

# **Towards Pan-African Cooperation in Satellite Communication: An Analysis of the RASCOM Project**

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## **Abstract**

This paper begins by profiling the key elements of the RASCOM study and their implications for the socioeconomic development of Africa. It then analyzes the traditional arguments in the debate about the role of the new information and communication technologies in African development. Arguing for a regional approach to telecommunication infrastructural development, the paper examines SADCC's experience and concludes by offering a framework within which strategies can be mapped out for an integrated information and communication technologies development.

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# **Vers une Coopération Panafricaine de la Communication par Satellite: Une Analyse du Projet RASCOM**

## **Résumé**

L'exposé commence avec une esquisse des éléments clefs de l'étude du RASCOM et leurs implications sur le développement socio-économique de l'Afrique.

Il poursuit avec une analyse des arguments traditionnels dans le débat sur le rôle des nouvelles technologies et informations dans le contexte du développement africain. Se prononçant en faveur d'une approche régionale dans la mise sur pied des infrastructures de développement, l'exposé se penche sur l'expérience de la SADCC et conclue en proposant un cadre au sein duquel des stratégies peuvent être formulées pour le développement intégré des technologies de communication et d'information.



## Introduction

The decision by the Conference of African Ministers of Transport, Communications and Planning early in 1991 to accept the recommendations of the Regional African Satellite Communication (RASCOM) study on the potential use of satellite communication for the continent signals a major leap forward in the often slow and painful progress toward adopting satellite communication.

The advantages of satellite communication are not only limited to improved pan-African telecommunication links, but have a potential of networking Africa through radio and television broadcast in a way never before imagined. Such integration of the airwaves use would reflect a major consolidation of the OAU blueprint for the economic community for Africa by the year 2,000.

According to the recommendations of the RASCOM project, the crucial importance of fostering and developing inter-African cooperation is based on a number of considerations, four of which are listed below:

1. The end of the 20th Century marks the advent of a new age of communication characterized by unprecedented world demand for communication facilities and by the development of new technologies for meeting that demand and offering new services;
2. the availability of an appropriate communication network for Africa is one of the major prerequisites for the implementation of the Lagos Plan of Action for the integration of the African States;
3. a large number of recorded television programmes from the industrialized countries reach Africa, where they are widely disseminated, creating a situation in which African viewers are generally more familiar with the cultures and socioeconomic achievements of peoples in other regions than those of their counterparts in the neighboring countries or other parts of their own continent; and
4. despite the shortage of material resources, radio and television are playing an increasingly important role in the attainment of cultural and socioeconomic objectives in the African countries (RASCOM, 1990, p. 82).

The RASCOM report notes that African countries are already cooperating through a system of regular exchange of programmes

established by URTNA. The Programme Exchange Center, based in Nairobi, Kenya, offers African broadcasting institutions free access to its video bank which now boasts of an estimated 600 programmes in both English and French. In addition URTNA is spearheading efforts to establish a network of regular news exchanges via satellite. AFROVISION, as the network is called, will be coordinated from Algeria where an African Regional News Exchange Coordination Center is being established (RASCOM, 1990, p. 83).

A key element of the recommendations is the proposed establishment of a pan-African organization, tentatively to be based in Nigeria, that will coordinate and regulate the use of Africa's space segment. One of the simmering controversies that have pitted developed and developing countries against each other is the observed inequitable use of the outer space, notably the highly prized Geo-stationary orbit (GSO). The industrialized countries have taken a lion's share of the GSO in what is seen as a violation of the letter and spirit of the 1967 Outer Space Treaty which declares that the space segment is a common resource to be used for the benefit humankind.<sup>1</sup>

However, the acceptance of satellite communication technology by African policymakers, coming as it does in the aftermath of the most detailed and comprehensive study of telecommunications ever carried out in Africa, poses some challenges for African communication scholars, researchers and educators. What infrastructure is being built to ensure that Africa's historical experiences with the new information and communication technologies namely, greater dependence on western industrialized countries, are not routinely and mechanically repeated? What role are African communication educators, scholars and researchers as well as sociologists and political scientists expected to play to ensure that an integrated satellite communication in Africa will relate more dynamically to the development needs of Africa's masses instead of just the urban elite and their overseas compatriots?

This paper argues that Africa is on the threshold of a major communication technological revolution with far-reaching possibilities as the world edges into the 21st Century. However, technological progress in the field of communications can exacerbate inequities in African societies unless accompanied by the democratization of the post-colonial socio-political and economic institutions as well as the emergence of a civil society. A key question is whether democratization will precede technological innovation or whether the technological revolution will force democratization. To address this question, it is pertinent to review the classic debate on the implications for Africa and the Third World of the information and communication technologies



(ICTs). This will help to put into perspective the potential pitfalls of RASCOM.

The RASCOM project is a product of a number of international protocols and initiatives, notably the United Nations Transport and Communications Decade (UNTACDA, 1978–1988) which aimed at developing and modernizing the communication and transport infrastructure of Africa. The formation of RASCOM's "elder sister", the Pan African Telecommunications Network (PANAFTEL), was the culmination of early efforts at developing an extensive telecommunication network aimed at redressing the fragmentation of the continent through colonial structures of transport and communications.<sup>2</sup>

However, the problem with most of these early efforts was that there appeared to be no conceptual understanding of the role communication and transport infrastructure was expected to play in the socioeconomic development of the continent. This is despite the fact that African leaders have historically talked of the importance of telecommunications and transport in the socioeconomic development of their countries. These laudable speeches never culminated in a dynamic domestic policy on development support communication. The policymakers tend to see themselves as the center of development. To this extent, the use of telecommunications and broadcasting meant primarily ensuring that the telephone at the minister's desk was functioning and reporting word for word what he or she said and minute by minute their activities. Communication policy thus meant surrounding a government minister with media personnel. There are countless occasions where a government minister would not address his or her audience unless the media were present!

Also telecommunications was viewed in technical terms and dominated by technicians and engineers, with very little sociological, cultural or educational inputs. Merely calling for more telephones or other communication technological gadgetry amounted to a policy of quantitative acquisition without any qualitative examination of the impact of such technologies on health, education, and other development factors.

## **ICTs and Third World Development**

It has traditionally been argued that the ICTs have a significant potential in helping developing countries to "leapfrog" into the 21st Century. The assumption here is that the "frog" is healthy enough to take the "leap". The information revolution, which has brought an array of information technologies ranging from high-tech computers, fibre optics



and new generation of satellite systems, has attracted investments from Third World countries, some of which, like India, Brazil, Indonesia and Singapore are experiencing an annual growth rate in communication and computers of 10 to 20 percent. These countries, along with China, Mexico and the Arab countries, have since 1975 had their own satellite systems which they use for relaying educational programs in rural areas as well as for domestic and regional communications.

New developments in satellite technology promise cheaper and more versatile systems suitable for Third World needs. Third World governments have two major policy goals: first, to provide timely and effective public services to enable their people to earn their livelihood and enjoy an enhanced quality of life and, second, to develop the human and material resources of their countries in order to provide the basic needs to all its citizens. The new technologies of information and communication are seen as vital in maintaining the momentum of development, particularly when they are integrated and focus on micro-level projects and involve the active participation of the people.

Hence, informatics — the rational and systematic application of information to economic, social and political problems — can be a powerful motivating force for rural development. A major attraction is that, in applying information and communication technology, Third World countries need not adopt older technology "just because it happens to be less sophisticated" since the newest technology may be the cheapest and most efficient.

However, such an optimistic and idyllic characterization of the information and communication technologies comes with warnings that the technologies could, unless properly and carefully planned, produce new forms of dependence and exacerbate inequities in the distribution of goods and services. In some countries where such technologies as microcomputers have been introduced into the educational systems, decisions to use them were not necessarily based on research findings, nor did there exist a large number of research projects, monitoring development or assessing the effect of computers on education, according to the findings of the Stanford Symposium on Computers for Education.<sup>3</sup>

In most African countries, sophisticated ICTs have been ushered in without a clearly defined communication research policy. Consultants, engineers and technicians rule the day, their recommendations have largely been passively accepted by policymakers who appear to lack the capability to make rational and informed policy decisions on the introduction of the ICTs. They have, in the process, failed to understand the full implications of ICT, particularly their umbilical links to the world of transnational corporations (TNCs) and big government.



In this respect, five features in the use of telecommunications in the Third World have been identified. These are:

1. Unjust — because the telecommunication structure appears to be a privileged asset of a few countries rather than of the majority;
2. non-egalitarian — because the quality and flow of content via telecommunication systems is heavily biased in favour of a few countries. Third World countries are overwhelmingly receivers rather than generators of content;
3. non-participatory — because Third World countries and users have virtually no control over the planning, administration and programming of telecommunication systems. Investment decisions regarding the type of telecommunication technologies ignore the basic necessities and conditions of the small countries and are determined by the large users in the rich countries;
4. ineffective — because available technologies usually do not incorporate feedback mechanisms; and
5. non-pluralistic — because dependence on a few technologies limits the quality and number of informational, educational and cultural options, apart from the political or ideological restrictions that may exist.<sup>4</sup>

Traber (1986) and Schiller (1985) warn that the new technologies of information and communication are essentially an instrument of the corporate power of the TNCs. The technologies were developed in, by and for highly advanced capitalist economies, especially that of the United States. It is to be expected, therefore, that these technologies are being employed to serve market objectives of the TNCs. Contrary to predictions that the new technologies would, through information revolution, bring about fundamental changes in economic, political, social and cultural relations, they have precipitated a rapid growth of "disinformation and misinformation," (Traber, 1986, p. 1).

Traber (1986) further argues that the information revolution has had no emancipatory effect on humans by way of improving the quality of life because it was a manifestation of an information implosion rather than explosion and its benefits were spread in closed corporate structures of financial, TNC and military establishments. He says the exclusive nature of the benefits of this information revolution is evidenced by the fact that 90 percent of the data flow via satellite is



intra-corporate and about 50 percent of all transborder information flow takes place within communication networks of individual TNCs.

This exclusivity is seen as consolidating corporate power which could threaten the sovereignty of individual Third World nations. As Smith (1980) has observed, "the threat to independence in the late 20th Century from the new electronic technologies could be greater than was colonialism. For many a society, communications satellites may become the pipettes through which data which confers a sovereignty is extracted for processing in some remote place" (p. 176). The new system of global domination/dependency that may be created by the new information and communication technologies has another strategy for institutionalizing itself. This involves "cajoling" poor nations and their leaders into a race with glowing promises that electronic instrumentation offers the means of moving speedily out of backwardness into the 21st Century.

The relationship between information and economic power reflects an assumption that international development projects, business ventures, marketing, trade and technology transfer have usually resulted in the domination of the weaker peripheral nations. Modernization of less developed countries, says Mowlana (1986), has in fact led to their conversion and has made them amenable to control by Western power centres. As the corporate power over and control of the information flow increases, the Third World nations experience declining power and capability to make rational and sovereign decisions about the use of natural resources and the distribution of goods and services. The state systems would also become "vassals" in a fortified hierarchical, corporate-controlled structure described by Moshowitz (1984, p. 11) as "virtual feudalism". It is within this hierarchical structure of corporate-controlled information and communication technologies that development communication projects have emerged in the Third World.

## **Historical Origins of RASCOM**

The role of telecommunications in development was recognized as early as the formative years of the Organization of African Unity (Okundi, 1975). Hence, in subsequent years the OAU blueprint for the integration of African economic development leading to the African Economic Community (AEC) by the year 2000 includes a comprehensive telecommunications development program.<sup>4</sup> However telecommunications research in Africa has tended to originate from international agencies such as UNESCO and the ITU. Some of these studies came as a result of the declaration by the United Nations of 1983 as the World Communications Year.



One of the most comprehensive studies in telecommunications was a joint ITU-OECD project. It was carried out against a background of the widening gap in services of the world network; the growing need to question the historical approach to financing rural telecommunication services and trends in national and international investments and financing which were not favourable to telecommunications (Butler, 1983). The ITU-OECD project started in 1977 and its primary objective was to provide more evidence and data and propose solutions for the development of telecommunications in the rural areas of developing countries.

The project's findings dispelled perceptions by some Third World policy makers that telephones were a luxury for the urban rich and that the telecommunication infrastructure did not warrant the same intervention priority and treatment for investment as in other categories of public infrastructure such as roads, health and services. From 18 cases studied, the project concluded that telecommunications had a great potential in contributing to national development and that the telephone was not a luxury but a handmaiden of rural development (Butler, 1983).

Historically, the development of the African telecommunications network was dominated by commercial and administrative relations with Europe.<sup>5</sup> As a result, a large amount of domestic telecommunications traffic was being routed through Europe which resulted in very high and completely unrelated telecommunications tariff structures.<sup>6</sup> The emergence of former colonial territories as sovereign independent states, each concentrating on the development of its own network, precluded the overall improvement of inter-African communication. Thus, when viewed in comparison with other countries, African telecommunications development has not kept pace with general economic development (Okundi, 1975).

It was within this rather complex framework that the Organization of African Unity recognized the urgent need to develop an inter-African telecommunications network, while at the same time preserving commercial and cultural links with Europe and other continents. African governments recognized that telecommunications were vital to economic and social development and were vital tools in the hands of governments in exercising administrative and other controls at the national level as well as enabling them to participate more fully in the life of the world community of nations (World TC Forum, 1975). To achieve these goals, African governments, fully aware of the inadequacy of their telecommunications infrastructure, made the establishment of an up-to-date telecommunications network among their first priorities in accelerating the overall socioeconomic development of the continent.<sup>7</sup>



However, while these resolutions held out a lot of promise they largely remained on paper as the ITU-OECD project showed several years later. Long before the ITU studies (especially the pre-investment surveys in African telecommunications development in 1968), African governments had been toying with the idea of such a pan African telecommunication network. The ITU first organized a conference on African postal and communications administrations in 1962. It was at that conference that the first international plan for the development of an African telecommunication network was outlined. In late 1968, the ITU began detailed pre-investment surveys in Africa of the international requirements for producing future plans for an integrated African international network for telephone, telex, telegraph and television communication. On the basis of its findings, the ITU recommended that PANAFTTEL should not only serve to facilitate connection between countries but should also provide communications between national centers — thus providing a medium for developing national networks at the same time.

At the meetings on the Implementation of the Pan African Telecommunications Network, held in Addis Ababa in 1972 and in West Africa in 1973 to discuss the output of pre-investment surveys, it was estimated that a network of 20,000km of international transmission links needed to set up the network would require US\$100 million to finance it (World TC Forum, 1975). ITU also studied the traffic potential for the network in order to determine its viability. The study that attempted to forecast traffic between 1975 and 1999 showed a considerable increase in the volume of traffic over the previous period of 1970 to 1979.

Thus PANAFTTEL, which was inaugurated as part of the U. N. Transport and Communications Decade for Africa (UNTACDA 1978-1988), was seen as the first step in the development of an efficient and modern telecommunications network in Africa and, at the same time, a foundation of an efficient future regional network for the continent. The next stage would include the development of an African domestic satellite system (RASCOM) that would best contribute to an inexpensive method of satisfying the continuously changing traffic matrix of the African continent.

Research studies by the ITU on African telecommunications during the 1960s and 1970s undoubtedly heightened an awareness among the newly independent African states of the potential power of telecommunications in development. The studies also heightened an awareness among African leaders of the gross disparity in the density of telecommunications between developed and developing countries. One way of helping to upgrade and modernize Africa's



telecommunications infrastructure, given the problems of inadequate foreign exchange, was a recommendation by the Maitland Commission, encouraging developing countries to pool their resources in purchasing appropriate equipment (Missing Link, 1985). Other recommendations by the commission included a vigorous training program for telecommunications personnel; the establishment of research and development institutions; local manufacture of telecommunication equipment; adequate financing by Third World countries for their telecommunications networks and the establishment of funds to provide for the earth stations and terrestrial facilities in the developing countries.

## **The RASCOM Project**

The RASCOM project was inaugurated under the Inter-Agency Coordinating Committee (IACC) by the Conference of African Ministers of Transport, Communications and Planning. RASCOM's mandate was to undertake a comprehensive and objective study of an integrated telecommunication network for Africa which will take into account the need to provide satisfactory service particularly to rural areas in order to enhance the socioeconomic development of the participating countries.

The goal of RASCOM is to provide an efficient, reliable and economic means of telecommunications, including sound and television and community reception by satellite, to all areas using a regional African satellite system, complemented by other appropriate technology with a view to fostering the socioeconomic development of African countries (Yusuf, 1987). The IACC was tasked with the responsibility of integrating and harmonizing all on-going pre-feasibility studies to avoid needless duplication. RASCOM's terms of reference had as their immediate objectives:

1. To carry out a country-by-country study to identify the needs for satellite communications, including requirements for transmission of sound and television broadcasting and community reception by satellite, with a view to providing services at the national level, in particular rural and remote areas, and the regional level and submit proposals for efficient and economical services using a regional African satellite communications system, complemented as necessary by any other appropriate technology, which shall be properly integrated into the existing and/or planned infrastructures;
2. to undertake technical and economic studies for the design, launching and operation of a regional dedicated satellite system for

the African region that would cater for the provision of efficient and economical telecommunications, including requirements for transmission of sound and television broadcasting and community reception by satellite and data communication service for intra-African connection between States; inter-urban connection within countries; and rural and remote areas of participating countries;

3. to cover all aspects with regard to the integration of the space component into the existing or planned network, in particular, the interfaces and any adaptations needed for the smooth functioning of the two components; and
4. to identify and prepare a broad outline of specifications for the design and local production, where possible, of all types of equipment that may be required individually or collectively for an integrated system. These specifications shall be geared to respond to the African economic, social, technical and physical environment (Yusuf 1987; RASCOM, 1990, p. 12).

At the national level, the RASCOM project was aimed primarily at identifying truly national development-oriented telecommunication service needs in each country, and requires each country to extensively involve users to determine their requirements. It approached access to telecommunications not just from the conventional telephone/telex demand as perceived by the Post and Telecommunications (PTT) authorities, but also as felt by the overall national development authority in form of infrastructural support to other activities. This approach brought to the study the cultural, economic and social breadth that it needs to satisfy the aspirations of the population of each country. (RASCOM, 1990; Yusuf, 1987).

RASCOM's regional level activities use inputs from national studies and include: data base for the African regional project; telecommunications supply evaluation; regional planning targets for telecommunications including sound and television broadcasting; traffic distribution forecast between the terrestrial and satellite system; formulation of proposals for implementation; financial and economic evaluation; and organization and management of the African regional system.

## **RASCOM's Findings**

One unique aspect of the RASCOM project was the creation of grassroots national coordinating committees, NCCs, each with representatives



from a broad range of agencies and organizations. This was an attempt to link telecommunication infrastructure to the development needs of both urban and rural populations.

The survey, completed in 1990, showed in its findings a continuing problem in telecommunications development in Africa. Existing services are still inadequate, with most people in the region having no access to telecommunications services. At the end of 1988, there were 4.3 million DEL (direct exchange lines), or a density of 0.76, a far cry from the objectives of the OAU, namely, a telephone density of 1.5 by 1995, 2.0 in 2000 and 2.5 by the year 2005. Countries in North Africa had performed relatively better with Libya having, as of 1988, a density of 6.67, Tunisia, 3.19, Algeria, 2.93, Egypt, 2.77, and Morocco 1.19. Altogether, 38 countries had reached a telephone density higher than 1 del/100 inhabitants. Chad and Zaïre recorded the lowest telephone density at 0.09 while Mauritius and the Seychelles recorded the highest at 4.2 and 10.6 respectively (RASCUM, 1990).

The nine countries of the Southern African Development and Coordination Conference (SADCC), which in the past decade declared transport and communications a priority sector for regional development, appear to have fared relatively better than most other African countries, showing that regional cooperation pays off. SADCC recorded an average of 1.13 telephones per 100 people. Swaziland recorded the highest telephone density at 3.05, followed by Zimbabwe, 3.03, Botswana 2.22 and Zambia 1.21. At the lower end of the scale were Mozambique, 0.43 and Tanzania, 0.53. A strong caveat needs to be made here. The average telephone density implies equal access to telephones.

To determine the differential in access to telephones between urban and rural communities, the RASCUM study used the comparative penetration index, the ratio between mainline density in urban areas and that in rural areas. In 1986, the ratio for 50 countries in Africa was 0.03, meaning that the urban density was 33 times higher than the rural density (RASCUM, 1990). What is access and how is it defined? The RASCUM project used the following as its operational definition:

Telephone accessibility means the opportunity for any citizen anywhere to have access to a telephone in order to communicate with any other telephone. This accessibility may be measured by the maximum distance a person has to travel to obtain access to a telephone. This distance can vary from 0 km to hundreds of kilometers for people living in rural areas. (RASCUM, 1990 p. 24).

The study also found lack of proper planning for interconnectivity and the digital networks that are rapidly proliferating the continent. Rural telecommunication networks were found to be virtually non-existent, a result of poor investment, leading to a rapidly deteriorating situation, despite early studies showing rising demand for telephone services in the rural areas. The sad state of affairs in rural telecommunications makes a mockery of sonorous cantations by the policy makers about their telecommunications policies aimed at improving rural development. The argument of prohibitively high investment costs in rural telecommunications is systematically losing its persuasiveness in the light of new, cheaper and more versatile telecommunication equipment that can be made available at much less cost than older systems. The costs effectively decrease when African countries pool their resources.

In broadcasting, the RASCOM project found that, while significant achievements have been made in the rural penetrative capability of transmitters, serious problems remain in the quality and content of program. In other words, where transmitting quality has improved, television viewers have been treated to generous servings of foreign programs, mostly archived materials in the Western film libraries, and with no developmental value or relevance to the needs of the populations of Africa.

There has been little or no innovation or creativity in transforming the broadcast media into effective instruments of educating the public, creating forums for public debates on major socioeconomic, political and cultural issues. The report calls for a more vigorous and dynamic program of cooperation in program production and exchange. This is consistent with the vision of the Lagos Plan of Action as well as the AEC protocol. A regional approach to implementing the RASCOM recommendations is likely to be the most effective and potentially viable way of developing a strong and viable pan-African cooperation in satellite communication. Alternative sources of funding for broadcasting networks, which are still very dependent on government subventions, should be explored. Considering the deteriorating economic condition in Africa, the report recommends the development of a telecommunications infrastructure through regional organizations such as the Economic Community of West African States (ECOWAS), the Preferential Trade Area (PTA) and the SADCC.



## **The SADCC Experience**

In implementing the PANAFTTEL network, SADCC had to contend with a number of obstacles most of which were a legacy of colonial domination. These obstacles included telecommunications not being accorded adequate priority in most African countries outside SADCC; lack of communication standards; power supply problems; use of equipment not adapted to the African environment and requirements; lack of telecommunications operation agreements between administrations; unharmonized tariff rates; fast changing technology; inadequate high-level manpower for technical and administrative management; scarcity of financial resources; and lack of industries and manufacturing capability (Yusuf, 1987). Two additional problems, one of them peculiar to SADCC, are equipment damage due to South Africa's acts of regional destabilization and lightning. It is estimated that such infrastructural damage by South African-sponsored agents amounted to over US\$10 billion (SADCC, 1989).

Yusuf (1987) argues that African countries recognize that the collective, self-reliant and self-sustaining development of the continent can only be achieved through the establishment of the African Economic Community and that telecommunications have a vital role to play in its realization. This vital role has been underscored at many international conferences. An important strategic element has been the need to link the telecommunications infrastructure to the productive sectors, notably agriculture. Recommendation 4 of the Tunis Conference on Broadcasting in Africa (1987) stresses in its preambular paragraphs the need for effective communications with the rural areas with a view to promoting the development of agriculture, health and education. Recommendation 2 of the Tunis Declaration states that member states (must) co-operate in extending telecommunication and broadcasting services to the rural areas.

It is from these pan-African and international initiatives that SADCC has derived part of its formula for its telecommunications development program. However, some aspects of the pan-African and international recommendations have not been given the emphasis they deserve at the SADCC regional level, notably that telecommunications must be part of an integrated package of communication service to be better able to respond to social and development needs of the bulk of the population.

The vast majority of the population in the SADCC region are engaged in agriculture — hence Africa's strategy for economic recovery

underscores the need for increased investment in small-scale agriculture (APPER, 1987; Lagos Plan, 1979). The African Domestic Satellite project may prove to be of practical application in rural development, especially in vast SADCC countries like Angola, Botswana, Mozambique and Tanzania. The feasibility study will take full advantage of knowledge gained from satellite experiments in other parts of the world to evolve practical solutions and technical/economic objectives of satellite communications in the region (SADCC, 1987).

## **Conclusion**

This paper has analyzed the RASCOM project in the context of the overall telecommunication development program in Africa. One area that needs particular attention is training and research in telecommunications. For communication researchers this is one neglected area. Yet it is a significant part of the overall development in Africa. Hopefully, this paper will stimulate discussions on strategies to include telecommunications in the training and research agenda for communication scholars and researchers.

To conclude, we would like to make a few suggestions for developing a systematic research agenda. First, let us make a strategic shift from the traditional arguments, without abandoning them of course, that the ICTs are an instrument of control by the TNCs. Let us develop a dynamic of our own. Let us identify our strengths and develop a balance of power theory of development. Here we can use our strengths to use the same ICTs to promote our interests. The essential elements of this balance of power theory are, first, to build a critical mass of African and Africanist scholars and researchers. This can be a strategic link between the developing and developed countries in terms of identifying and negotiating terms for technology acquisition and overseas training for telecommunication students. Traditionally such negotiations have taken place between representatives of African governments, who are essentially politicians, and their overseas counterparts, who are skilled engineers, to the disadvantage of Africa. Developed countries are competing to sell their products to the Third World. Here Africanists and African scientists can get the best deals by going for the lowest bidder. The second strategy is to establish a development support communication center for Africa. Such a center could serve as a clearing house on a variety of telecommunication information-related issues, ranging from training, research, equipment acquisition to documentation.



## Notes

1. United Nations Resolution on the Exploration and Peaceful Uses of Outer Space, United Nations, N. Y. For an extensive discussion on the international regulatory regime see Donald J. Flemming; E. D. du Charme; Ram S. Jakhu and W. G. Longman, 'State Sovereignty and the Effective Management of a Shared Resource: Observations Drawn from Examining Developments in International Regulations of Radio Communication.' *Annals of Space Law*, Vol. X, 1985.
2. See 'RASCOM (1986) Draft Treaty Establishing the African Economic Community. Terms of Reference for the Feasibility Study of RASCOM.' Harare, African Minister of Transport, Communication and Planning, Res. ECS/UNTACDA/Res. 86/84.
3. 'Executive Summary of the Stanford/UNESCO Symposium on Computers for Education, Which Role for International Research?' Stanford University, March 1-14 1986, p.1.
4. OAU Draft Protocol on the African Economic Community. Doc. ECM/ECO.8(SIV) OAU (1979).
5. U.N. Transport and Communications Decade in Africa (1978-1988). Doc. UNECA(E/CN.14/ECO/138; E/CN.14/TRANS/136, p. 38.
6. 'Meeting on the Implementation of the Pan African Telecommunication Network, Addis Ababa, October 30-November 10, 1972.' Report published by the ITU, Geneva, Switzerland.
7. *Ibid.*

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