsflusses nach Völkerrecht, dem Recht der Europäischen Gemeinschaften und dem Grundgesetz der Bundesrepublik Deutschland*. Frankfurt/m: Alfred Metzner Verlag, 1982.
- 13 Robert E. Jacobson. "Satellite Business Systems and the Concept of the Dispersed Enterprise: an End to National Sovereignty?" *Media Culture & Society*. Vol. 1 (1979), No. 3., p. 235-254.
- 14 A.M. Rutkowski. "The Impact of New Technology on Satellite Radiocommunications — Special Report." *Telecommunications*. Vol. 17 (1983), No. 2. p. 46-47; 62.

Current Research on Satellites

AUSTRALIA

Dr. E. Steve Seumahu (Dept. of Electronic and Communication Science, La Trobe University, Bundoora, Victoria 3083) is currently national co-ordinator with Dr. Peter White of the Education Dept. Media Centre, La Trobe University, of the PEACESAT Australia Project initiated by La Trobe University and the Satellite and Telecommunication Users Association to experiment with satellite applications tailored to the needs of educational, health, scientific, community development and other public service groups.

BELGIUM

Prof. J Briers and Research Director, Alex Fordyn (Satellite Project, Dept of Masscommunication, State University of Ghent, Universiteitsstraat 8,9000 Ghent) are responsible for the research projection on the Satellite Television Situation in Belgium. A team of six researchers will investigate the relationship between the increase in communication outlets and diversity of programming; the news and advertising policies of satellite TV broadcasters; legal questions about "spillover" of broadcasts and implications for future communication policies and research.

COSTA RICA

CETTEM, Centro de Telecomunicaciones para el Tercer Mundo (Apartado 4766, San Jose, C. Pablo Roberts, Secretary General) continues to monitor satellite issues and in May convened a seminar to discuss Latin American satellite issues prior to the Regional Administrative Radio Conference on Broadcast Satellites.

FRANCE

CNES, Centre National d'Études Spatiales (129 rue de l'Université, Paris 7) is the centre of French space policy.

GREAT BRITAIN

Dr. Colin Berry (Psychology Department, North East London Polytechnic, The Green, London, E15 4LZ) has completed a comparative analysis of the content and form of televised weather forecasts in 20 countries in order to enumerate and compare techniques available for international DBS. Experiments to assess the relative effectiveness of different methods of news and weather presentation for international audiences are planned.

The European Institute for the Media (Director: Prof. George Wedell, The University, Manchester M13 9PL) will be undertaking research projects on 1) the future of European identities expressed in television and 2) the structure and content of a possible European TV satellite channel as proposed by the European parliament.

Istvan Wels (33 Monmouth Rd, London W2 4UT) has completed several satellite studies including one for the Broadcasting Research Unit of the British Film Institute (127 Charing Cross Rd., London WC2H 0EA) which will be published as an appendix to the Report of the Working Party on New Technologies. BFI, forthcoming.

INDIA

Dr. Binod C Agrawal (Educational Resources Cell, Space Applications Centre, SAC. PO, Ahmedabad, 380 053) is planning to research remote sensing applications in national development at the grass roots level. His paper "Social Evaluation of the Satellite Instructional Television (SITE) and its Implications for the Future" will appear in the book *World Communications: A Handbook* (New York: Longman, forthcoming) edited by George Gerbner and Marsha Siefert.

ITALY

Dr. Roberto Grandi (Istituto di Discipline della Comunicazione e dello Spettacolo (IDCS), Università di Bologna, Via Guerrazzi 20, 49126 Bologna) is researching the social impact of new technologies (including satellites).

JAPAN

At the Research Institute of Telecommunications and Economics (RITE) (1-6-19, Azabudai, Minato-ku, Tokyo) a team of researchers (**Nozuma Takasai, Tadao Yamagishi, Kazuyoshi Miyoshi**) have prepared a report on a Pacific regional satellite system.

USA

Wilson P. Dizard (Vice-President, Kalba Bowen Associates, 12 Arrow St., Cambridge, MA 02138, and Professor, School of Foreign Service, 1800 K Street, Georgetown University, Wash. DC, 20006) is studying US preparation for the 1985 Space WARC.

David Honig (Lecturer, School of Communications, Howard University, Washington DC, 20059) has completed five chapters of a forthcoming book entitled *International Regulation of Direct Broadcast Satellites*. In his campaign as Research Director for the National Black Media Coalition he is studying the "Prospective use of DBS by Rural Blacks".

Dr. Heather Hudson (College of Communication, University of Texas, Austin, TX 78712) is a member of the Advisory Committee to the U.S. Delegation for the 1985 Space WARC, and is continuing to research the role of telecommunications (including satellites) in development.

Dr. Larry C. Kerpelman (Abt Associates Inc., 55 Wheeler Street, Cambridge, MA 02138) is directing a project to evaluate the Agency for International Development's Rural Satellite Program in the Caribbean and Indonesia. The evaluation will examine the ways in which satellite communications are used to foster development in the education, health care, and agricultural sectors.

Dr. Emile G. McAnany (College of Communication, University of Texas, Austin TX 78712) is to study the ways in which Brazil intends to use its domestic satellite system. With Dr. Heather Hudson he plans a study of satellite planning and use in India, Mexico and the Arab States.

Dr. William P. Marberg (Mitre Corporation, Metrek Division, 1820 Dolley Madison Blvd, McLean VA 22101) has written a recent report entitled: *A Technical and Regulatory Analysis of Direct Broadcast Satellite Systems* (Mitre MP-82W31).

Dr. John K. Mayo (Learning Systems Institute, Florida State University, Tallahassee, FL 32306) is directing research to evaluate (in collaboration with Peruvian researchers) the joint US AID/Peruvian National Telecommunications Co. (ENTEL) project to provide rural telephone services via satellite.

Prof. Hamid Mowlana (School of International Service, The American University 4400 Massachusetts Ave., NW, Washington, DC 20016) has been commissioned by UNESCO to prepare a "Global Report on International Flow of Information". Two sections of the report will deal with satellite broadcasting as it relates to TV, radio, DBS and transborder data flow.

Dr. Edwin B. Parker (Vice-President, Equatorial Communications Co., 300 Ferguson Dr., Mountain View, CA 94043) has recently published "Impact of Telephone and Satellite Earth Station Installations on GDP" (with Heather Hudson and Andrew P. Hardy) in *Telecommunications Policy*, Vol. 6, No. 4 (1982) p. 300-307 and "Satellite Micro Earth Stations A Small Investment with Big Returns", *Data Communications*, Vol. 12, No. 1 (1983), p. 97-104.

Dr. Joseph N. Pelton (INTELSAT, 490 L'Enfant Plaza, SW, Washington, DC 20024) is editing with Joel T. Alper, an attempt at a definitive treatment of INTELSAT, entitled *The INTELSAT System* to be published under the auspices of the American Institute of Aeronautics and Astronautics.

Prof. Jon T. Powell (Dept. of Communication Studies, Watson Hall 210, Northern Illinois University, De Kalb, IL 60115) has recently published "Towards a Negotiable Definition of Propaganda for International Agreements Related to Direct Broadcast Satellites", *Law and Contemporary Problems*, Vol. 45, No. 1 (Winter) 1982, p. 3-35.

Dr. Kathryn M. Queeney (Communications Dept., Glassboro State College, Glassboro, NJ 08028) is writing a book on *The Final Decisions of the United Nations on the Regulation of Direct Satellite Broadcasting*.

Armando Valdez (Stanford Center for Chicano Research, Stanford University, PO Box 9341, Stanford, CA 94305) is studying the impact of US deregulation on DBS development and "the structural parameters to the diffusion of DBS as an emerging broadcast technology".

Dr. Rolf T. Wigand (Center for Public Affairs, 231 Wilson Hall, Arizona State University, Tempe AZ 85827) is a co-sponsor and co-organizer (with COMSAT, INTELSAT, AIAA, and IEEE) of the 6th International Conference on Digital Satellite Communications, September 1983, Phoenix, AZ). Recent publications include "Satellite Communication: Policy and Regulatory Issues" in *Progress in Communication Sciences*, Vol. 6 (Norwood, NJ: London: Ablex, 1983/84) ed. by M.J. Voigt and B. Dervin.

WEST GERMANY

Prof. Hans H. Kleinsteuber (Institute für Politische Wissenschaft, Hamburg University, Von-Melle-Park 15, 2000 Hamburg 13) is heading a research project (financed by the DFG — German Research Foundation) on telecommunication policy in the FRG that includes aspects of satellite policy. He is co-operating in a comparative study on European New Media policy (under the direction of ECPR). Some results are discussed in: Kleinsteuber, *Rundfunk-politik*, Opladen, 1982.

Georg-Michael Luyken (Amalienstra. 87, D-8000, München 40) is finishing his dissertation doctoral on "Technical, Economic and Political Factors Determining Direct Satellite Broadcasting".

PERSPECTIVES ON COMMUNICATION RESEARCH

Bringing Satellite Research Down to Earth

It sometimes seems that many of the questions raised by social research in the field of satellite communications are far removed from the everyday concerns of ordinary people. For example, the complex issues of assigning orbital positions or apportioning the frequency spectrum, are not, at first glance, obviously relevant to the communication needs of the average television viewer. Even the prospect of direct broadcasting by satellite is an arcane issue to the majority of consumers in Europe or the United States. The fundamental challenge facing researchers in satellite communications is to show how these mysteries of advanced technology impinge in a significant way upon the social, political, economical, cultural and communication environment in which most people live.

Looking to the Satellite User

The most fruitful approach to research on satellites is that which recognizes that the focus of interest is not the technology itself, not the social or political context within which it is situated, but the needs and wants of the user of the satellite services.

Alternatives To Present Structures

At the international level research can explore how present day institutional arrangements and regulatory systems serve the communication needs of users such as broadcasting and telecommunications authorities, nation states, and multinational business corporations. In particular research should help uncover the ways in which present arrangements contribute to conflict or encourage cooperation among users. It should also ask the question: which users and which communication needs are not being served at present, and what new arrangements could be devised to remedy the situation?

Extending The Benefits of Satellites

Crucial questions cluster around the development of Outer Space as a global resource. The problems of guaranteeing equitable access to the orbit/spectrum resource are technical issues with profound political and social consequences. On an international level research could explore present regulatory processes and arrangements, for example, the work of the ITU, and try to determine if the present mechanisms are benefiting all nations or only a few. More

importantly perhaps, one looks for research that suggests new ways of exploiting the orbit/spectrum resource for the benefit of all users.

Access, Diversity and Participation

At both national and international level three key issues are evident. These are access, diversity and participation. If one looks, for instance, at the manner in which satellites have been used to promote development goals, these issues are in the forefront of debate. Development communication via satellite aims to make information and education accessible to the inhabitants of remote and rural areas. By introducing new channels of information and new kinds of programming into traditional environments, the satellite helps diversify the range of media available to rural dwellers.

What Purposes Does Technology Serve?

The questions raised in development applications of satellites are found in other contexts too. In every instance the key questions are those which focus on the ways in which the needs of users are being or not being served by the technology. In relation to direct broadcasting by satellite, for example, do tv viewers need or want more programming? What kinds of programming are they interested in receiving? In what ways do satellites bring diversity and in what ways do they simply distribute over larger areas a standardized cultural product? How far should consumer preferences for satellite services and programming be determined by free market principles and how far be regulated by government authority? Who decides, and on what criteria?

These and a host of other questions come to the fore when the implications of satellite communications are considered. But these questions are not fundamentally different from those which must be asked in relation to other communication technologies such as cable tv, videotex, or even radio and tv. At root such questions ask what are the purposes served by communication technologies and who benefits from these technologies? Research which explores such questions and which is not afraid to suggest answers could do much to bring satellite research down to earth.

Jim McDonnell
Issue Editor

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In the current research section of the TRENDS issue on Secrecy, Vol. 3, No. 4, 1982, Gregorio Arena's first name was wrongly given as Gregoria. We should like to apologize for this mistake.

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