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POLICY IMPLICATIONS OF THE WORLD ADMINISTRATIVE RADIO CONFERENCE OF 1979: An Historical Perspective and Political Analysis

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ABSTRACT

POLICY IMPLICATIONS OF THE
WORLD ADMINISTRATIVE RADIO CONFERENCE OF 1979:
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The World Administrative Radio Conference of 1979 and the major political issues therein are the foci of this study. Particular attention has been devoted to human rights aspects and the related concept of redistributing global resources for the purposes of equitable human development.

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Preface

The policy implications of the World Administrative Radio Conference of 1979 (WARC79) are linked to the past through the technological and regulatory history of electric telecommunication. Technological innovation has been the sine qua non of telecommunication for almost two hundred years.[1] Shortly after the appearance of a practical telegraphic apparatus, a need emerged for regulations and international cooperation. Sending messages across national borders required standardization of the equipment and operating procedures. Along with technical considerations were political issues involving national sovereignty, as in the censorship of messages that were considered threatening to the welfare of the state. Economic issues in the form of rate and tariff schedules were also studied and discussed at the first international meetings.[2]

As the world economy has grown, it has also become interdependent. What happens in one country becomes important in other countries, even if they are separated by thousands of miles. The expansion of international commerce in the last century was the impetus for many research and development efforts to improve the speed and capacity of systems that conveyed human communication. Telecommunication has become the connective tissue of information societies. During the 1960's, telecommunication was recognized by President Lyndon Johnson's Administration as having, "progressed from being an essential support to our international activities to being also an instrument of foreign policy."[3]

This thesis will proceed from a review of historical factors into a report on current events (Parts I and II). The issue chosen for detailed analysis is the debate between developing and developed countries over the future world "Information Order". Part III presents a synopsis of the World Administrative Radio Conference, which was held from 19 September 1979 to 11 December 1979, and a summary of the U.S. government's ratification process of the Final Acts of WARC79.

The underlying purpose of this thesis and its organization is to present a cohesive view of modern telecommunication from the birth of telegraphy to the emergence of direct broadcast satellites. It is intended, by tracing the history of innovation and regulation, that this process

will provide an appropriate foundation for understanding the subtle complexities that were a part of the negotiations at WARC79.

A major theme to be stressed throughout this work is the concept of development as it applies to industrialized and third world nations alike. Progress and development are linked to the means and quality of human communication. With the decolonization of natural resources has come demands for the decolonization of information. Political, economic, social and cultural factors impinge on the technology of telecommunication. Information scientists and technocrats must recognize these factors share equal importance with purely technical choices.

Sincere appreciation is extended to the many librarians, technicians and analysts who provided invaluable assistance in collating many obscure documents. To Elizabeth Valentine for her constant support and knowledge of the law which proved to be the prinicpal assets of this study. I am also indebted to Michelle King and Lori Pena for their bibliographic and word processing skills. The basis for this analysis is a direct result of the encouragement and advice given by Thomas Muth, Ph.D., J.D. In the classroom and as thesis advisor, Dr. Muth offered expert opinions that challenged and enlightened my education.

PART ONE

THE GROWTH AND DEVELOPMENT OF INTERNATIONAL TELECOMMUNICATION

VALENTINE FROM A TELEGRAPH CLERK ♂ TO A TELEGRAPH CLERK ♀

"O TELL ME, WHEN ALONG THE LINE
FROM MY FULL HEART THE MESSAGE FLOWS,
WHAT CURRENTS ARE INDUCED IN THINE?
ONE CLICK FROM THEE WILL END MY WOES."

JAMES CLERK MAXWELL

CHAPTER ONE

Technology and Innovation

The word telecommunication has origins in ancient Greece. The prefix "tele-" denotes operations over long distances. The International Telecommunication Union has defined the word as "any transmission, emission or reception of signs, signals, writing, images, sounds, or intelligence of any nature, by wire, radio, optical or other electromagnetic systems."[1] The first organized means of telecommunication were quite simple. Early techniques employed mirrors for reflecting sunlight, smoke signals from hilltops, drums or the human voice.

The eminent scientist Robert Hooke proposed a system of visual telegraphy nearly three hundred years ago. One hundred years later a working system was developed. This occurred in France, and it became an integral part of Napoleon's military communications network. Other systems soon followed in Europe and America.

Because early forms of long distance communication required large investments of capital and labor, their use was restricted to government, especially military, applications.[2] In addition, use was only possible under favorable weather conditions and in the daytime. The optical telegraph, like the pony express, was only an interim

solution to a long-term problem. At the close of the 18th century, experiments with electrostatic energy began to show promise as a means of sending messages over wires.

Electrical Telegraphy

Although electrostatic generators had been a philosopher's toy for many years, they were not viewed as practical inventions until the growth of steam-powered railroad trains produced a corresponding need for rapid communication. Once the initial problems of function and design were overcome, the evolution of electrical telegraphy followed a path as swift as the locomotive. The telegraph was a ubiquitous mode of communication by the middle of the 19th century. Since use of the device was relatively inexpensive, business and personal communications could be transmitted. Soon, the use of the telegraph for commercial and private communications dominated the medium.

Newspaper publishers were some of the first private organizations to see the value of nearly instantaneous communication via telegraph. In 1980, Julius Reuter began the news agency that still bears his name. Originally, his service was known as "Reuter's Telegrams." Reuter also utilized carrier pigeons to relay news information between European capitals.

When the transatlantic cables were installed the entire nature of world events was dramatically altered. Had the cables been in place 50 years earlier, the Battle of New Orleans would have never been waged and perhaps the whole

War of 1812 could have been avoided.[3] Some historians have linked the creation of the modern nation-state directly to the emergence of the railroad and telegraph.[4] With these innovations, long-distance communication became possible over nation-sized geographical areas.

One major disadvantage of the telegraph has always been the time required to receive a reply. The interactive quality of human speech is lost in the encoding-decoding process of sending a telegram. A "musical telegraph" was proposed by some inventors, but the device now known as the telephone was not immediately viewed as a means of interpersonal communication.[5] Once the telephone was developed, however, its adoption in the U.S. and other industrialized countries was swift.

Telephone

As in the case of electrical telegraphy, the invention of the telephone was not simply the product of a single person. Actually, many people took part in telephonic research and development leading up to the achievement of Alexander Graham Bell. Bell applied for a patent on Valentine's Day, 1876. Later on the same day, Elisha Gray filed a caveat for a similar invention of his own.[6] After extensive litigation, the dispute was settled in Bell's favor and he received much credit for the birth of a new industry.

Refinements in switching mechanisms and in long-distance signal transmission connected thousands of communities. The telephone industry required a major commitment to research

and development in order to build a large system with paying subscribers. The effects of this process have appeared in many fields tangential to telecommunications.[7]

The telephone brought more people into contact with telecommunication than did the telegraph. In combination, the two modes of communication exerted much influence on daily affairs by the close of the 19th century. The next century would introduce mass communication through radio broadcasting.

Radio

Before there was radio there was wireless telegraphy. A wireless telegraph apparatus was invented after the discovery of electromagnetic waves. The existence of radiation propogated by simultaneous periodic variations of electric and magnetic field intensity was postulated by James Maxwell and demonstrated by Heinrich Hertz. During the last half of the 19th century these two physicists, the former from Scotland and the latter from Germany, laid the foundation for two identical, yet separate, innovations.[8]

In 1895, the Russian, Alexander Popoff, set up a receiver-antenna configuration and published the results of his experiments later that year. An Italian, named Guglielmo Marconi, also worked on a similar device, but he did not receive a patent until 1897. Consistent with the origins of the telegraph and telephone, there is a dispute over the original invention of the radio. Marconi also organized the first transatlantic radio transmission in

December, 1901. The radio had already been responsible for saving lives at sea by then, which further aided the adoption of this new communication medium.[9] Marconi is more famous than Popoff, largely because he fully realized the commercial as well as the scientific implications of his invention. On the other hand, the Soviet Union celebrates the 7th of May as Radio Day, in honor of Popoff's accomplishment.

The idea of transmitting human voice and music without wires occupied the imagination of many inventors. Two Americans contributed significantly to the effort. Reginald A. Fessenden, a Canadian working in the United States, was the first person to stage a successful radiotelephonic broadcast. The date was Christmas Eve, 1906.[10] The other major figure was Lee DeForest. After receiving his Ph.D. from Yale in 1899, he went to work for the Western Electric Company, but then obtained financial backing to form the American De-Forest Wireless Telegraph Company.

DeForest read a lecture by the British physicist, John Fleming describing a rectifier. This was a device that would allow current to flow one way, but not the other. DeForest's idea was to produce much more powerful voltage than Fleming's "valve." He called his invention the audion tube. He used it to broadcast voices from the Eifel Tower in 1907.[11] DeForest and Fessenden were embroiled in litigation, between each other and with other companies over the use of their respective patents. They were both to

receive comfortable compensation for their efforts. The audion remained the only electrical amplifier available until the invention of the transistor in 1948.[12]

Instantaneous transmission, elimination of wires, and lightweight portability are but three obvious advantages of radio. Transportation, again, played a fundamental role in the development of new telecommunication technology. The need to maintain continuous contact with ships at sea became tragically apparent after the sinking of the Titanic in 1912, and it brought about a sudden reliance on the radio. That same reliance on radio continued with the establishment of the commercial airline industry in the 1920's. The 1930's brought radar to the expanding uses of the electromagnetic spectrum.

Broadcasting began in the early 1920's and quickly put pressure on the capacity of the available radio spectrum. A major change in the regulatory structure of telecommunication was catalyzed by the problems of the new mass medium. Broadcasting by radio put people in touch with global, national, and local events on a real-time basis. The impact of radio broadcasting continues to be an important factor in cultural, political, and economic affairs.

Television

An early version of television was devised by G. R. Carey of the United States in 1875.[13] It consisted of a mosiac of selenium cells which operated much like photoelectric cells. These, in turn, were connected to a series

of tiny electric lamps. The system proved quite impractical, however, a man in Germany saw in this device the potential for a working system. Paul Nipkow, of Berlin, made a rotating scanning disc that could achieve a hazy picture, but the device was also impractical because the scanner simply could not be spun fast enough to produce a satisfactory picture. The year was 1884.

The brilliant Russian scientist, Vladimir Zworkin, began experimenting with the cathode ray tube in the 1920's. The cathode ray tube had been developed by an Englishman named Joseph Thompson in 1897.[14] Zworkin realized that the incredible speed by which the beam operated could be used for an efficient scanner when it was under the influence of electromagnets. His invention was called the iconoscope.

The American Philo Fransworth perfected a tube for receiving the electrical pulsations of the iconoscope and turning them back into images. Had it not been for the outbreak of the Second World War, television would have been a practical reality sooner than 1946.

Today, television effects the lives of billions of people--from the screaming hordes in Teheran to the inner sancta of American suburbs. Since the introduction of cable and subscription television, the way in which we view the world has been completely altered. The inception of videoconferencing is also revamping the way business, education, and government is conducted, while the combination of satellites and television has spawned a debate involving national

sovereignty, cultural imperialism, and human rights. Television has progressed from infancy into adolescence, eclipsing radio along the way in dominance of the popular entertainment market and in news reporting.

Satellites

The notion of space tavel stretches all the way back to ancient myths. In fact, some popular writers contend the idea is linked to the development of civilization itself.[15] A story about an ocean ship blown to the moon was related by Lucian of Samosata in his Vera Historia in 160 A.D.[16] In 1865, the year the ITU was established in the same city, Jules Verne published a book, titled, De la Terre a la Lune. It is remarkable that in his prophetic novel, Verne set the launch in Florida and placed three astronauts aboard the space vehicle.[17]

On 4 October 1957, the space age began, with the successful launch of Sputnik 1 by the Soviet Union. Sputnik was the first artificial earth satellite. The event signifies the beginning of the space race between Russia and America. The contest culminated in the U.S. Apollo moon landing on 16 July 1969. Telecommunication has been an important factor in the exploration of outer space through the four functions of tracking, telemetry, command, and control.[18] The exploitation of outer space has also begun and telecommunication is in the forefront with communications satellites. The geostationary orbital path, 22,300 miles above the equator, became the first limited natural

resource from beyond the earth's atmosphere to be claimed for commercial purposes.

The use of satellites for communications began in 1960 with Echo I. Communications satellites can be categorized under two headings, passive and active. The first group merely bounces signals back to earth off their inflatable, reflective surfaces. Echo I and II were of this variety. The second type of communications satellite is one that receives, amplifies, and re-transmits signals. The active satellites were initiated with the deployment of Telstar on 10 July 1962. The following year, Syncom I was launched and the geosynchronous orbit was utilized. The use of the geostationary orbit was suggested by another science fiction writer, Arthur Clarke at the end of World War II.[19]

Remote sensing of the earth's natural resources by satellites has become an important feature of economic planning and development. Presently, this technology is only accessible to developed countries and the technicians able to interpret the data. Use of spectrum space for solar power generating stations in orbit is currently being proposed. The power would be stored on board until needed and then transmitted to the earth via microwave beams. The environmental implications are yet to be resolved, as well as the allocation of frequencies for its use.[20]

Direct broadcast satellites (DBS) have been controversial since they were first conceived. DBS is a system that

utilizes the geostationary orbital path to beam television signals into private homes which have a small receiving dish instead of an antenna. Although there are few systems in operation, the issue remains an international point of contention in bilateral and multi-lateral negotiations.

Should another world war take place, satellites, television, and telecommunication in general, would be instrumental weapons in espionage and propoganda. A recent best-selling novel has drawn one possible scenario.[21]

Computers

The average person is largely unaware of the relevant position in telecommunication held by computers and information systems.[22] This technology has become indispensable to the orderly functioning of developed societies. The advances made in the storage, retrieval, processing, and distribution of information have been labeled, "...the central technological achievements of the twentieth century's third quarter."[23] In the administration of government, the computer has been described as the greatest contribution to effectiveness and efficiency of operations made in modern times.[24]

As in the case of satellite technology, this thesis will focus on computer technology and how that pertains to telecommunication. Some of the regulatory issues concerning this technology will also be covered in the appropriate sections that follow.

Computers have existed in various forms since ancient times. Devices were employed to predict the exact change of seasons, survey land, and do mathematical calculations. The modern machines can handle enormous quantities of data with impeccable accuracy and at speeds that go beyond human capabilities to measure without the aid of other machines. Punched cards were invented in 1880 by Herman Hollerith, an employee of the U.S. Bureau of Census.[25] An English mathematician named Charles Babbage outlined the basic functions of a computer in a paper he wrote in 1822. It was not until 1944, however, that engineers were able to build a working computer. It was assembled by International Business Machines Corporation and presented to Harvard University.[26]

Computer technology was greatly advanced by the needs of the space industry, especially in the U.S. Apollo program. The need for rapid, interactive information processing was a prerequisite to attaining the goal of putting humans on the moon and bringing them home. In addition, the space program required unprecedented microminaturization of information processing technology. These advances have been absorbed into the telecommunication industry very quickly. In less than a decade, experimental technology has become commonplace.

Electronic Switching Services (ESS) are one example. With this equipment, tracing a call can be almost instantaneous, data communications and processing can be conducted over regular phone lines. Enormous quantities of

information can be stored in tiny cells for a fraction of the costs of just 15 years ago.

The use of computers for management of the electromagnetic spectrum and the geostationary orbit is becoming accepted by some countries.[27] But there are presently no university programs for training individuals in this area.[28]

In the late 17th century, Gottfried Leibniz speculated on a time when courts could be abolished. He believed that, in the future, disputes would be settled by mathematically solving the impartial equations to show who was right and who was wrong.[29] The USA was able to use a computer for helping to resolve the discrepencies between 14,000 proposals made by the members of the ITU at WARC79. Although the computer did not solve all the differences at the Conference, the trend is evident.

Future Prospects

The evolution of telecommunication will continue in the next two decades with the merging of services such as telephone and (cable) television. Computer terminals, satellite transmissions, and teleconferencing are but a few peripheral services that are being offered by multinational corporations and government subsidized enterprises.[30] The regulatory issues connected to this integration of services will occupy an important place on policy-makers' agenda for the next two decades.

The first chapter has shown that the evolution of telecommunication technology has always been an international

effort. It is certain that, without the free exchange of scientific information, the emergence of international telecommunication would have been greatly delayed. At the same time, it has been necessary to protect the interests of those who labor to further technological innovation. Resolving the dilemma created by conflicting issues such as these can only be accomplished through international organizations.

It is hypothesized that the ITU, must adopt a more dynamic approach to planning and control of international telecommunication. In order to deal with the problems created by new technology and new politics, the ITU will have to respond by improving its structural design. A stronger commitment toward correcting the exigencies and inequities within telecommunication systems in developing countries will become a major bargaining chip at future conferences.

Some writers have posed the possibility of a "teleculture" emerging from a global telecommunication network.[31] The components are in place for information utilities to extend their rhizomatous services into communities of all sizes. The "global village" foreseen by Marshall McLuhan now appears just over the horizon.[32] But a lot depends on the shifting priorities for world order. Before going into a detailed analysis of these issues, it will be useful to review the origins and repercussions of regulatory activities in international telecommunications.

CHAPTER TWO

International Regulation, Administration, and Control

The application of electricity to long-distance communication swiftly altered relations among nations during the 19th century. Two factors were responsible for this. Around mid-century, telegraphy demonstrated the nearly instantaneous speed at which electric communication operates. The other factor, coming at the end of the century, was the ability of radio to cross national boundaries with or without prior consent. It soon became apparent to telecommunication specialists that national borders imposed artificial limits on the efficacy of the new technology.

The political and social differences of various telegraph operators on both sides of a country's borders added to the difficulties. These initial problems often detracted from the speed, accuracy, and secrecy of messages transmitted over national frontiers. The problems persisted with the introduction of radiotelegraphy and later, broadcasting. The use of radio for broadcasting quickly established this mass medium as an important source of information. It was also seen as a powerful influence on society, but early attempts at regulation were largely ineffective.

The European countries first recognized the need for international agreements. By the mid-nineteenth century, a Telegraph Union appeared and in the early twentieth century, an International Radiotelegraph Union was organized.

Telegraph Conferences

Soon after the telegraph became technically and economically feasible, the need for cooperation among administrations was realized. In 1848, the linking of the Prussian capital city with outlying districts of the kingdom required fifteen separate agreements. The first international agreement was signed the following year by Prussia and Austria. The Austro-German Telegraph Union was created when other Central and Eastern European countries joined the original pair. The West European Telegraph Union was formed in 1851 by France and Belgium. Both organizations added more countries to their membership. The two unions continued to work together until 1865 when they merged in Paris to become the International Telegraph Union.[1]

There was no American present at the 1865 conference, but the telegraph instrument invented by the American, Samuel F. B. Morse, was adopted for use on international lines.

The second ITU conference was held in Vienna in 1868. The Union established the International Bureau of Telegraph Administrations at this meeting. The Bureau served an indispensible administrative function in the early days.

The first two conferences dealt with the problems of land telegraphy in Europe. The next conference included submarine cables on its agenda. The United States had industrial interests in this technology. The American entrepeneur, Cyrus Field, attended the third ITU conference in Rome in 1871. He was not representing the U.S. in any official way, but was there as a representative from a private British company.

The fourth Union conference was held in St. Petersburg, Russia in 1875. The convention and regulations that were developed at this meeting remained in effect with only minor changes until 1932. The U.S. was invited to send a non-voting observer, which it did. Because the U.S. was not a member of the ITU, it could not vote.

In order to become a member, countries had to own or control the telegraph industry inside their borders. Representatives from member countries could then sign agreements, including rate schedules, that would be enforced. The U.S. policy of not interfering with private companies prevented it from becoming a member of the ITU. The American ambassador to Russia, Eugene Schuyler, was this country's observer to the meeting in St. Petersburg.

Schuyler commented on the convention and some of the main points of the conference. He noted that the principles of the convention included (1) the "right of everyone" to correspond by means of international telegraphy; (2) confidentiality of the contents of the telegram, unless the

welfare of the state is in jeopardy; (3) if the welfare of the state is threatened, the state could withhold all or part of the telegram; and (4) the cost of the telegram was to be determined by the number of words.[2]

Following the St. Petersburg conference, a series of submarine cable conferences was held during the 1880's. Participation by the United States was minimal at these meetings. The slow ratification process in the U.S. Senate, coupled with the country's unique private ownership of telegraph companies kept the U.S. on the sidelines during these initial international telegraph conferences.

Early in the twentieth century, the United States was invited to become a member of the ITU. At the 1908 ITU conference the matter was discussed, but the invitation was declined. It was not until after World War I that the U.S. government really become concerned about international telegraphy.[3] Many of the cables that were cut and diverted by the Allies during the conflict had previously served the United States.

An American Committee of International Telegraphic Communication met in November, 1918 to consider the cable situation which was worse after the war than before.[4] The final report of this meeting recommended that the U.S. should expand its facilities. The report also said the League of Nations should control all cable and radio apparatus. The seeds were sown for coordinating all forms of electric communication within a single international administration.

A preliminary conference opened in Washington, D.C. on 8 October 1920 to consider how to deal with the problems of post-war telegraphy. Unfortunately, no plans for resolving the problems came out of the conference. The United States cable facilities in 1920 were still not up to their pre-war conditions. In addition, this was a non-Union conference and therefore, the conferees did not take it very seriously.[5]

Early Radio Conferences

Analogous to the history of telegraphy, the regulation of the "wireless" became an important part of the industry shortly after the development of technical and economic arrangements. On the other hand, facilities and regulation of ordinary telegraphy did not resemble or fit the situation with the radio. The wireless telegraph allowed distant communication between ships as well as ship to shore. This greatly contributed to the safety of life at sea, but regulations were required to provide intercommunication among the various types of equipment.[6] Ancillary agreements were necessary for the assignment of frequencies and rules of operation.

The first international meeting to consider radio regulation was a preliminary conference called by the Prince of Prussia. It was held in Berlin in 1903 with nine countries, including the United States, in attendance.[7] Alexander Popoff was a member of the Russian delegation. The main purpose of the conference was to undertake preliminary

studies. Assuring freedom of correspondence also was one of the objectives.[8] The director of the Western Union Telegraph Company, J.I. Waterbury, was a U.S. delegate. He noted three main obstacles to providing a practical system of radio telegraphy. They were: how to prevent interference; how to obtain range; and how to ensure secrecy.[9]

The Final Protocol of the Preliminary Berlin Conference stipulated that, "...coast stations should be bound to receive and transmit telegrams originated from or destined for ships at sea without distinction as to the system of radio used by the latters."[10] This principle formed the basis for the subsequent regulation of radio communication. The American proposals had a significant influence on the Final Protocol.

Problems with international radio continued, in spite of the Preliminary Conference. A major controversy transpired between the Marconi Company, the U.S. and Germany. The British firm refused to accept messages from ships using German equipment. When the Marconi Company operators declined to do so while on an American lightship, they were told to pack up their equipment and depart.[11]

The United States continued to ponder the policy problems related to radio during the interim period between the Preliminary Conference and the First Radio Conference of 1906. An interdepartmental board was set up by President Theodore Roosevelt in 1904. The group was to consider the general topic of radio regulation as well as to formulate

specific proposals for the U.S. delegation to present at the 1906 conference. The board also recommended certain legislative measures to prevent interference, avoid control of the technology by monopolies, and furnish the government with the proper guidelines for handling the international aspects of radio.

Along with these rudimental investigations came recognition of the electromagnetic spectrum as a limited, albeit renewable, natural resource. Congestion of the airwaves can easily occur without spectrum management. If two stations in close proximity operate on the same frequency, there will be poor reception of both stations. If one of the stations is using more power, then it will simply "drown out" the weaker signal.

When the question of harmful interference arises between two or more countries, then technical issues collide with political issues. The difficulty lies in reconciling the conflict between national sovereignty rights and the need for international cooperation. The First Radiotelegraph Conference in 1906 sought to establish a legal framework for coordinating the incipient problems of radio communication. The Radio Convention, drafted by the host country (Germany) and accepted by the Conference, was based on the ITU Convention of 1875. The Bureau of the ITU at Berne was designated as the central administrative office of the Radiotelegraph Conference. The Convention became effective on 1 July 1908. The U.S. Senate did not ratify the

Convention, however, until just before the second conference opened in 1912.

The second Radiotelegraph Conference was convened in London on 4 June 1912. Just three months prior to the conference the "unsinkable" Titanic struck an iceberg and foundered with a loss of more than 1,500 lives. Another ship, the Californian, was close enough for the officer on watch to observe the distress flares, but he did not understand their meaning. The only radio officer on board the Californian had gone off-duty fifteen minutes before the catastrophe. He had attempted to warn the Titanic that icebergs had been sighted, but was told to "shut up" as the Titanic was corresponding with Cape Cod at the time.[12]

A major non-technical problem arose at the conference over the number of votes to be accorded to each nation. A country could have as many as six votes. Because the United States had delayed ratification of the 1906 convention, it was not eligible for the maximum number of six votes. The procedure, established by the 1906 convention, was that a member had to be a "contracting country" six months prior to the next conference.[13] But the U.S. delegation was able to wage a successful floor fight at the meeting to obtain the six votes. The U.S. also managed to have any reference to rates excluded from the convention. The delegation stated in the Final Protocol that the country was, "...under the necessity of abstaining from all action in regard to rates, because the transmission of radiograms

as well as of ordinary telegrams in the United States is carried on, wholly or in part, by commercial or private companies."[14]

The date for the third conference was scheduled for 1917, but World War I made this impossible. The Third International Radiotelegraph Conference was eventually held in 1927. The interim between the second and third conferences witnessed many changes in the technology and application of telecommunication. In addition, the world order had undergone significant changes during the 13 year span separating the two conferences. The League of Nations was created, Germany was defeated, then economically debilitated, a revolution transformed Russia, and radio broadcasting had burst into existence.

The Third Radiotelegraph Conference opened in Washington, D.C. on 4 October 1927, to revise and update the 1912 radio convention and regulations. Secretary of Commerce, Herbert Hoover, chairman of the U.S. delegation, was elected Chairman of the Conference. As the host country, the U.S. had primary responsibility for assigning the chair and vice-chair of the conference committees. As a result, the practice of putting the control of committee affairs in the hands of European delegates was modified. The committee posts were distributed on a global basis, as opposed to the continental (European) approach of the two previous conferences. The U.S. also allowed the news media access to all plenary sessions. In the past, the press had been barred from attending these meetings.

At the 1912 conference, five countries (France, Germany, Great Britain, Russia, United States), each had six votes while most had only one vote. At the 1927 conference, France, Great Britain, and the United States had the maximum. Germany was reduced to the minimum. After a lively debate, the German delegation was eventually granted six votes, "...out of courtesy."[15] Russia did not attend, as it was not invited by the host country, the United States.

The need for a permanent organ to undertake studies and present conclusions at future conferences was expressed at the Washington Conference. In response, the Radio Consultative Committee was formed at the Conference. The Committee was patterned after those committees in the ITU that deal with telegraph and telephone questions. The U.S. initially opposed the creation of the consultative committee on the ground that it might interfere with private industry. Guglielmo Marconi spoke in defense of the U.S. position of protecting "...private radio initiative from over-regulation."[16]

The Washington Conference drafted the first Frequency Allocation Table. The Table comprised only a tiny fraction of the frequencies that are listed in the current Table. The original Frequency Allocation Table was defined as 10 to 60 KHz. Today, the Table extends from 10 KHz to 400 GHz. In fact, one major stimulus of innovation in radio communication has been the constant annexation of higher electromagnetic frequencies.

Before the Conference closed on 25 November 1927, the next meeting was scheduled. The conferees decided to meet in Madrid in 1932. This was in accordance with a suggestion made by the International Telegraph Union at its 1925 meeting to hold a joint conference to merge the telegraph and radiotelegraph conventions. The concept of allocating frequencies by an international organization, for international needs (rather than national), and according to various uses (rather than along political lines), are the three primary accomplishments of the Washington Radiotelegraph Conference of 1927.[17]

A major political incident at the Washington Conference had to do with the refusal of the United States to invite the USSR. Russia formally protested to the Berne Bureau for the "political considerations" Washington had exhibited.[18] As a result, the Soviet Union did not consider itself bound to the 1927 Convention, which, in turn, caused problems for its neighbors.

The Convention of 1927 was quickly ratified by the U.S. Senate. The Foreign Affairs Committee received no objections to the Convention or the Regulations. The Washington Conference has been called the first truly modern telecommunication conference.[19] In light of this statement, it is useful to point out that political as well as technical issues have always been a part of the process.

Modern Radio Conferences

The purpose of this section is to provide an overview of the major radio conferences sponsored by the ITU. The General World Administrative Radio Conference of 1979 will be treated separately in later chapters.

There were three preliminary conferences prior to the first joint telegraph and radio conference of 1932. They were the Prague Plan Conference, 1929, the International Radio Consultative Committee (CCIR) Meeting of 1929, and a second CCIR meeting in 1931. Each of these gatherings influenced the agenda of the Madrid Conference. The Prague Plan included specific agenda items to be covered at the CCIR meeting later that year. In addition, the Soviet Union participated and signed the agreements that came out of the Prague conference.

The International Radio Consultative Committee which is one of the permanent organs of the ITU, was established at the Washington Conference and came into effect on 1 January 1929. The CCIR operates through Study Groups, World and Regional Plan Committees and Plenary Assemblies. The Plenary Assemblies meet about every three or four years and draw up a list of technical problems concerning radiocommunications. Study Groups are formed to provide Member countries with expert advice on the questions. Draft Recommendations are then submitted to the next Plenary Assembly where they are adopted or rejected by the Assembly. Once adopted, the Recommendations are published and distributed by the ITU.[20]

Although the United States voted against Article 17 of the Washington Convention establishing the CCIR, it did send three delegates to the first meeting at The Hague in 1929. The main objective of the CCIR was to prepare the technical agenda for the Madrid conference. The third interim meeting between the Washington and the Madrid Conferences was another CCIR conference, held in Copenhagen in 1931. The U.S. delegation of eleven people was aided by the technical advice of the Federal Radio Commission (FRC). The meeting refined the technical proposals to be discussed in Madrid. By the time the joint conference in Madrid was to open, there were over 3,000 proposals to be considered by 80 delegations.

Prior to Madrid, there were two meetings titled the Safety of Life at Sea Conferences (SLS) that dealt with the use of radio frequencies. A third SLS Conference was held in 1948. The conferences were originally convened for maritime matters, but changed in three decades to considering technical, social, economic and political issues.[21]

The first joint conference convened in Madrid on 4 September 1932, with almost 600 persons in attendance.[22] A Joint Convention Committee was organized to coordinate the telegraph and radio sessions. The objective of the joint conference was to update the International Telegraph Convention of 1875 and the Radiotelegraph Convention of 1927. It is ironic that the former convention was drawn up in Russia but not signed by the United States, while the latter

convention was formulated in the U.S. but not signed by the USSR. In Madrid, the main objectives of the telegraph conferees were to agree on the length of code words allowed in telegrams and resulting rates. The radio negotiations dealt mainly with the demands of countries for more broadcasting frequencies.[23]

The United States opposed the old method of assigning multiple votes to a country based on the number of colonies a country possessed. Prior to the conference, the USA circulated a position paper which stipulated, "The right to vote is limited to independent countries and to territorial units possessing a large measure of autonomy, as evidenced by their eligibility for membership in the League of Nations."[24] A proposal was submitted to the conference by the American delegation calling for the abolition of all colonial votes, however, a consensus could not be reached. European countries which held colonies resisted the change in protocol whereas "revolutionary" governments like the USA and the USSR supported the proposal. A temporary system of voting was put forth. This compromise allowed each delegation represented on a committee to vote. In effect, the compromise gave colonial delegations voting privileges, as they were included on all the important committees.[25]

Another major non-technical issue involved the official language used at the conference. The only official language of the previous conferences was French. The USA wanted English to be adopted as a second official language with the

cost of translation to be shared equally by the entire conference. A compromise was reached that allowed short documents and transcripts of debates to be published in both English and French. The official documents of the conference which were very long continued to be published only in French.

The issue of press censorship was partly covered by the Madrid conference. Failing to obtain support for a proposal to abolish censorship altogether, the USA sought to have a warning given before censorship was imposed on the press. Other countries wanted greater controls on the international press, calling for measures that were even more strict. The U.S. was actively sustained in this endeavor by the delegations from Canada, England, and Russia. The resulting Article 26 liberalized previous canons of press censorship.[26]

The 13th International Telegraph Conference and the Third International Radiotelegraph Conference, convened as two separate legal entities in 1932, but concluded the meeting as a single organization. Liaison was established by the Joint Convention Committee and related technical committees. The most important accomplishment of the Madrid Conference was the signing of a single convention containing the general principles of regulation and control that are common to telegraph, telephone and radio services. When the meeting was adjourned, Article 1 of the new convention came

into effect and the International Telecommunication Union emerged.

The subsequent meetings of the ITU dealing with radio matters will be summarized later in this chapter. A synoptic table of all conferences of the ITU from 1903 to 1979 appears in the Appendix. The First Administrative Radio Conference of the new ITU was held in Cairo in 1938.

Some of the technical advances that occurred between 1932 and 1938 included short-wave broadcasting; the use of radar for tracking aircraft; and, television broadcasting in Germany and Great Britain. The IXth Olympic Games were televised from Berlin in 1936. The demand for more allocations and the higher technical standards of new technology were the main concerns of the Cairo Conference.

One of the most far-reaching decisions of the Cairo conference was the allocation of radio channels for future services as well as existing services. This was the first allocation ever in anticipation of future needs.[27] In other ways the Cairo meeting was a continuation of business initiated at the Madrid Conference. For example, the language issue persisted, although English translators were provided with office space by the Egyptian government. The American delegation furnished translators and typists, while the Berne Bureau provided duplication and distribution services.

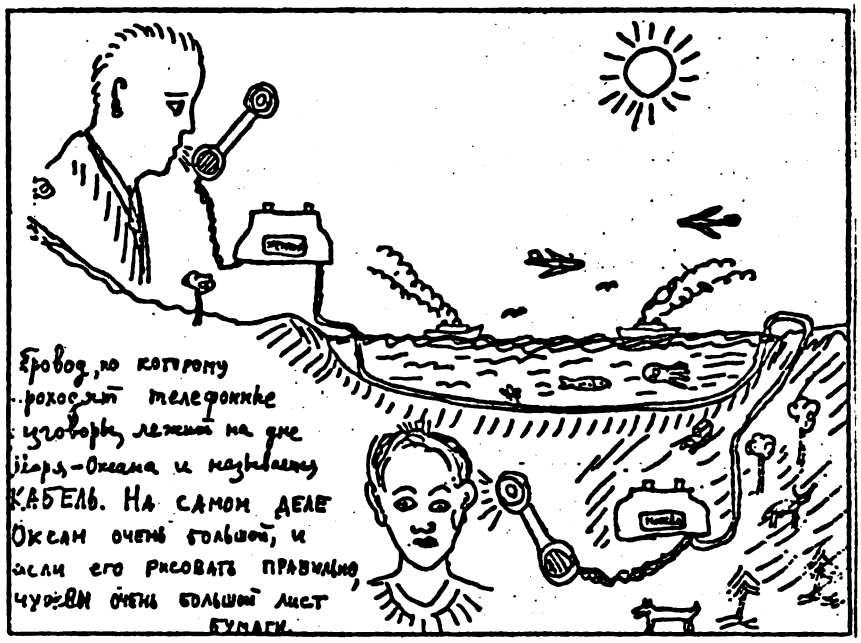
The United States was the host country of the next conference, held in Atlantic City in 1947. This was the

first meeting since before the Second World War and many things had changed in the intervening nine years. The most important outcome of the meeting was the creation of the International Frequency Registration Board (IFRB) which had responsibility for maintaining the Master Frequency List.[28] A secondary result was the Additional Radio Regulations necessitated by the immense growth of radio services during this period. Although the U.S. has recently opposed the concept of planning conferences, in 1947 it had proposed such meetings to replace the first-come, first-served mechanism.[29]

The 1959 Administrative Radio Conference was held in Geneva at the permanent headquarters of the ITU. The main task of the Conference was to revise the Radio Regulations. In recognition of the impending uses of space telecommunication, the delegates called for an Extraordinary Administrative Radio Conference to be held in 1963.

PART TWO

GLOBAL ISSUES THAT IMPINGE ON TELECOMMUNICATION POLICY



Drawing by Andrei A. Sakharov sent to his granddaughter in Newton, Mass.

New York Times, 26 February 1980, p. B4.

CHAPTER THREE

Human Rights Aspects of International Telecommunication: Communication in Support of Development

This chapter focuses on international or diplomatic communication. Human rights are treated as values across cultures and it is their impact on international telecommunications policies that will be considered. The United Nations Universal Declaration of Human Rights will serve as the basic statement of human rights because of its international recognition. WARC79 is significant in this regard because the decisions made at this international conference will shape global communications through the end of this century.

The lack of agreement on the allocation of frequencies is important because lesser developed countries have attained a numerical voting advantage in the International Telecommunications Union since the last general WARC in 1959. The rhetoric of international politics has acquired new concepts as a result of this change. These concepts are often associated with principles of human rights and serve as points of contention at the international level.

Five interrelating concepts will be discussed throughout this chapter. The next section documents their precedents, followed by a discussion of how they impinge on human rights and international communications. These concepts are expressed in the following "umbrella" phrases:

1) New World Information Order;

2) Cultural Imperialism;

3) Balanced vs. One-Way Flow of Information;

4) Equal Rights for Nations in the Allocation of Frequencies; and,

5) National Sovereignty Extended to Parking Spaces for Geosynchronous Communications Satellites.

These ideas influence the policies of all 154 countries participating in the ITU and in subsequent regulations. Although every nation's proposals presented at WARC79 are specific to each government, many can be generally stratified along the North/South dichotomy. The North/South dichotomy is used here to refer to the general geographic location, by hemisphere, of the developed (North) and the less developed (South) countries of the world.

Historical and Political Origins

> "The study and assessment of human rights is linked inextricably to deeply held values about the good and the bad, the right and the wrong. Judgments are made enormously difficult by ideological and cultural variation. Thus the existence of a document to which many States have consented, even if fewer have honored, is an advantage for an exercise in making statements with cross-cultural and cross-ideological applicability."[1]

What are human rights and how did they come to be articulated within the framework of the United Nations? Before delving into the events of the 20th century, it would help to sketch out the historical path these modern concepts have traversed.

The idea of rights is almost as old as its ancient enemy despotism. The first known use of a word meaning freedom was in the 24th century B.C., when a Sumerian king defeated an oppressive high priest.[2] In Greek drama, Antigone made reference to a law superior to the law made by government when she refused to obey a decree forbidding funeral rites for her brother.

Plato spoke of the notion of justice as though it were handed down by long tradition.[3] This is the notion that every human is to be given what is their due. During the Middle Ages this notion flourished most notably in the philosophy of Thomas Aquinas. The controversy then and now has been, what, in fact, is each person's due? How does anything come to belong to a person anyway? And, how does it so truly belong to the individual that every human and every government has to grant it and/or allow possession of it? Here we encounter resistance from the past to yield answers: "The concept of 'being due to' that is, ' right,' is of itself such a primordial idea that it cannot be traced back to a prior, subordinating concept. That is to say, it can at best be described, but not defined."[4]

Medieval philosophers were concerned mainly with duties one owed to the feudal lord or the church. Their belief was in a universal order of things.

During the 17th century, the concept of "natural rights", which had grown out of earlier developments like the English Magna Carta (1215), gained wide recognition. By the 18th century it was commonly held that the proper task of government was to safeguard such rights. At the end of that century came the American Constitution and Bill of Rights and the French Declaration of the Rights of Man.

In England, Jeremy Bentham had defined rights in terms of duties. Writing in his Fragment on Government in 1776, he said: "Without the notion of punishment...no notion could we have of either right or duty." Others wrote about obligations--that no one can enjoy rights unless others meet obligations.

Comes now the 19th century and Karl Marx. He believed that humanity is still in its adolescent stage and would not be mature until the emergence of universal communism-sometime in the far off future. Only then, according to Marxists, would the concept of rights have any meaning. So today, when we in the West point to totalitarian control in the Soviet Union, for example, what we see as violations of basic human rights are rejected by the East as simply illusory bourgeois sham.[5]

The 20th century has added another facet to the notion of rights. Since the revolutions in Russia and China, human

rights are commonly associated not only with freedom from interference of various kinds, but also with positive benefits like education, a decent standard of living, health care and the like. These more recent elements are called cultural and economic rights. Consequently, the U.S. Bill of Rights relates only to the original set called civil and political rights.

The foregoing chronology of human rights identifies these ideas in an historical context. Civil and political rights, then, are a part of human rights wherein there are also enunciated cultural and economic rights.

The right of access to all public places is being extended to the electromagnetic spectrum in many recent legal arguments. One writer and critic of Western society has pointed out cultural contradictions that relate specifically to communications. The media, "of course, are neutral. The purposes to which they are put are not."[6] Another Western writer has posed a counter-point to this proposition with the often quoted phrase: "The medium is the message."[7] Whichever interpretation one chooses, one thing remains clear, access to communication media has become a critical factor in the analysis of policy and regulation at national and international levels.

When the United Nations Charter was adopted after World War II, protection of human rights was included in Articles 55 and 56. This interest in promoting respect for human rights is an example of the increasing concern by the inter-

national community to secure basic rights and freedoms for all human beings.[8] The specific inclusion of human rights provisions in the Charter reflects the reaction of the international community to the atrocities of World War and toward regimes which perpetrate them. The horrors of World War II resulted in a widespread commitment to international protection of human rights as a necessary element to peace, security, and progress.

The Universal Declaration of Human Rights was adopted on 10 December 1948 in the form of a resolution of the General Assembly. Of the 58 states in the United Nations at the time, 48 voted for the Declaration, none voted against, eight abstained, and two were absent.

The drafting of the Declaration was an example of intense diplomatic jousting between various cultures and ideologies. Delegates from the United States, Britain and France, sought to restrict the document to the legal formulation of articles on the civil and political rights. They held up as models the English Magna Carta of 1215, the American Declaration of Independence of 1776, the U.S. Constitution of 1787 and the 1789 French Declaration of Human and Civil Rights. The Western countries were reluctant to include specific social and economic rights.

The Soviet Union, on the other hand, called for the inclusion of such rights as the right to work, to rest and leisure, to education, and social security. The United States objected to these proposals on the basis that they

were "socialist" in nature, and reflected only a socialist doctrine of human rights.[9] The economic and social rights proposals were put into the Declaration after much debate.

One important point to be made regarding the Declaration relates to enforcement. In the United States, if certain minimum conditions of civil rights are not met, then the citizen may go to court to compel the accused to abide by the law. With the United Nations document, this is different. Enforcement of the Declaration is not part of the United Nation's function.

According to the Preamble to the U.N. Declaration of Human Rights, the articles set forth a "common standard of achievement," not enforceable legal obligations.[10] Human rights, in short, are statements of basic needs or interests. The concept presupposes a standard below which it is intolerable that a human being should fall. The Declaration is a correlative, then, of the equally modern notion of social justice.

The Preamble states that "a common understanding of these rights and freedoms is of the greatest importance for the full realization of the pledge." To be sure, not all of the more than 150 nations now in the United Nations share a "common understanding of these rights." Since the Resolution was put forth, nations have taken different and sometimes diametrical positions on what the provisions mean.

It would be incorrect to assume, however, that conflicting ideologies are at the root of the problem. It is

apparent from municipal to international practice that that it is not unusual for persons of the same ideology to apply different interpretations on a principle or a norm. One writer put it this way, "it seems...a shortcoming in the theoretical work of lawyers, philosophers, and sociologists that they mainly concentrate their attention on the differences, and neglect to stress the common human content of some notions and ideals."[11]

The Modern Context for Communication Rights

The concept of communication rights has evolved from Article 19 of the Universal Declaration of Human Rights which supports freedom of opinion and expression as well as the right to seek, receive and impart information through any media regardless of political borders. A recent UNESCO Report on the right to communicate stated that "the changing world situation is bringing about profound changes in human communication. These changes are leading to new and enlarged perspectives. A strong relationship between human communication needs, the development of communication resources and human rights becomes evident."[12] Within the sphere of North-South relations the treatment of communication rights is multi-cultural in scope and supports the belief that information is a resource and fundamental to development.[13] The right to communicate is used as "a meta-policy, a balancing ethic or as the basis for a new information order. It thereby provides a unique and necessary dimension in the emerging framework of needs/supplies/rights."[14]

In the East-West negotiations that produced the Helsinki accords, information and communication were given important status. The Final Act of Helsinki encouraged cooperation in four areas: human contacts; information; culture; and education.[15] In what has been termed the "third basket", matters relating to the area of information are described under three sub-headings:

(a) improvement in the circulation of, access to, and exchange of information;

(b) cooperation in the field of information, and;

(c) improvement in the working conditions for journalists.[16]

The differing political ideologies involved at the Conference on Security and Cooperation in Europe which produced the Helsinki agreements have lead to new disputes over human rights. These disagreements, in some cases, have served to delay the easing of tensions. The manipulation of these issues for propaganda purposes have undermined the intent of Helsinki and subsequent meetings. One European researcher characterized these propaganda ploys as follows:

> "They are an evasion from the many burning problems of humanity, of many nations and societies, of the human being and its position and anxiety in the contemporary world. Nowadays, it seems a comparatively lesser problem to bring about the classic rights of the individual. The new phenomena in societal development requires more profound solutions in the political and economic structures of society."[17]

The first practical enunciation of the right to communicate was made in 1969 by Jean d'Arcy.[18] He wrote an

article which discussed the global communication revolution and the need for new social and political concepts to deal with new communication technology. Presently, there are three ideological perspectives on the right to communicate. These are the traditional Western view of freedom of expression, the Easternsocialist view of national security, and the Third World view with its concern for political and social integrity in international communication and national unity and development as they relate to domestic communication.[19]

The right to communicate can be separated into three areas: association, information and cultural evolution.[20] These areas have contingent freedoms and responsibilities which must be balanced.

The right of association is especially important to individuals who can neither read nor write. This group of people, who comprise one-half of the world's adult population, rely on their interactions with others to obtain information.

The right of information as articulated in its present form has produced a receive-only right.[21] This is largely a result of existing mass media organizations and not a limitation of the technology itself. The proposition has been made that the right to information be expanded from a free flow to a balanced flow. This condition has lead to rigorous debate in the international arena with no compromise yet in sight.

The area of cultural evolution rights is the most recent and least defined component of the right to communicate. It includes a right to privacy as it relates to individuals and to cultural communities.[22] In a sense, the right not to communicate is put forth in this area. This is because any culture should be given the opportunity to evolve on its own without being inundated by unwanted information programming. Cultural imperialism is one description of such unwanted information. The term has been defined as "the sum of processes by which a society is brought into the modern world system and how its dominating stratum is attracted, pressured, forced into shaping social institutions to correspond to, or even to promote, the values and structures of the dominant center of the system."[23]

The MacBride Commission stated that modern communication is a matter of human rights. The Commission's final report gave this perspective on the right to communicate:

> "The idea of dialogue, in contrast to monologue, is at the heart of much contemporary thinking, which is leading towards a process of developing a new area of social rights."[24]

However, the Commission did not have a consensus on this issue. The member from the USSR, Sergei Loser, pointed out that the right to communicate does not exist as an internationally recognized right and, therefore, should not be included in the report.[25] The controversy surrounding the democratization of communication continues.

The U.N. and Technology Transfer

One year after the WARC of 1959, seventeen new nations joined the United Nations. These countries were instrumental in persuading the General Assembly to pass a resolution which called for an end to colonialism even though the U.S. and other developed countries were against it.[26] Eventually, more than 70 new nations were created by the subsequent dismantling of British, French, Belgian, Dutch and Portugese colonies. Today, these third world countries constitute over two-thirds of the U.N.'s members.

An important and far-reaching objective of the present day U.N. is to achieve the new international economic order (NIEO) which was passed by the General Assembly in 1974. This resolution combined many previous proposals of the developing nations and has since become the centerpiece at the bargaining table between North and South. The developing countries are seeking more financial assistance, trade concessions, fairer prices for their goods and more input in the international financial organizations. The U.N. Conference on Trade and Development (UNCTAD), U.N. Conference on Science and Technology for Developement (UNSTD), U.N. Industrial Development Organization, the U.N. Development Programme (UNDP), the U.N. Commission on Transnational Corporations and the Organization for Economic Cooperation and Development (OECD) inter alia, consider issues relating to technology transfer and its fundamental role in producing long-term economic growth.

The United States participates in the transfer of technology and technical information mainly through the activities of American corporations. According to the Department of State "(t)he government ideally tries to avoid measures which would give special incentives or disincentives to investment flows and normally does not intervene in the activities of individual companies regarding international investment."[27] In another policy statement, the U.S. government has asserted "(w)e also believe that the development effort is and remains the primary responsibility of the developing countries themselves."[28]

While the U.S. government generally relies on the initiatives of private enterprise to diffuse and distribute the benefits of technological innovation, it also lends support to the needs of developing countries with positions that recognize the legitimacy of linking human rights with science and technology. Ambassador Theodore M. Hesburgh, chairman of the U.S. delegation to UNCSTD gave credence to the call for a new international economic order in his opening address. "While our material resources may dwindle, our traditional energy sources may run dry, there is one inexhaustible and always renewable resource: our ingenuity, our imagination, our knowledge and technology, and especially our common human aspirations that can convert all these into a new world. And let us, with the aid of science and technology, construct a new realm of human rights.[29]

Technology transfer operates on many levels in the international arena. With the predominance of developing nations in the U.N. has come new initiatives for sharing, such as the Conference on Technical Cooperation among Developing Countries (TCDC). This conference, which arose from the resolution on the NIEO, was attended by 138 countries seeking to "build a bridge across the South."[30] The objectives of TCDC were to build self-reliance in developing countries by promoting collective exchanges of information and technical resources.[31] Despite the work of numerous conferences, commissions and permanent agencies of the U.N., many problems remain. The critical issues are still shrouded in misunderstanding, mistrust and intransigence. Some argue for a less global approach in these negotiations as well as actual adherence to the agreements reached between developed and developing countries.[32]

The International Telecommunication Union (ITU) is the primary organization for promulgating international regulations and policies on the use of telecommunications. It is also one of the world's oldest existing international regulatory organizations. Its purposes are to maintain and extend international cooperation in the use of telecommunication of all kinds, and to promote the development of technical facilities and the efficiency of the services.[33] The flowchart on the following page (Figure 1) depicts the ways in which countries may interact through the auspices of the ITU.

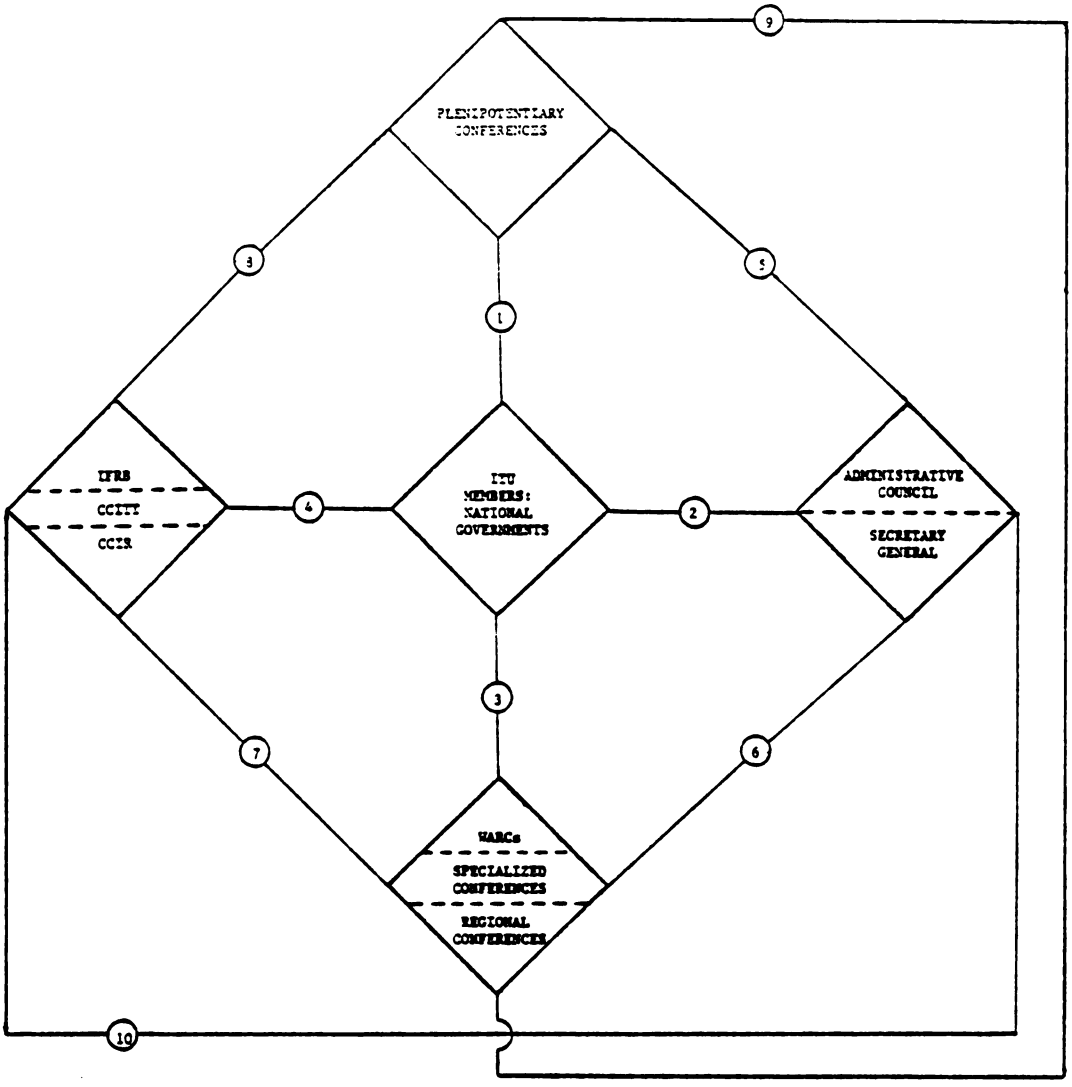


Figure 1.

Members participate in the ITU in a number of ways. The inner lines (1-4) illustrate the interactions between a member and the major functions of the agency. The outer lines (5-10) depict the interactions among the major functions of the ITU. See the legend on the following page.

LEGEND FOR FIGURE 1

1 Plenipotentiary Conferences meet every 5 to 7 years to establish the policies of the ITU. National governments send delegations to the Plenipotentiary Conference which produces a Convention that is signed by the member nations of the ITU.

2 The Administrative Council and the offices of the Secretary General are responsible for the daily operations of the ITU. National governments provide personnel and make requests for assistance to the Administrative Council. The ITU maintains an international library of telecommunication materials, publishes a monthly journal and various reports for the benefit of member countries.

3 National governments send delegations and proposals to the various Administrative Conferences organized by the ITU. These conferences produce Final Acts, Resolutions and Recommendations that are assembled in a document that carries the force of a treaty.

4 The International Frequency Registration Board carries out studies and registers the uses of the electromagnetic spectrum. The IFRB also coordinates the use of the geostationary orbit. The Consultative Committees provide technical support to the member countries. These groups also provide training programs for national administrations. The members reciprocate with personnel and special consultants for these groups.

5 Plenipotentiary Conferences elect the 36 members to the Administrative Council and the Secretary General/Deputy Secretary General. The Council and offices of the Secretary General provide administrative support to the Plenipotentiary Conferences.

6 The Council and Secretary General give preparatory and administrative support to the Administrative Conferences. The Administrative Conferences establish international regulations and procedures for allocating resources which are directed to the offices in Geneva.

7 The IFRB, CCITT, and CCIR investigate technical questions to be decided at Administrative Conferences. Some Recommendations and Resolutions from these conferences direct the groups to carry out special studies or assistance.

8 The Plenipotentiary Conferences interact with the IFRB, CCITT, and CCIR in much the same way as do the Administrative Conferences. The study groups provide technical information to the conferences. The conferences pass Resolutions and Recommendations that direct the groups to conduct studies or provide technical assistance to countries with special needs.

9 The Plenipotentiary Conferences prepare an initial agenda for major Administrative Conferences. The Administrative Conferences also request future conferences and changes in policy through the Final Acts which may be considered by the Plenipotentiary Conferences.

10 The IFRB, CCITT, and CCIR all provide technical studies and information for the functions of the Administrative Council and Secretary General's office. The ITU Administration, in turn, provides personnel, budget and other operating assistance to these groups.

Within the ITU and the emerging international law of communications, the emphasis has been on functionalism.[34] This has resulted in an institutional structure that is closely associated with the technical-scientific exigencies of any particular telecommunication problem. Usually, these matters have taken precedence over non-technical considerations. A recent symposium on international communications put it this way:

> "In this particular area of International Law and Organization, the technocrat, or at least the technically sophisticated lawyer, has been King..."[35]

The ITU contributes to the needs of developing countries by providing training programs and technical assistance.[36] The agency has become increasingly involved with the problems of development largely because of third world pressure. The ITU also favors the pooling of technical knowledge and experience among developing countries as one of the most effective ways to achieve the aims of development. On the other hand, developing nations presently conduct less than five percent of the world's research.[37] Martin Luther King, Jr. once said, it is a cruel joke to expect a man to pull himself up by his bootstraps when, in fact, he has no boots. The Secretary of the ITU has stated that the agency is totally committed to the principles of regional development. Responding to the Plan of Action adopted at TCDC, the Secretary acknowledged that "...telecommunications constitute the essential infrastructure for all economic, social or cultural development."[38]

The World Administrative Radio Conference (WARC79) was the first ITU general administrative conference to be numerically controlled by lesser developed countries. At the same time, it occurred at a point when voices for new world economic and information orders were being heard. Given the relatively broad jurisdiction of WARC79, a certain apprehension existed among many of the developed countries concerning the way in which new orders should be expressed in the institutional setting.

Another U.N. agency that deals with questions of information rights is UNESCO. Its goal is to contribute to peace and security by promoting collaboration among nations through education, science, and culture in order to further universal respect for justice, for the rule of law, and for human rights and fundamental freedoms. In many respects the purpose of UNESCO dovetails with the ITU. Therefore, a brief examination of recent developments within UNESCO is included in this analysis.

Several UNESCO conventions are designed to assert the right of everyone to take part in the cultural life of the community to share in the benefits of science.[39] In addition, UNESCO has issued various declarations on information flows since the first U.N. Conference on Freedom of Information in 1948. The Universal Declaration of Human Rights also appeared at the end of that year. The conference concluded that the freedom of information was "the touchstone of all the freedoms to which the United Nations is dedicated.[40]

UNESCO, which is noted for long, descriptive titles to its publications, has produced documents such as the Declaration of guiding principles on the use of satellite broadcasting for the free flow of information, the spread of education and greater cultural exchange (1972); and, the Declaration on Fundamental Principles concerning the Contribution of the Mass Media to Strengthening Peace and International Understanding to the Promotion of Human Rights and to Countering Racialism, Apartheid and Incitement to War (1978). At the same time the ITU was holding WARC79, UNESCO's special International Commission for the Study of Communication Problems was preparing its final report. More will be said about this select panel in the succeeding section.

The Secretary of UNESCO has noted the dual role of the agency "as a forum for drawing attention to the imbalance and injustices prevailing in the communication field, and as the most appropriate institution for mobilizing efforts to solve those problems."[41] Actually, UNESCO was the first place where the concept of a new world information order was articulated. It was then endorsed by the U.N. general assembly after being moderated somewhat to gain support of Western countries. The U.S. and other industrialized countries made it clear that their support of the resolution was not to imply any indirect commitments or to restrict freedom of the press.[42]

The Debate Over a New World Information Order

Information plays a multidimensional role in international relations: as the basis of communication between peoples; as a means of sharing knowledge between nations; and, as a commodity in international trade. The New World Information Order calls for a restructuring of old systems. It is conceptually allied with earlier debates in the U.N. for a New International Economic Order (NIEO).

The 1978 UNESCO General Conference witnessed the culmination of at least ten years of intensive negotiations concerning the problems of the developing world in gaining greater recognition of their needs. The Conference produced a declaration that attempted to balance the diverse global interests concerning information and communication. This process has led to the idea that information in the modern world is characterized by basic imbalances.[43] An obvious imbalance exists between Northern and Southern hemispheres in the volume of news and information emanating from the developed world and intended for the developing countries.

The supercilious response by many developed countries toward the concept of a changing world order has been particularly acute in matters relating to communication and information technology. Counterpoised with this attitude is the argument in favor of restructuring the rules governing information and data flows.

The survival of the colonial era is seen by developing countries to persist in the often tendentious interpretation of events by the developed countries and their urbane media. In response to this criticism, the developed world often refers to the arguments of the developing nations as sans culotte, and usually unworthy of serious consideration. Moral, cultural, or political values peculiar to social systems in the North are placed over values and concerns of communities in the South. Although the overwhelming majority of the world's population resides in developing countries, they are using much less of the available spectrum space than developed countries. For example, the USSR and USA together control 25 percent of the shortwave broadcasting frequencies. And in the higher frequencies, the percentage is much greater.[44] The principal reasons for this are the lack of technical/economic resources in the third world and the "squatter's rights" policy of the ITU.

The export of advertising and acculturation to developing countries is virtually unrestricted and often harmful to the receiving cultures. Even though the information may be detrimental to development aims, little effort is made by developed countries to control the export of their own cultural values.

The rights vesting mechanism within the ITU is evolving according to changing patterns of international relations.

In the area of spectrum allocation, frequencies traditionally have been assigned on a first-come, first-served basis. This method favors those countries that already possess the technical and financial means to utilize radio communication. The developing countries argue that, by the time they are able to use new technologies, there will be no vacant spectrum space. Consequently, they want certain frequencies reserved until such time when they are able to use them. The developed countries counter these proposals with the contention that such reservation of spectrum space would restrict efforts to use it efficiently.[45] Developing countries, in turn, say they could license others to use the space until they are ready to use it themselves. The debate continues.

Another problem lies in the allocation of parking spaces for geostationary communications satellites. Only a limited number of slots exist over the equatorial region of the globe from which those satellites can operate. The extension of national sovereignty over these locations in space has been proposed by some third world countries.[46]

The concern for balanced flows of information is not restricted to North/South discussions, many developed countries have restrictions on transborder data flows and the importation of entertainment programs.[47] There are further complications of the issue when multilateral accords involve East/ West points of view. On the bilateral plane there have always been technical, political, economic, social,

cultural, and national security considerations. Now these discussions themselves have become the focus of attention as reflected in the demands for reshaping world orders of economics and information. New priorities have evolved for telecommunication aid and development in third world countries.[48] The paradigm has shifted from a structure-functionalism mode to include an infrastructure-supranationalism component.[49]

Establishing a New World Information Order has been described as a three-step process: "One, establishment of new, or the revision of existing communications infrastructures. Two, international co-operation for development of communications. And, three, some transformations in the content and intent of communications."[50] Furthermore, the establishment of a new world information order is dependent upon the success of the new international economic order.[51]

In 1972, Luis Echaverria Alvarez of Mexico proposed a charter of economic rights and duties of states. Speaking before the third session of UNCTAD, the former Mexican President stated that such a charter would "complement... the Universal Declaration of Human Rights."[52] The subsequent document adopted as a resolution by UNCTAD prompted the U.N. General Assembly to establish a working group to produce a draft charter. On 12 December 1974, the General Assembly adopted the Economic Charter which has become the foundation of the New International Economic Order. There were no countries voting against the charter, however, there were 15 abstentions, including the United States.

The United States has no single policy for responding to the various issues raised by the NIWO[53] Although the U.S. International Communication Agency has stated that the NIWO is the guiding philosophy for its policy it has not given much more than lip-service to the concept.[54] On the other hand, there has been a growing awareness of these issues within the agency. A major report prepared for USICA noted that "(t)he strategic implications of the North-South debate on communications should be taken seriously."[55] And a report prepared for the U.S. Senate has said that international communication questions are becoming more and more North/South issues.[56] In the same report a broadcaster from Yugoslavia pointed out that "(i)nternational communications is one of the few issues where 90 developing nations agree. These issues will go faster than one thinks."[57]

The traditional view which holds that telecommunication systems follow the creation of a solid industrial base has become obsolete. The present view, shared by developed and developing countries alike, is that efficient telecommunication systems are a precondition for development. One member of the U.S. delegation to OECD acknowledged this with the following comment: "Trade doesn't follow the flag anymore, it follows communication systems"[58]

A senior telecommunication researcher for a major consulting firm has used the classic chicken-or-the-egg problem to describe the dilemma facing agencies which dispense

foreign aid for economic development: "the lack of telecommunication infrastructure hampers industrial development, while a less advanced stage of industrial development produces a serious shortage of capital and trained manpower which inhibits expansion of telecommunications facilities."[59]

The United States cannot simply ignore the demands of third world countries for a New World Information Order. This country has many industries in the telecommunication field with a stake in maintaining access to international markets. Furthermore, it cannot close its borders and continue to enjoy its leadership role in science and technology. The transfer of technology and information to developing countries is an appropriate quid pro quo for the protection of vital U.S. interests such as command, control, tracking and relay stations for military surveillance satellites. Other interests fall into the economic sphere such as international banking and business concerns that rely on dependable telecommunication facilities.

The U.S. must move beyond the politics of confrontation on mutual gain. Substantive proposals should be made regarding: trade; technology transfer; monetary reforms; industrialization and investment; food and agriculture; and, institutional arrangements.[60] Positive international action in this area would help redress structural imbalances and contribute to the establishment of a more equitable system which, in turn, would benefit the entire world community.[61]

Another problem lies in the generalization of the developing countries. There is great diversity among all nations and the individual needs of developing countries cannot be expressed in terms of average figures. Such statistics can produce "a spurious impression of homogeneity."[62] On the other hand, there is some danger that developing countries will view their numerical voting majority in the U.N. as an apotheosis, thereby reducing the chances for a meaningful North-South dialogue because of international politicking and bureaucratic manipulation.[63]

George Bernard Shaw divided society into two opposing classes: at one extreme were those with large appetites and no dinners and at the other were those with large dinners and no appetites. The goal of a new world order should be to work toward eliminating both extremes and creating a menu that is both affordable and satisfying to everyone.

Future Prospects

This chapter has sought to identify human rights issues that impinge on international telecommunication uses, policies, and regulations. The research has attempted to relate these issues to the general debate between developed and developing nations of the world. The issues involved in the North/South debate are grouped into five general categories: (1) "establishment view", which is dominant in industrialized countries; (2) "social democratic view", which is a variant of number (1), it advocates the normative

process for bringing about change; (3) "third world view", a semi-official perspective based on the principles of socioeconomic development; (4) "neo-mercantilist view", which holds that economic policy is the main instrument of political goals; (5) "historical materialist view", that calls for restructuring the present global order.[64] Examples of these perspectives were presented and analyzed.

In light of the recent national elections in the U.S., this section might also be titled: The Rise and Fall of Human Rights in American Foreign Policy. Shortly after the inauguration of Jimmy Carter, a public opinion poll found that Americans were more concerned about human rights than any other aspect of international affairs.[65] Four years later, a new Administration, ostensibly with public support, is proclaiming that combating international terrorism would replace human rights as the major foreign policy objective.[66]

The United States has been involved in human rights issues with varying degrees of interest ever since the Declaration of Independence in 1776 which proclaimed equality and self-determination as self-evident truths. The Emancipation Proclamation and the 14th Amendment broadened the scope of civil rights in America. The League of Nations was the product of Woodrow Wilson's ideas. Franklin Roosevelt's four freedoms led directly to the Atlantic Charter which was embodied in a declaration of the United Nations on 1 January 1942, adopted by 27 countries. One of the key

elements of the present proposals for the NIEO was normatively articulated in the Atlantic Charter: "to further the enjoyment by all States, great or small, victor or vanquished, of access, on equal terms, to the trade and to the raw materials of the world which are needed for their economic prosperity."[67] It is ironic that the U.S. has since acted to block measures by the U.N. to assist developing countries based on the principles of the Atlantic Charter.

The Peace Corps was an innovation by the Kennedy Administration for assisting third world countries with education and skill development. Lyndon Johnson proposed the Great Society as a social experiment designed to lift the nation's poor above the poverty line. The Johnson Administration also concentrated on domestic civil rights legislation, primarily in the area of education. President Nixon reinstituted the quiet diplomacy of the Eisenhower years and achieved the recognition by America of the People's Republic of China. The Nixon Administration's attitudes toward domestic civil liberties led to many alleged violations and the President's resignation. Gerald Ford pardoned Nixon and gave limited clemency to the Vietnam Era draft resisters. Jimmy Carter pardoned all Vietnam Era draft offenders. He implemented a human rights review mandated by Congress for programs administered by the Department of State. On the international level, President Carter appointed a civil rights activist as U.N. Ambassador, obtained a Peace Treaty

between Isreal and Egypt, but also was paralyzed by the Iranian crisis. Ronald Reagan has since proceeded to dismantle liberal Democratic programs with the aid of a Republican controlled Senate and the public mandate he obtained in the election.

It is too soon to say what impact the new Administration will have on the international level, however, early indicators may provide some insight. President Reagan named a military general as Secretary of State and the Ambassador to the United Nations was chosen primarily on the basis of an article she wrote criticizing the human rights policy of the Carter Administration. When she was a Professor of Political Science at Georgetown University, Ambassador Jeane Kirkpatrick wrote "(t)he U.S. has never tried so hard and failed so utterly to make and keep friends in the Third World."[68] The new budget Director has even suggested pulling away support from UNESCO, thinly disquised as a cost-saving measure.[69]

The preceding discussion is intended to illustrate the oscillating posture of the U.S. government with regard to human rights issues. The information presented is the result of a modest literature survey and not an empirical analysis of any particular Administration's policies. The facts clearly indicate, however, that public opinion regularly changes, especially in relation to foreign policy matters and the government reflects this vacillating attitude in its policies. The result is that opportunities for

meaningful dialogue between North/South countries are lost in a morass of chestpounding verbiage and accusatorial attitudes.

What is generally regarded as a free-press in the West is seen by some third world critics, as only a silouette of a truly accessible medium. The Information Minister of Guyana has responded to the issue of government-control versus private-control of the media in the following manner:

> "By a free press, in the West, you mean a press owned by a few people who have a commercial monopoly, really a monopoly of the conscience of mankind. They are 'the good people' and they 'know what is right.' A free press means, for you, that the owner of the press is free to prevent whom he wants from being heard. You don't have a free press at all. You have a press imprisoned by commercial interests."[70]

In 1979, the U.N. Commission on Human Rights emphasized the connection between human rights and the process of development in the third world countries. The Commission noted that "exercise of the right of development implies a reign of peace and the establishment of an international economic order based on respect for human rights."[71] The United States delegation was the only country voting against the resolution by the General Assembly which incorporated language from the Human Rights Commission report. The U.S. contention was that the resolution was fundamentally defective because it did not consider the individual as the basic social unit.[72] As one expert put it, "the latest U.S. protest sounds lamentably argumentative since individuals presently have no international standing."[73]

Bits of information that, taken by themselves, may appear only as stray facts, are brought together and form an entirely different picture collectively than when viewed individually. The MacBride Commission's final report was titled, Many Voices, One World to underscore the multiplicity of arts, sciences, cultures, politics and economics that comprise the mosaic of human communication. There is a preponderance of valid evidence supporting the establishment of a new world information order. Indeed, it is apparent that the present world order is changing. And arguments for attempting to inject humanitarian ideas into the change process have the weight of world opinion behind them. Ignoring this fact challenges democratic ideals and threatens all national interests.

The impact of telecommunication technology on society has been three-fold. It has produced completely new modes of sending/receiving information as in the case of satellites and laser optics. It has dramatically reduced costs through innovations like large-scale integrated circuits and magnetic bubble domain memory devices. And it has produced new methods of conserving spectrum space with single-sideband transmitters and digital voice/data networks. Society, on the other hand, has found ever expanding ways to apply new technology. The human rights aspects of telecommunication continue to be debated, ranging from technology

transfer to protection against jamming.[74] The result has been an increase in highly sophisticated use leading to the continuing congestion of the airwaves.

How the members of the ITU rectify this problem will, in large part, depend on relations between industrialized and developing nations. Not only is the demand for spectrum increasing, but the problems of spectrum crowding are becoming more difficult and expensive to resolve. It is against this background that WARC79 was held.

PART THREE

THE WORLD ADMINISTRATIVE RADIO CONFERENCE OF 1979

CHAPTER FOUR

Background to the Conference

Natural resources that once were taken for granted became major issues during the 1970's.[1] Since then, there have been more frequent and stronger demands for conservation, equitable distribution, and non-pollution of the environment. Resources that were once exploited without regard for future needs are now coming under more stringent methods of international regulation. Three notable examples come to mind. At the beginning of the decade came oil and the emergence of OPEC. The oceans and the Law of the Sea Conference have been a perennial problem. At the end of the decade, another forum for the expression of new international norms was the WARC of 1979 and the use of the electromagnetic spectrum. The new emphasis within the ITU for more planning conferences and equal access to the resource is a direct result of this trend.[2]

The word "regulation" is important to keep in mind when considering WARC79. With regard to communications media, every government partakes in it. Some more than others, perhaps, yet the result is the same, i.e. control. To address the question, "why regulate?" would require a separate study. Therefore, this thesis assumes the necessity and importance of regulation. If for no other reason, the

assumption is made because the media are powerful institutions and they frighten people. Especially, government people.

Take, for example, the recent visit to America by Vice Premier Teng Hsiao-p'ing of the Peoples Republic of China. After experiencing an interview between himself and network news correspondents, (CBS, ABC, NBC, PBS) he told Jim Lehrer that he had been very frightened of them. He wasn't used, he said, to doing such things.[3] An interesting reaction by a government official from a country where the freedom of expression exists as limited access to a concrete wall on the outskirts of the capital.[4]

The general purpose of WARC79 was to provide for the future planning, utilization and regulation of the radio spectrum in order to allow the various telecommunication services to fulfill their function, be it national, regional or global in character.

The Conference dealt with allocations for services, but it did not assign individual frequencies. The Final Acts of WARC79 comprise the administrative procedures for such action to proceed at another point in time by each national government.[5]

The duration was set for ten weeks, but was extended an extra week to complete the Final Acts. Even with this extra time, the 1979 Conference was much shorter than previous

ITU conferences.[6] Generally, the Final Acts will come into force on 1 January 1982, however, many transitional features will take much longer to be implemented. This is because some changes, such as adjustments in the High Frequency bands used for fixed services require the replacement of expensive hardware. Whereas a developed country with a strong financial base may argue for rapid replacement of old technology, developing countries have neither the financial nor the technological infrastructures to adopt expensive, albeit efficient, changes. Compromises on some decisions at WARC79 and postponement to future conferences had to be used to resolve many of the differences between countries.

The Final Acts carry the force of a treaty and, as such, must be ratified in the U. S. by the Senate before they become binding on the country. The purpose of the treaty is to "...guide subsequent national legislation, provisions and practices to ensure harmonious development of radiocommunication services in accordance with mutually acceptable multi-lateral arrangements between States."[7] The Final Acts total 1,100 pages and include numerous footnotes, resolutions, and recommendations, as well as major revisions of the Radio Regulations.

The last major revision of the frequency spectrum was in 1959. At that time, space communication was highly expermental and most countries lacked any television service.

There was little use of mobile radio and the millimetric frequencies remained in the laboratory.[8]

Delegates to the 1959 conference were aware of rapid advancements in aerospace research, but decided to wait until 1963 for an Extraordinary Administrative Radio Conference "to examine the technical progress in the use of radiocommunication for space research and the results of technical studies by the CCIR..."[9] At the closing session in 1959, the Conference chairman, Mr. C.J. Acton, predicted "an increase in tempo in the development and use of frequencies in the higher part of the radio spectrum. Some of these developments, for example, the use of telecommunications relating to outer space, could be of worldwide significance."[10]

The recognition of the value and importance of the electromagnetic spectrum as a natural resource has introduced new factors in planning telecommunication services. The Deputy Secretary-General of the ITU recently referred to new dimensions of telecommunication especially in regard to:

> "--economic, social and cultural development, or
>
> --in support of activities which rely on telecommunication or radio spectrum use for the fulfillment of their objectives, such as the various earth exploration satellite services, and the uses to which mobile (terrestrial and satellite) are now put or envisaged."[11]

The 1979 Conference was expected to address broad questions concerning the whole range of telecommunications.

These issues are summarized below:

> To define principles for the use of the electromagnetic spectrum and the geo-stationary orbit;
>
> To define principles regulating the rights and duties of the users;
>
> To reallocate frequency bands for the increase in the number of different services throughout the world;
>
> To re-examine and revise principles of international cooperation in the field of telecommunication, including the role of the ITU and its permanent administrative organs.[12]

The ITU conducted preliminary seminars and meetings for countries preparing proposals for submission to the WARC. Numerous bilateral and multilateral discussions also took place between various nations to coordinate their proposals. The ITU's permanent organs were involved with preparation and planning of the Conference in many ways. The IFRB reviewed the seminar proposals in advance to identify the widest areas of agreement on specific issues.[13] The IFRB also was responsible for making available to the WARC technical analyses of the Radio Regulations.

The ITU organized regional seminars in Nairobi, Panama and Sydney to help countries prepare for the WARC.[14] These preparatory seminars offered workshop-type sessions largely for the benefit of developing countries. The ITU intended that these seminars would "...provide understanding of various technical parameters that relate to the future development of terrestrial and space radiocommunications services

and their coexistence with a view to an optimum utilization of the radio spectrum."[15]

Some of the topics covered by the seminars were:

> Role of WARCs and their Final Acts, Scope of the 1979 Conference.
>
> General review of the CCIR technical guidelines for WARC-1979.
>
> Technical advances leading to a more efficient use of spectrum for terrestrial services including HF spectrum for fixed service, mobile service and broadcasting service.
>
> Sharing criteria and problems between land mobile and VHF-UHF broadcasting.
>
> Space services and space/terrestrial sharing up to 40 GHz.
>
> Technical factors determining the suitability of frequency usage above 40 GHz.
>
> Operational questions: new call sign identification of ship stations and maritime mobile needs.
>
> Consideration and discussion of the existing Articles in the Radio Regulations dealing with frequency allocations and the coordination, notification and registration of frequency assignments.
>
> Trends and future use of HF communications.
>
> Evolution in existing and new service applications for geostationary satellite orbit use.
>
> Short-range radiocommunications (VHF/UHF).
>
> Problems experienced by administrations in the application of the existing Radio Regulations.[16]

A Special Preparatory Meeting (SPM) was convened in response to a resolution of the ITU's Administrative Council inviting the CCIR "to carry out the necessary studies to ensure timely provision of the technical information likely to be needed as the basis for the work of the Conference."[17]

The purpose of the meeting was to review more than 250 texts identified by study groups as relevant to WARC79. These texts summarized studies of all radio services and frequency bands from a few kilohertz to optical wavelengths.[18] Preparation for the SPM itself took two years to complete. Dr. John Saxton of the United Kingdom was the Chairman.

The technical topics investigated by the CCIR Study Groups were assigned coordinators for the SPM. The SPM was organized to address the following topics:

> Terminology, classification and designation of emissions;
>
> Terrestrial services up to 40 GHz, technical data for allocation and regulations;
>
> Space services and space/terrestrial sharing up to 40 GHz, technical data for allocation and regulations;
>
> Monitoring and identification;
>
> Services above 40 GHz, and optimum use of the spectrum;
>
> Propogation;
>
> Resolutions and recommendations related to CCIR work;
>
> Drafting.[19]

More than 250 engineers from 87 countries, discussed over 400 papers submitted to the SPM. The final report totalled 600 pages.[20]

The SPM set forth new or revised definitions for telecommunication services, which were submitted to the WARC79 for consideration. The CCIR Study Groups working

on the Special Preparatory Meeting divided their tasks according to similar topic areas. Definitions concerning radiocommunication interference, for example, were promulgated by a CCIR Study Group and reported in the Draft SPM Report. Some relevant definitions from this group are:

> Interference: The effects of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misrepresentation, or loss of information which could be extracted in the absence of unwanted energy;
>
> Interfering source: An emission, radiation, or induction which is determined to be a cause of interference in a radiocommunication system;
>
> Permissible interference: Observed or predicted interference which complies with quantitative interference and sharing criteria contained in the Radio Regulations or in Recommendations of the CCIR or in regional agreements as provided for in the Radio Regulations;
>
> Harmful interference: An interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with the Radio Regulations.
>
> Note: It is recognized that, under certain circumstances, a higher level of interference than that defined as permissible may be accepted by agreement between the Administrations concerned without prejudice to other Administrations, but it is not considered possible to set down any precise values for this interference level - each case must be treated on its merits. This interference level may be called accepted interference.[21]

In addition to the preparations organized by the ITU, individual nations gathered together to share ideas on mutual problems. Private and quasi-nongovernmental organizations, (referred to as "quangos" by the Economist

and other publications), also sponsored international meetings to discuss WARC79.[22] These meetings all stressed the importance of national communications policy planning and suggested ways to establish coordinating bodies in the area of telecommunication.[23] These seminars were organized on a multidisciplinary basis and utilized consultants from telecommunications, broadcasting, information and related interest groups. They sought to clarify and analyse major policy issues to be discussed at WARC79.[24]

A significant problem identified by those attending the various preparatory meetings was that most of the countries about to attend the conference were unable to participate in the technical studies of the CCIR.[25] This lack of a proper institutional framework within many developing countries is seen as a major reason why their telecommunications planning lags behind developed countries.[26]

The actual preparations undertaken by the United States will be considered in Chapter 6. The comparative analysis in Chapter 6 is restricted to those Administrations that speak English. References to information and original documents from the United States, Canada, Belize, United Kingdom, American Samoa, Australia and New Zealand are included in that chapter.

The preparations by the ITU have been summarized in this section. These efforts provided inputs to the WARC which included:

> the report on activities and matters of concern to the International Frequency Registration Board;
>
> The results of the studies carried out by the CCITT in regard to certain maritime mobile service matters including rationalization of the Radio Regulations with CCITT Recommendations concerning some operational and accounting issues;
>
> the report of the Secretary-General covering three broad aspects:
>
> > coordination and exchange of data and information through the medium of the General Secretariat; tasks centered principally on operational matters connected with the functioning of public correspondence and safety services, station identification, etc.
> >
> > matters connected with the publication of service documents, final acts, etc.
> >
> > other tasks entrusted to the Secretary-General by the 1959 Ordinary Administrative Radio Conference or by other Administrative Conferences held since then.[27]

The United Nations sponsored an exhibition one week prior to the opening of the WARC. This event, called Telecom 79, helped to direct world attention on the technology and regulation of telecommunication. It also provided an opportunity for delegates to the WARC to participate prior to the conference. The Secretary-General of the ITU commented that "...the presence of national pavilions of developing countries enabled delegations to become aware of those countries, and their telecommunications projects and requirements, to make

economic and technical evaluations; and to engage in productive negotiations."[28] The exposition gave special emphasis to direct broadcast satellite technology and communication between computers.

In addition to the exhibition of new technology, a Forum was attended by more than 45 international scientific and engineering associations. The Third World Telecommunications Forum had an ironic title in that this meeting was the third such gathering of its kind and it focused attention on many Third World interests. The week-long Forum was held in two parts. Part one dealt with telecommunication perspectives and economic implications. Part two was a technical symposium lasting four days. In conjunction with these events, the U.N. sponsored the Third International Festival of Telecommunication and Electronics Films; and the First World Book Fair on Telecommunications and Electronics.[29]

Sean MacBride, President of the UNESCO-sponsored International Commission for the Study of Communication Problems, delivered an address to Forum 1979, titled, "Shaping A New World Information Order."[30] In his opening remarks, the distinguished speaker set the stage for the WARC: "It is most fitting that the ITU,...should provide the Forum for what will surely be an important step in the concrete efforts to establish the much discussed 'New World Communication Order.'"[31] He went on to say that "...without

shifting the emphasis or changing the nature of the deliberations--it would be appropriate to look at the whole problem which is on your agenda in a broader perspective."[32] The Third World Telecommunications Forum espoused new principles of planning and technology transfer. Unfortunately, this symposium presented techniques and technology that remain outside the financial and technical abilities of most developing countries.

The Agenda for the 1979 WARC

The Administrative Council of the ITU set forth the initial agenda in 1978.[33] Most of the provisions deal with allocations or coordination, notification and recording of frequency assignments. Items on the Agenda relating to the operation of the IFRB and other permanent organs of the ITU opened the possibility of substantial alterations to existing arrangements in the ITU.[34] Another item on the Agenda provided for the adoption of new resolutions. This power can be utilized during plenary sessions to create new norms of international law. The Agenda also asked the WARC to consider recommendations as may be deemed necessary. Recommendations are directed toward one of the permanent organs of the ITU. The purpose of a recommendation directs the ITU to conduct a study or provide technical assistance for a specific problem.

The early publication of the Agenda invited comments from many interest groups. Some countries didn't wait for

the Agenda to be published before undertaking preparations. The United States conducted in-house studies, and coordinated citizen and industry input to its proposals. This activity was initiated by the FCC five years prior to WARC79.[35] The unprecedented designation of a chairman to the U.S. delegation two years in advance indicates the increasing importance of international telecommunications to the United States Government. There were other reactions to the Agenda from individuals writing about a "hidden agenda" to the WARC.[36] The umbrella issue for the "hidden agenda" was the developing countries' call for a New World Information Order.[37]

Many communication professional from Third World countries expressed a common issue, the re-distribution of global resources and the redefinition of political, economic and social power structures. As the 1979 WARC approached it became a focal point for this issue. One writer from the Caribbean commented that the Conference would provide the framework for an emerging global communication system.[38]

> "To be equitable to all interests it must be stable, yet have the capacity to expand to meet the needs of all elements in the world community. If WARC'79 is to foster a communications system that is truly responsive to the needs of all people of the world, developing as well as industrialized nations must be represented by able and informed delegations."[39]

The North/South dichotomy has already been discussed, however, it is worth recalling in view of the realities

of operating within the present U. N. organization. As one U.N. correspondent put it recently, "When the U.N. demands a new international economic order, the industrialized countries are forced eventually to respond to the pressure."[40] She goes on to say this is because the 120 or more Third World nations "...constitute well over two-thirds of the U.N.'s 152 members. They hold 39 percent of the jobs in the U.N.'s administrative body, the Secretariat, and 42 percent of its high-level positions, and their leverage is greater than those figures suggest because many non-Third-World Secretariat members, including Secretary General Kurt Waldheim, tend to be sympathetic to their concerns and responsive to their demands."[41]

The United States' Acting U.N. Ambassador commented on the philosophy of change shared by developing countries:

> "They are asking for a fairer allocation of resources and a fairer return. What they're saying in essence is, 'There are some new players now and you can't ask us to join the game handicapped.'"[42]

It would be incorrect, however, to assume the non-aligned movement is completely unified in its purpose and goals. For example, when Cuba made a bid for a seat on the Security Council, it was rebuffed by more than a third of the movement's members in a secret ballot. This opposition has remained steadfast throughout numerous ballots in spite of Cuba's backing from the Soviet bloc and many Arab countries. Even as chairman of the non-aligned movement, Fidel Castro has not been able to muster all the votes within his own unruly faction in the General Assembly.[43]

Within the context of the ITU and WARC79, the North/South debate could be labeled as access versus progress. On one side of the aisle are a multiplicity of developing countries with myriad populations demanding financial and technical assistance packages along with guaranteed, a priori, spectrum and orbital path allocations. On the other side, almost in a corner, are the industrialized nations with their own demands for standardization, high technology solutions and the freedom to exploit new markets wherever and whenever they exist. After the Conference stalled on its first order of business, The Economist reported, "The Western countries fought back at UNESCO and won, so far. Now the battle has moved from the software to the hardware of communications and to a different U.N. agency."[44]

Concerning my personal research of ITU's preparations and agenda for WARC79, I visited Geneva in August, 1979. My reaction is in agreement with a recent appraisal of the organization. "The ITU is full of engineers terrified of controversy and terrified of the press."[45] During the Conference, journalists had to steal copies of the list of delegates because the ITU refused to give them to the press.[46] This writer found it very difficult to locate the right information while at ITU headquarters and was only given a brief interview with one of the public relations officers. The interview took place in a corridor and an elevator as I was escorted to the reading room. When I returned to the United States, I wrote to the ITU requesting any press

releases on the WARC as they became available. I never received a response, although I tried two more letters.[47] After the Conference, however, I was able to receive a press release concerning the activities of the Allocations Committee.

From the standpoint of public relations, the new awareness and demands made on the ITU may cause it to become more responsive. This would benefit the agency. From the perspective of technical expertise and preparations, the agency does a fine job, as evidenced by the enormous amount of work actually performed at WARC79.

CHAPTER FIVE

Précis of the Conference and Final Acts

As the 1979 World Administrative Radio Conference opened during the last week in September, it looked like politics would stymie the Conference. The Third World countries blocked the Western countries' choice of a chairman. Traditionally, the developed countries would meet before the start of an ITU conference to decide among themselves who would chair the upcoming event. This practice had continued throughout dozens of ITU conferences over the last 75 years.[1] The developing countries felt the agenda would be manipulated against their interests by the industrialized countries and offered their own nominee. The new candidate was adamantly opposed by the United States and the United Kingdom.[2] After much debate a third person was chosen and the nine Conference committees could begin to process nearly 15,000 proposals.

The press in America and Europe predicted turmoil for the Conference.[3] The ongoing controversy within UNESCO over the New World Information Order prompted many government officials to speak out. Despite official rhetoric, one Department of State worker iterated that political-economic issues would be taken up by the Conference.[4]

After the Conference, another U. S. advisor succinctly stated the difference between WARC79 and previous meetings:

> "The special significance of this conference was that it had considerably broader authority than most of the recent conferences, that many pressures for substantial change were in evidence, and that the developing countries were particularly interested in exploring a variety of new alternatives."[5]

Steering Committee: Committee 1

During the first plenary session, the Conference established nine committees. The first to be designated was the Steering Committee. It coordinated the work of the other eight committees, controlled the timetable of meetings and conducted the plenary sessions. The chairman also served as the Conference Chairman. Mr. Roberto Severini from Argentina was chosen after the initial dispute between the choice of the Western countries and the choice of the Non-Aligned countries.[6] Being bogged down during the first week with the polemics of choosing a leader probably accounts for the fact that WARC79 had to be extended four days to complete the Final Acts.

The Conference Chairman serves in the Argentine government as Technical Under-Secretary of Communications. Mr. Severini also teaches a course on telecommunications at the University of Buenos Aires. He has been a delegate to previous special WARCs and was President of the Plan Committee at Lima, Peru in 1979. The so-called Lima Plan

which favours the concept of a New World Information Order is one reason why Mr. Severini was acceptable to the developing countries.

The vice-chairmen of the Steering Committee came from Cameroon, China, Italy, Russia, Switzerland, and the United States. Senior officials of the ITU were available to this committee for technical and administrative assistance. Committee 1 held weekly meetings to review progress reports and schedule each week's activities.

Credentials Committee: Committee 2

Committee 2 was responsible for verification of the credentials submitted by each delegation according to the provisions of the ITU Convention.[7] This Committee examined each set of credentials to determine which delegations actually were empowered to sign the Final Acts. The Chairman of Committee 2 was Mr. J. Martinez from Venezuela and the Vice-Chairman was Dr. Amer Jomard from Iraq. The final report of the Credentials Committee was accepted with no challenges.

The committee report showed that of the 144 delegations at the WARC, 126 had the right to vote and sign the Final Acts. There were two delegations allowed to vote but not sign, and nine could sign, but not vote; seven delegations could do neither.[8] The main reason a delegation would not be permitted to vote was that its administration had not ratified the ITU Convention. Another problem was

some countries failed to keep current on maintenance fees of the ITU.

Budget Control Committee: Committee 3

The Budget Control Committee was the next committee created during the first plenary session. The function of Committee 3 was to manage the expenses of the Conference. It recorded and approved accounts incurred throughout the duration of WARC79. The extension of the Conference caused the budget to be exceeded by approximately 2.5 percent.[9] The additional cost was absorbed by the ITU without being passed on to the member countries. Mr. Z. Kupczyk from Poland was the Chairman. Mr. K. P. R. Menon of Malaysia was the Vice-Chairman.

Technical Regulations Committee: Committee 4

The Technical Regulations Committee (Committee 4) considered proposals concerning the following items from the Radio Regulations:

> Article N1, Terms and definitions; Section V, Space, orbits and type of objects in space; Section VI, Technical characteristics, Article N2, Nomenclature of the frequency and wavelength bands used in radiocommunication; Article N3, Designation of emissions; Article N4, Technical characteristics; Article N16, Interference; Article N17, Tests and the related Appendices 3, 4, 5, and B.
>
> To consider proposals concerning the technical provisions included in the following Articles: Article N25, Terrestrial radiocommunication services sharing frequency bands with space radiocommunication services above 1 GHz; Article N26, Space radiocommunication services sharing frequency bands with terrestrial radiocommunication services above 1 GHz; Article N27,

Special rules relating to space radiocommunication services; Article N33, Radiodetermination-satellite service, Section IVB, Radiobeacon stations and the related Appendices 28 and 29.

To consider as appropriate to the work of the Technical Regulations Committee the resolutions and recommendations adopted by previous administrative radio conferences and to take such action as may be considered necessry, including the adoption of any new resolutions and recommendations.[10]

The Chairman of Committee 4 was Mr. N. Morishima from Japan and the Vice-Chairman was Mr. M. Cisse of Senegal. The Technical Regulations Committee maintained the upper limit of the Frequency Allocation Table proper at 275 GHz.[11] But there was some identification of possible uses of the spectrum up to 400 GHz.[12] The total frequency range for the electromagnetic spectrum was set between 9 kHz and 3,000 GHz.[13]

The Special Preparatory Meeting (SPM) provided the foundation for the work of the Technical Regulations Committee. The SPM report was disseminated as a Conference document.[14] When WARC79 convened there were still about 1,000 technically-oriented proposals to be examined and reported by the working groups of the Technical Regulations Committee.

Committee 4 was involved with interactions between Committee 5 (Frequency Allocations), and Committee 6 (Regulatory Procedures). The joint efforts with Committee 5 involved technical problems of sharing frequency bands between dissimilar radio services. The liaison between

Committee 4 and Committee 6 pertained to questions of terminology.

Committee 4 worked out technical solutions to problems raised by the Conference and also made changes to the Radio Regulations. It had to maintain a swift pace in order not to delay the work of other Conference Committees. The formulation of recommendations and resolutions directing the CCIR to undertake new studies also had to be coordinated by Committee 4.

Allocations Committee: Committee 5

Committee 5 was responsible for Frequency Allocations. The specific terms of reference for the committee were to consider proposals concerning the following articles:

> Article N1, Terms and definitions (Sections III-V); Section II, Radio systems, services and stations; Section III, Terrestrial radio systems, services and stations; Section IV, Space radio systems, services and stations and radio astronomy. Article N5, General rules for the assignment and use of frequencies; Article N6, Special agreements; Article N7, Frequency allocations; Article N8, Special rules for the assignment and use of frequencies; Article N28, Section I, Broadcasting service; Article N29, Fixed service; Article N47, Special rules relating to the use of frequencies in the aeronautical mobile service.
>
> To consider as appropriate to the work of the Frequency Allocations Committee the resolutions and recommendations adopted by previous administrative radio conferences and to take such action as may be considered necessary including the adoption of any new resolutions and recommendations.[15]

The selection of Mr. M. Harbi of Algeria and Mr. J. J. Hernandez of Mexico as Chairman and Vice-Chairman, respectively, caused some consternation among delegations of the industrialized nations. One reason was the Algerian Plan which called for a 70/30 split in favor of developing countries in allocations for fixed services. The Third World countries did not deliver the block support necessary for approving the proposal, although the problem was slated for future study during the final plenary session at WARC79.[16]

The Allocations Committee conducted its work by splitting the electromagnetic spectrum into five sections and assigning each section to a working group. The major working groups had the following range of frequencies to study and revise: Below 4 MHz, 4 to 27.5 MHz, Above 27.5 to 960 MHz, Above 960 MHz to 40 GHz, and Above 40 GHz. If a particular problem required closer study it was referred to a sub-working group. Committee 5 also formed a special working group to prepare definitions of radio services and handle miscellaneous questions.

A total of 66 working groups were used by Committee 5 to review the Table of Allocations and definitions of telecommunication services.[17] The USA had representatives on most of these groups. The total size and sophistication of the American delegation was in sharp contrast to many of the delegations from lesser developed countries. The U.S. could assign personnel to every activity that had some

bearing on its interests. Committee 5 expedited 12,832 proposals through 151 separate meetings and produced 146 documents to be acted upon by Plenary Sessions of the WARC.[18] About 85 percent of all proposals to WARC79 were directed to Committee 5.

The Table of Frequency Allocations contained 365 footnotes before WARC79. Some countries felt there were too many footnotes. They wanted the Conference to eliminate as many footnotes as possible. Unfortunately, the Conference was unable to do this. The new Table now has 487 footnotes.[19] The British, who seem to excel at the art of understatement, refer to the footnotes in the Home Office's Report on the World Administrative Radio Conference 1979, by saying:

> "...to some extent this was a retrograde step."[20]

Although taking footnotes can be the right action for countries with frequency uses that differ from most other countries, the consensus is that many of the new footnotes were overprotective of national interests.[21] The Deputy Secretary-General of the ITU, Richard Butler, referred to the 1979 WARC as a conference of footnotes.[22] Footnotes can be used in different ways. In the Table of Frequency they can be used to explain administrative procedures. But as Mr. Butler remarked, "Countries can also use footnotes to make individual allocations for their internal needs."[23]

In effect, this by-passes the general principle of allocating frequencies on the basis of the type of service and allows a country to make allocations based on individual national needs. However, the country making the footnote is not supposed to cause interference to other countries. This procedure normally favors large, geographically isolated nations. Consequently, various national and sub-regional administrations, including the United States, took advantage of this new protocol.

The three global regions used by the ITU are primarily for the purpose of administering the Table of Frequency Allocations. Committee 5 considered proposals that called for creating a new region for Africa. African nations maintained that colonial history and not technical criteria accounts for the present situation.[24]

In 1947, the ITU trisected the world into the following regions: Region 1 covers Europe, Africa, Arabia, and Russia; Region 2 comprises the Western Hemisphere, including Greenland and Hawaii; and, Region 3 is made up of Australasia, Asia, and most of the Pacific Islands. The debate over a new region was split over recommendations to "review" or to "revise" the map.[25] Revising would have meant an immediate change, while reviewing would put the matter under study by the ITU. After much discussion, the complexity of the issue prompted the Conference to adopt a recommendation requesting the CCIR to study and report on the issue at a future Conference.[26]

Another research question for the CCIR came from countries wanting to completely revise and re-write the terminology used to explain radio services. Again, the Conference decided the issue needed further study before a decision could be made.[27]

The Table of Frequency Allocations was thoroughly scrutinized by Committee 5. The total number of bands allocated varies slightly from region to region:

Region 1 394 Bands

Region 2 409 bands

Region 3 404 bands[28]

There are 59 worldwide radiocommunication services now recognized in the Table. There are 92 bands allocated exclusively on a global basis to 21 different services.[29] The lower limit of the Table was moved from 10 kHz to 9 kHz to correspond with standard channel spacing procedures.[30] The upper frequency limit also was extended from 275 GHz up to 400 GHz with some indications given as to the possible uses of this area.[31] For the purposes of international research, the definition of radio waves was maintained at 3000 GHz by Committee 4 (Technical Regulations).[32] The use of bands above 275 GHz was seen by Committee 5 as being of special importance for passive services, i. e. radio astronomy, earth exploration satellites and passive space research. A footnote in the new Table adds emphasis and support to the planned uses of the upper limits of the spectrum.

The following sections summarize the relevant actions of the working groups responsible for the Table of Frequency Allocations.

9 to 4,000 kHz: Working Group 5BA

Terms of reference:

> Review and if necessary revise the Table of Frequency Allocations in the bands below 4,000 kHz and consider any Resolutions and Recommendations concerning the use of frequencies in these bands.[33]

Chairman: Mr. Cook, Venezuela

No major service changes were made between 9 and 4,000 kHz, but some efforts to share frequencies were successful, as in the case of radiolocation, aeronautical radionavigation and maritime mobile services in Regions 1 and 2. There were limited extensions of the bands used by broadcasting and amateur services. The report of the chairman of Working Group 5BA summarized allocations below 4MHz by stating:

> "It may be noted that at this Conference the regional character of the use of bands below 4,000 kHz was confirmed."[34]

It should be further noted that there are some persistant problems associated with the existing tripartition. One example is Region 1. As already stated, there are many differences between countries in Europe and countries in Africa. The European nations are small by comparison to African nations. The land in Europe is densely populated and developed; whereas the land in Africa is sparsely

populated (except in a few large cities). The majority of developing economies in Africa still lack basic infrastructures and rudimentary industrial facilities to support stable socio-economic systems. These aggravating factors become real stumbling blocks during multi-lateral negotiations, as in the conflict at WARC between long-wave broadcasting and aeronautical beacons. These services share bands below 150 kHz.

Large countries and/or countries that use only one of the above services experience no significant interference problems in these bands. On the other hand, in small crowded countries the problem is potentially dangerous. This is because pilots in congested air traffic over most European cities rely on aeronautical beacons to navigate.[35] These beacons can be obliterated by interference from high power broadcasting signals. The solution was to move aeronautical beacons out of the long-wave broadcasting band and into other bands that give the beacons a high priority status.

In contrast to the comment of the Working Group's Chairman about the regional character of the ITU being upheld by the Conference, the Report of the British delegation described the final compromise as, "...a complicated solution involving regional differences, numerous footnotes, adjustments in the relative status of various radio services and additional provisions for aeronautical radionavigation."[36]

The United Kingdom and other European countries made proposals for new worldwide radiolocation bands to accommodate position-fixing systems. But here again, they confronted significant regional differences.[37] The problem was solved after joint interaction with Committee 6 (Regulatory Procedures) to develop an elablorate series of footnotes and procedures for regulating the band.

The long-wave broadcasting band was changed slightly to accommodate the 9 kHz channel-spacing rule in the band. Each broadcasting frequency will eventually be reduced by 2 kHz. This will cause no appreciable change in the quality of reception. Moving the radionavigation frequencies out of the band will improve existing long-wave broadcasting services. The problem of protecting radionavigation services in Regions 2 and 3 was partially solved by reserving the band 190 to 200 kHz for exclusive use by this service.

In addition, the Conference approved the band 90-110 kHz for the use of radionavigation services worldwide. This band is protected by a footnote from interference by emissions in adjacent bands. Another footnote was included to improve the use of the band through coordination of the technical features and operation of the systems using the band.[38]

In the band 525 to 535 kHz, the power has been increased for broadcasting stations in Region 2. The allocation for broadcasting in Region 2 was extended to 1705 kHz.

The use of the new band 1605 to 1705 kHz will be regulated according to a plan to be developed by a Regional Administrative Conference. This conference must be held no later than 1985.

A footnote was added to the Table for governments to use bands allocated to amateur services between 3.5 and 144 MHz in the event of a natural disaster. The amateur service also received an exclusive allocation between 3,500 and 3,750 kHz in Region 2. The long term benefits of enhanced global access to the spectrum by amateurs was seen by many delegations as a positive step.[39]

4 to 27.5 MHz: Working Group 5BB

Terms of reference:

> Review and if necessary revise the Table Frequency Allocations in the bands between 4 and 27.5 MHz and consider any Resolutions and Recommendations concerning the use of frequencies in these bands.[40]

Chairman: Mr. P.D. Barnes (Australia)

The biggest issue that had to be resolved by this Working Group was the skirmish between fixed services and broadcasting services. Between 4 and 10 MHz, fixed services lost very few allocations. Between 10 and 27.5 MHz, significant reallocations of spectrum were made from fixed bands to increased maritime mobile, broadcasting and amateur services. One exception to the latter example is the band 21.85 - 21.87 MHz which will be vacated by the radio astronomy service. This band has been reallocated to fixed service.

The Conference established procedures and timetables for the transfer of fixed service and broadcasting assignments. The fixed service transfer period is five years, beginning on 1 July 1984, for changes made above 10 MHz. The time period for transfer of broadcasting services in the bands below 10 MHz spans 10 years from 1 July 1984. One exception is the reallocation of the band 9.775 to 9.900 MHz from fixed service to broadcasting. Footnote 3510A establishes the conditions for transfer of existing fixed services. Therefore, the use of the new 125 kHz wide band for broadcasting is dependent upon the voluntary compliance by countries now using the band for fixed services.

Many of the changes made in these frequency ranges will involve greater sharing between the fixed, maritime and land mobile services. Use of the spectrum between 4 and 10 MHz for fixed services was increased 125 kHz, the same increase as broadcasting services. Sharing in these bands now provides for more fixed services on a primary and secondary basis.[41]

The amateur service received additional allocations between 10.1 and 10.15 MHz on a secondary basis, 18.068 to 18.163 MHz including amateur satellite on an exclusive basis and 24.890 to 24.990 MHz also including amateur satellite on an exclusive basis. The use of the latter two bands is contingent on how soon present users vacate the spectrum. Some of the displaced services, such as radio astronomy, received new allocations in the higher frequencies.

The 1979 WARC decided a specialized conference would be required to deal solely with short-wave (HF) broadcasting. The industrialized countries argued in favor of increased allocations to broadcasting while the developing countries wanted the fixed service allocations to be retained. The issues came before the full plenary meeting of the WARC for a vote. The developing countries won by a small margin. Subsequently, a group of 16 developed countries, including the United Kingdom and the United States, entered reservations aimed at protecting their existing HF broadcasting interests.[42] This subject will be re-examined during the HF conference scheduled for 1983.

The conflict between fixed and broadcasting services was generally a result of North/South differences. The "appropriate technology" needs of developing countries call for maintaining fixed services in this shortwave band at the expense of developed countries' proposals for more broadcasting services.[43] The proposed increase for broadcasting services also was seen by the developing countries as one more instance of "unbalanced" flows of information.[44]

A unique feature of the HF portion of the Table is the use of footnotes allowing alternative or additional allocations to individual countries or to sub-regional groups of countries. This means a country can, in effect, receive allocations based on internal needs as opposed to the allocation-by-service principle that has been the rule since

the Washington Conference of 1927.[45] Use of these footnotes is for services operating within the countries concerned.

Industrial Scientific and Medical Applications (ISM) were expanded with a new band at 6.78 MHz. The existing ISM allocations at 13.56 and 27.12 MHz were left unchanged.

30 - 960 MHz: Working Group 5C

Terms of Reference:

> Review and if necessary revise the Table of Frequency Allocations in the bands between 27.5 and 960 MHz and consider any Resolutions and Recommendations concerning the use of frequencies in these bands.[46]

Chairman: Mr. K. Olms

The major issues treated by this Working Group were: shared frequencies for television broadcasting and land mobile allocations; allocations for maritime services; and, aeronautical services.

The frequency range 100 to 108 MHz now has been allocated to broadcasting services worldwide. It will not be until 1995, however, before the allocations are exclusively awarded to broadcasting. Several footnotes with provisions for transfer of non-broadcast services in Region 1 were added to the Table. This part of the spectrum is already included in the FM broadcast band in the USA. A regional conference organized to plan FM broadcasting for Region 1 was recommended by the Conference. The ITU's Administrative Council will make the specific arrangements.

At the upper end of this frequency range, between 862 - 960 MHz, the broadcasting allocation was eliminated in Europe where it has not been used for some time. But in Africa the broadcasting allocation was maintained, thereby adding one more wedge to the North/South split in Region 1. The Europeans will create another mobile allocation in place of the old broadcasting allocation. It will share the band with an existing fixed service allocation.

Above 960 MHz - 40 GHz: Working Group 5D

Terms of Reference:

> Review and if necessary revise the Table of Frequency Allocations in the bands between 960 MHz and 40 GHz and consider any Resolutions and Recommendations concerning the use of frequencies in these bands.[47]

Chairman: Dr. B.S. Rao (India)

The majority of services in this band are fixed-satellite, radar systems and radio telephone relays. Some minor allocations were given to broadcasting satellites, remote microwave sensing from space and space research. The amateur-satellite service received specific sub-bands for operation in the microwave amateur bands. This last item had strong support from the international radio amateur movement.

Below 10 GHz, the matching uplink allocations have been made for broadcasting satellite services (BSS) by extending the existing uplink allocations by as much as 225 MHz. More spectrum was provided for the fixed satellite service (FSS) below 10 GHz. Agreements were reached to incorporate

interregional sharing criteria into the next Region 2 Planning Conference to prevent interference with services in Regions 1 or 3.[48]

This Working Group made provisions for the growing importance of inter-satellite communications. Passive sensing in the Earth exploration satellite and space research services was identified as a priority area for future development. In light of this, the Conference made arrangements for the evolution of an exclusive band for passive services. In addition to spectrum allocations for passive services, related allocations were made for the use of radar systems on board spaceships and satellites.

The quest for signs of extra-terrestrial intelligence was given greater international acceptance by identifying frequency bands where the research may best be conducted. There also were a number of resolutions and recommendations calling for further studies of the appropriate uses of sound broadcasting and solar power satellites.

Since space services were first introduced in 1963, the sharing of frequency bands with terrestrial services has been the major regulatory problem.[49] Satellite communications in bands between 4 to 6 GHz have been constrained by various terrestrial services. These bands, which are used for FSS by INTELSAT and other satellite systems, must be shared with costly terrestrial services that have not yet been amortized. Compromises and extended timetables were necessary to balance the interests of many countries.

Proposals for additional frequencies in the mobile-satellite service were generally accepted by the Conference. This service employs transportable earth stations linked to electronic news gathering (ENG) equipment. Live coverage of global events will ultimately change the present format and content of reporting international news. The advent of a 24 hour news service on some cable TV networks in the USA is only the beginning of this trend.[50]

Above 40 GHz: Working Group 5E

Terms of Reference:

> Review and if necessary revise the Table of Frequency Allocations in the bands above 40 GHz and consider any Resolutions and Recommendations concerning the use of frequencies in these bands.[51]

Chairman: Dr. A.W. Adey (Canada)

The only other time the ITU has considered allocations in the spectrum above 40 GHz was in 1971. This previous conference dealt solely with space telecommunications and radio astronomy.[52] The continuing pressure for more allocations coupled with innovations in technology for using these extremely high frequencies will undoubtedly lead to exploitation of this part of the spectrum. Again, the friction between terrestrial and space services will need reconciling. The burgeoning demand forecasted for FSS and fixed terrestrial services must be put in perspective with possible uses of these bands by other potential users. The need for more flexible regulations was directed to the CCIR for further review.

The upper limit of the Table of Frequency Allocations remains at 275 GHz where it was set by the WARC-ST of 1971.[53] Additional reference to frequencies above 275 GHz was restricted to general comments within a footnote about the possible uses of bands in the 275 to 400 GHz range for passive services. The definition of radio waves, however, extends to 3000 GHz.[54] The consensus among Conference participants was that, presently, few limitations should be placed on research in the bands above 275 GHz.

Although Working Group 5E had 87 percent of the spectrum space to be allocated, it also had the easiest task, which was to make large segments of spectrum available for the first time.[55] The working group finished its task before any of the other working groups in Committee 5.

Regulatory Procedures Committee: Committee 6

The Chairman of Committee 6 was Mr. M. Joachim from Czechoslovakia and the Vice Chairman was Mr. E.J. Wilkinson from Australia. The U. S. representative was Francis Urbany of the National Telecommunication and Information Agency (NTIA).

Terms of Reference:

> To consider proposals concerning the coordination, notification and registration of frequency assignments, and the activities of the IFRB and, in particular, proposals concerning the following articles:
>
> Article N9, Co-ordination, notification and registration of frequencies--International

Frequency Registration Board, general provisions.

Article N10, Internal Regulations of the International Frequency Registration Board

Article N11, Co-ordination of frequency assignments to stations in a space radio-communication service except stations in the broadcasting-satellite service and to appropriate terrestrial stations.

Article N12, Notification and recording in the Master International Frequency Register of frequency assignments to terrestrial radiocommunication stations.

Article N13, Notification and recording in the Master International Frequency Register of frequency assignments to radio astronomy and space radiocommunication stations except stations in the broadcasting-satellite service

and the related Appendices 1, 1A and 1B.

To consider proposals concerning regulatory measures against harmful interference covered by the following articles:

Article N18, International monitoring

Article N19, Reports of infringements

Article N20, Procedure in the case of harmful interference

and the related Appendices 6, 7, 8, and 9.

To consider as appropriate to the work of the Regulatory Procedures Committee the resolutions and recommendations adopted by previous administrative radio conferences and to take such action as may be considered necessary including the adoption of any new resolutions and recommendations.[56]

The Regulatory Procedures Committee had, inter alia, major responsibility for charting the principles and guiding the planning of fixed-satellite services. Committee 6 also

promulgated new procedures and revised the regulations in conjunction with the work of Committee 5 (Allocations). Shortly after the first formal meeting, the Algerian delegation presented a proposal to allocate HF fixed-service bands on a 70-30 basis in favor of the developing countries.[57] The United States delegation and other Western countries presented their own plan for improving access to the geostationary orbit.[58] The intent of these proposals was partly to alleviate the unique problems of the developing countries.

The so-called Algerian Plan was discussed informally, but many technical problems associated with its operation necessitated a compromise.[59] Committee 6 produced a package of new regulations involving changes in procedural matters and assistance by the IFRB to specific needs of the developing countries. The North and South countries also differed sharply over the scope and intent of the proposed HF planning conference. A broad mandate was finally agreed as the best course.

The compromise between supporters and opponents of the Algerian Plan had many facets. The essential components were: "(1) removal of outdated HF assignments in the Master Frequency Register; (2) reclassify remaining assignments according to needs and alternate means; (3) finding new frequencies for HF fixed assignments displaced by allocation changes ('reaccommodation'); (4) increased assistance

by the IFRB to countries needing help in finding new frequencies, and in identifying interference; (5) revision of Article N12, and related texts, to implement these procedures."[60] The arrangement included a resolution to give special recognition to administrations from developing countries.[61] This issue required nearly eight weeks and many discussions to resolve. Committee 6 had a total of 16 working groups. Seven of these groups were engaged in the process of drafting the regulations and recommendations concerning the HF bands.[62] WARC79 determined that two conferences should be held. Essentially the first is for planning and the second is for allocating frequency uses. The ITU's Administrative Council will set the budget and calendar dates for the conferences.

The question of how to provide for the effective management of the geostationary satellite orbit was considered by a working group (6-2) of the Regulatory Committee. Once again, the WARC elected to exercise its perogative to put the issue on the agenda of a future conference.

The denouement of this working group can be viewed as another step in the evolution of new institutional arrangements for international telecommuncations.[63] Because of the importance of its work and the implications it holds for the future, this group deserves further study. The growing awareness among developing countries of the need for more planning conferences produced the impetus for establishing this working group. On the other hand, most developed

countries felt that the existing provisions were adequate.[64] A more complete analysis of the ramifications of Six Ad-Hoc Two appears in the next chapter.

Committee 6 often relied on item 2.10 of the WARC Agenda "to propose to the Administrative Council and to the next Plenopotentiary Conference a programme for convening future administrative radio conferences to deal with specific devices..."[65] The long-term planning of frequencies for use by space systems was among the most important of those topics scheduled for prospective conferences. The location and spacing of communication satellites along the geostationary orbital path and related issues were postponed until meetings during the 1980's. One U. S. delegate, who also serves as general counsel for Satellite Business Systems, reported that between now and the time for the planning conferences, alternatives to the a priori scheme must be found.[66] It would appear that these differences between North and South will continue to be overriding concerns.

General Administrative: Committee 7

The Chairman was Mr. P. O. Okundi from Kenya and the Vice-Chairman was Mr. H. L. Venhans of the Federal Republic of Germany (West Germany).

Terms of Reference:

> To deal with proposals on general administrative matters not covered by other Committees and, in particular, to consider proposals concerning the following articles:

Article N1, Terms and definitions; Section I, General terms; Article N21, Secrecy; Article N22, Licences; Article N23, Identification of stations; Article N24, Service documents; Article N30, Amateur service and amateur-satellite service; Article N31, Standard frequency service and time signals service; Article N32, Experimental stations; Article N33, Radiodetermination service and radiodetermination-satellite service, Sections I, II, III and IVA; Article N39, Special services relating to safety; Article N73, Effective date of the Radio Regulations; and the related Appendices C, 9, 10 and 23.

To consider proposals on the technical aspects for the use of radiocommunications for making, identifying, locating and communicating with the means of medical transport protected under the 1949 Geneva Conventions and any additional instruments of these Conventions.

To suggest to the plenary meeting, taking account also of the advice of other Committees, a programme of future administrative radio conferences to deal with specific services with a view to presenting advice on such a programme to the ITU Administrative Council for subsequent submission to the Plenipotentiary Conference.

To consider Resolution No. Sat-4 of the World Broadcasting-Satellite Administrative Radio Conference (Geneva, 1977), and to take such action as may be considered necessary.

To consider as appropriate to the work of the General Administrative Committee the resolutions and recommendations adopted by previous administrative radio conferences and to take such action as may be considered necessary including the adoption of any new resolutions and recommendations.[67]

Committee 7 had broad purview over the activities of WARC79. It became a catch-all for matters of general administration, technical identification and planning of telecommunication services. In order to carry out the arrangements for future conferences, Committee 7 had to work closely with Committees 4, 5, and 6. The consultation between the committees and numerous working groups led to recommendations for a covey of future conferences.

Altogether, about two dozen specialized world and regional radio conferences were proposed at WARC79. The Conference approved three world conferences and six regional conferences. These will be scheduled and organized by the ITU Administrative Council and parts of the agency's permanent staff. The meetings are:

(1) World Administrative Radio Conference for Mobile Services;

(2) Regional Administrative Radio Conference for planning the MF Broadcasting bands in Regional 2, (Session 1 in 1980 and Session 2 in 1981);

(3) Regional Administrative Radio Conference for the detailed planning of the Broadcasting Satellite Service in the 12 GHz band and associated uplinks in Region 2 (1983);

(4) Regional Administrative Radio Conference for planning Sound Broadcasting in the band 87.5 108 MHz in Region 1, (1983);

(5) Regional Administrative Radio Conference for planning uplinks to broadcasting satellites operating in the 12 GHz band in Regions 1 and 3, (1983);

(6) Regional (European Maritime Area) Conference to revise the 1948 Copenhagen Plan (1984);

(7) Regional Administrative Radio Conference to prepare a plan for the initiation of broadcasting services in the band 1605-1705 KHz in Region 2, (1985);

(8) World Administrative Radio Conference for the planning of the HF bands allocated to the broadcasting services, (two sessions);

(9) World Administrative Radio Conference on the Geostationary Satellite Orbit and the planning of space services, (two sessions).[68]

Responding to the pressure of increasing numbers of radio stations, Committee 7 created new blocks of call signs.[69] The improvements in the system of designating call signs is intended to satisfy immediate needs.[70] Universal Coordinated Time (UTC) was adopted, replacing Greenwich Mean Time (GMT) for international telecommunication applications. The new standard allows unambiguous timing of events anywhere in the world with an accuracy of 1 microsecond or less.[71]

Twelve working groups assisted the General Administrative Committee. Many of these were special study groups formed to handle technical matters. Other working groups coordinated interactions between Conference Committees while some dealt with various special problems that arose during the WARC. One example was Working Group 7-3. The terms of reference were to reach consensus on an Argentina proposal for a recommendation that the ITU Secretariat develop a 'draft' conference structure, including proposed committee structure, approximately one year ahead of an

Administrative Radio Conference so that smaller countries, particularly developing countries, could plan delegation size and conference participation in the right proportion.[72] This group was chaired by a delegate from Argentina and was one of the few working groups that did not have a U.S. spokesman.[73] The proposal eventually became part of a recommendation in the Final Acts, over objections from some developed countries.

Restructure of the Radio Regulations: Committee 8

This committee was dubbed the Restructure Committee. It was chaired by Mr. O. Lundberg of Sweden and the Vice-Chairman was Mr. G. Warren from Canada.

Terms of Reference:

> To consider the specific proposals concerning the basic re-arrangement of the Radio Regulations and the Additional Radio Regulations, and the further refinement and deletion of superfluous or redundant provisions in Articles N34-N38, N40-N46 and N48-N72, as well as any consequential amendments concerning those articles, related appendices, resolutions and recommendations including the adoption of any new resolutions and recommendations.
>
> To consider proposals based on the CCITT studies carried out in accordance with Resolutions Nos. Mar2-22 and Mar2-23 and to take such action as may be considered necessary.[74]

This was another administrative committee, like Committee 7, but more limited in scope. Committee 8 was primarily

responsible for coordinating the re-arranged version of the Radio Regulations with those sections that were unchanged by WARC79.[75] Redundant or obsolete provisions were eliminated which resulted in the reduction of much material, including the entire "Additional Radio Regulations." The latter text was either merged or left out of the new Radio Regulations entirely.[76]

Editorial: Committee 9

The WARC maintained the traditional practice of putting this committee chair under a French delegate with vice-chairs to delegates from Spain and the United Kingdom.

Terms of Reference:

> To perfect the form of the texts of the Final Acts without altering the sense.[77]

The basic function of the Editorial Committee was to oversee the translation of the Final Acts and Radio Regulations. The working groups within this Committee worked long hours to complete their work by the final Plenary Session in December. As the technical committees would finish their work on various proposals, they forwarded the information to the Editorial Committee on blue paper. The Editorial Committee then prepared drafts on pink paper for discussion by the working groups. The final version of the information was put on white paper and passed on to the Plenary Sessions for consideration by the Conference as a whole. If

a dispute over interpretation arose between the three main languages, (English, French, and Spanish) the French would become the governing text.[78]

Final Acts

All countries empowered to sign the Final Acts on 6 December 1979 did, in fact, sign them. The Conference and Final Acts were completed in an atmosphere of cooperation, notwithstanding the differences between North and South, East and West; as well as regional and national rivalries. Although some of the preceding discussion on the work of the Conference Committees has been concerned with the Final Acts, it is appropriate at this point to put the Treaty in perspective. With 1,100 pages of text in the Final Acts, it is necessary to abstract and summarize the most noteworthy items; and refer the reader to the original document for further study.[79]

The definition of telecommunication as it was adopted by the Malaga-Torremolinos Convention was retained by WARC79.

> Telecommunication:
>
> Any transmission, emission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.[80]

The definition of the three "A's" of telecommunication regulation were maintained with minor changes.

Allocation (of a radio frequency or radio frequency channel):

> Entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more (terrestrial or space) radiocommunication services or the radio astronomy service under specified conditions. This term shall also be applied to the frequency bands concerned.

Allotment (of a radio frequency or radio frequency channel):

> Entry of a designated frequency channel in an agreed plan, adopted by a competent Conference, for use by one or more administrations for a (terrestrial or space) radiocommunication service in one or more identified countries or geographical areas and under specified conditions.

Assignment (of a radio frequency or radio frequency channel):

> Authorization given by an administration for a radio station to use a radio frequency or radio frequency channel under specified conditions.[81]

The international regulation of direct broadcast satellites (DBS) is becoming a reality in view of the changing world order. This is because of the approach taken by the developing countries to press for more access to the ITU and to technology in general. The Broadcasting-Satellite Service (BSS) was further clarified in the Radio Services Section.

Broadcasting-Satellite Service:

> A radiocommunication service in which signals transmitted or retransmitted by space stations are intended for direct reception by the general public.
>
> In broadcasting-satellite service, the term "direct reception" shall encompass both individual reception and community reception.[82]

Under the Operational Terms Section, further definitions of the nascent BSS industry are included. The terms listed below are especially noteworthy in this regard:

Individual Reception (in the broadcasting-satellite service):

> The reception of emissions from a space station in the broadcasting-satellite service by simple domestic installations and, in particular, those possessing small antennae.

Community Reception (in the broadcasting-satellite service):

> The reception of emissions from a space station in the broadcasting-satellite service by receiving equipment, which in some cases may be complex and have antennae larger than those for individual reception and intended for use:
>
> - by a group of the general public at one location; or,
> - through a distribution system covering a limited area.[83]

A special section for Technical Terms Relating to Space contains definitions relevant to "parking slots" over the equator.

Geosynchronous Satellite:

> An earth satellite whose period of revolution is equal to the period of rotation of the Earth about its axis.

Geostationary Satellite:

> A geosynchronous-satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a satellite which remains approximately fixed relative to the Earth.[84]

The nomenclature used to describe the frequency bands for radiocommunication is the subject of Article N2 of the Final Acts. This article stipulates that the electromagnetic spectrum be divided into nine frequency bands. The bands are designated by progressive whole numbers representing the frequencies measured in hertz (Hz). The official designation of hertzian waves used by the ITU is listed below:

Article N2

Nomenclature of the Frequency and Wavelength Bands Used in Radio Communication.

> Sec. 1. The radio spectrum shall be divided into nine frequency which shall be designated by progressive whole numbers in accordance with the following table. As the unit of frequency is the hertz (Hz), frequencies shall be expressed:
>
> - in kilohertz (kHz), up to and including 3000 kHz;
> - in megahertz (MHz), above 3 MHz, up to and including 3000 MHz.

- in gigahertz (GHz), above 3GHz, up to and including 3000 GHz.

For bands above 3000 GHz, i. e. centi-millimetric waves, micrometric waves, decimicrometric waves it would be appropriate to use "terahertz (THz)."

The Table of Frequency Allocations fills 176 pages of the Final Acts and has been summarized in a previous section of this Chapter. An analysis based on selected portions of the Table will appear in the next Chapter. One additional point that can be made about the new Table is the unprecedented increase in the number of footnotes taken by countries. Despite the Secretary-General's call for a reduction in the number of footnotes within the Table, the final plenary session accepted 122 more than the previous Table.[86] Whereas the procedure was originally instituted to provide a modicum of flexibility to the allocation of frequencies, the burgeoning list now resembles, ipso facto, an "Additional Table of Frequency Allocations," containing separate allocations by countries as opposed to the allocations by service in the actual Table.

The section of the Final Acts responsible for the coordination, notification and registration of frequencies was given a broader mandate in reference to the special needs of developing countries.[87] These regulations pertain to the operation of the International Frequency Registration Board (IFRB). The IFRB provides special assistance to countries having problems complying with the technical

requirements. Among other procedures aimed to assist developing countries is the following:

> The provision of assistance to administrations at their request, in the training of senior staff in the fields of spectrum manangement and utilization, particularly for those countries in special need.[88]

The Final Acts contain many resolutions pertaining to all aspects of telecommunication. These range from the purely technical to the political. Resolutions may be used to establish important new norms of international law. A case-in-point is Resolution BP: Relating to the Use of the Geostationary-Satellite Orbit and to the Planning of Space Services Utilizing It. In effect, this resolution calls for a shift from the squatter's rights policy to an a prioi policy achieved through a two-step planning and allocation process.

In a related area is Resolution AU: Relating to the Establishment of Agreements and Associated Plans for the Broadcasting Satellite Service. Noting the potential for harmful interference over large parts of the Earth's surface as well as problems of sharing frequencies, this Resolution calls upon the ITU to consider future conferences for coordinating the use of BSS.

Another innovation in the ITU is described by the following:

> Resolution BZ: Relating to Improvements in Assistance to Developing Countries in Securing Access to the HF Bands for

their Fixed Services and in Ensuring Protection of their Assignments from Harmful Interference:

The World Administrative Radio Conference, Geneva, 1979,

noting

the other Resolutions adopted at this Conference relating to the special needs of developing countries;

considering

a) that in many cases the developing countries have a need for assistance of a highly specialized nature and that this assistance must often be obtained at short notice, particularly in relation to the fixed service and the use of the HF bands;

b) that the technical knowledge and experience of most value to the developing countries in this field is obtainable from or through the International Frequency Registration Board;

considering also

c) that the resources of the IFRB are limited;

resolves

1. that the provisions of the Radio Regulations Nos. 4280A, 4310 BA, 4326A to 4326M, 4439/607 and 5143 to 5146 are intended essentially for the use by the administrations of developing countries;

2. that the administrations of developed countries should make the minimum possible use of the provisions;

3. that the administrations of developing countries should make the maximum possible use of these provisions.[89]

Resolution CE: Relating to Technical Cooperation with the Developing Countries in Maritime Telecommunications, was another effort to give recognition to the needs of developing countries. The Final Acts convey, "that in this regard the Union's technical cooperation activities could be extended to render very valuable assistance to these countries."[90]

The problems of tropical countries also was addressed by a resolution. Resolution CG provides for technical assistance to developing countries to undertake thorough studies of propogation in the rain-soaked tropical areas. Resolution CX is focussed on the role of telecommunications in rural development.

Resolution CZ also extends technical assistance into space services. Some of the relevant portions of the text are stated below:

> Relating to International Cooperation and Technical Assistance in the Field of Space Radio Communications:
>
> > The World Administrative Conference, Geneva, 1979,
> >
> > <u>considering</u>,
> >
> > a) that a large number of countries, members of the International Telecommunication Union, are not in a position to take immediate advantage of satellite techniques for the development of their telecommunication services;
> >
> > b) that such countries would benefit immensely through the technical

assistance programmes sponsored by the Union;

recognizing,

a) that international satellite-communication services are subject to the Convention and Regulations and that they permit participation of all countries including, in particular, the developing countries, in space communication systems;

b) that a number of problems need to be solved in order that the developing countries may participate effectively in international space communication systems and integrate these systems with their international telecommunication networks;

resolves to invite the Administrative Council

1. to draw the attention of administrations to the means by which they may avail themselves of technical assistance in connection with the introduction of space communications;

2. to consider the most effective manner in which requests for such assistance by Member countries of the Union may be formulated and presented in order to secure maximum financial and other assistance;

3. to consider how best to make use of funds made available by the United Nations in accordance with its Resolution No. 1721 to give technical and other effective use of space communications;

4. to consider in what way the work of the Consultative Committees and other organs of the Union may be utilized in the most effective way for the information and assistance of administrations of Member countries of the Union in the development of space radiocommunications.[91]

Resolution AD-1 pertains to national radio frequency management efforts by the ITU. Among other things, the document resolves that meetings be organized between experts in the ITU and personnel involved in frequency management from developing and developed countries. The purpose of these meetings is to design standard structures and operational features of spectrum management units to be established in the administrations of members of the ITU. The resolution also recommends that developing countries utilize funds from international sources to support their personnel at these meetings and for the creation of the aforementioned spectrum management units in their countries.

The principle of equal rights among nations in the use of the Earth's natural resources was the purpose of Resolution AY:

> Relating to the Equitable Use by all Countires, with Equal Rights of the Geostationary Satellite Orbit and of Frequency Bands for Space Radiocommunication Services:
>
> The World Administrative Radio Conference, Geneva, 1979,
>
> considering,
>
> that all countries have equal rights in the use of both the radio frequencies allocated to various space radiocommunication services and the geostationary satellite orbit for these services;
>
> taking into account
>
> that the radio frequency spectrum and the geostationary satellite orbit are limited natural resources

and should be most effectively and economically used;

having in mind

that the use of the allocated frequency bands and fixed positions in the geostationary satellite orbit by individual countries or groups of countries can start at various dates depending on the requirements and readiness of technical facilities of countries;

resolves

1. that the registration with the IFRB of frequency assignments for space radiocommunication services and their use should not provide any permanent priority for any individual country or groups of countries and should not create an obstacle to the establishment of space systems by other countries;

2. that, accordingly, a country or a group of countries having registered with the IFRB frequencies for their space radiocommunication services should take all practicable measures to realize the possibility of the use of new space systems by other countries or groups of countries so desiring;

3. that the provisions contained in paragraphs 1 and 2 of this Resolution should be taken into account by the administrations and the permanent organs of the Union.[92]

There are many resolutions and recommendations in the Final Acts. The recommendations of particular interest to

the present discussion include:

Recommendation ZP:

Relating to Specifications of Low-Cost Television Receivers

Recommendation YG:

Relating to a Handbook for Computer-Aided Techniques in Radio Frequency Management

Recommendation XH (replaces Recommendation No. 35 of the WARC of 1959):

Relating to the Practical Needs of Countries in Need of Special Assistance.[93]

An Appendix to Article 29 was adopted by the WARC that relates to BSS in the bands 11.7 to 12.2 in Regions 2 and 3 and 11.7 to 12.5 in Region 1. Especially noteworthy is a provision that stipulates a minimum of four channels be guaranteed each administration within the region covered by a broadcasting satellite. Beyond this minimum, additional channels will be distributed to countries based on such characteristics as geography, time zones and language differences.[94]

Concerning the entry into force, the Final Acts conclude with Article N73 which states that the Radio Regulations will be annexed to the International Telecommunication Convention and become effective on 1 January 1982. Generally, the new Radio Regulations and Table of Frequency Allocations enter into force on that date. There are, however, a number of special instances where changes are to be made over a much longer period of time.

The 1979 WARC had more spectrum to allocate, with less time to do it, and more participants taking part than the 1959 conference.[95] The immensity of the task took its toll on the delegations. The subcommittees were working 12 and 14 hours, six days a week, which put pressure on the full committees to make decisions in favor of existing arrangements. The reason for this, according to one U.S. delegate, was that the benefits and shortcomings of the status quo were at least well known and did not require lengthy discussions to be understood.[96] The delegate continued,

> "The time crunch, and hence the pressure to make conservative decisions, came about just as the subcommittees were completing their work and shifting the burden to the full committees. In these full committees smaller delegations often faced, for the first time, an opportunity to introduce or substantially debate non-status quo proposals. The result was greater polarization between large and small nations than might have obtained had the conference been scheduled for a greater length of time."[97]

CHAPTER SIX

U.S. Participation

Introduction

A media critic for the New York Times once described changes in the field of broadcasting as a result of one or more of the following forces: technological advances, marketing innovations, competitive friction, public policy, legislative action and shifts in public taste.[1] These factors can be equally applied to the broader topic of telecommunication. The government, private industry and various public interest groups in the United States collectively formulate guidelines for making domestic and foreign communications policy. Numerous and diverse interests are expected to coalesce into a single plan embracing the general goals and procedures for the nation as a whole. The result is often disappointing, however. One expert simply states that "(a)mong the most striking characteristics of the U.S. international communications system is the lack of a unified policy-making structure."[2]

Under the Carter Administration, international telecommunication issues were not given high priority.[3] It is too early to know what relevance, if any, the Reagan Administration will ascribe to the ratification of the Final Acts.

One indication may be discerned from the comments of Senator Harrison Schmitt who identifies with the new conservative majority in that body and is now in line to be chairman of the Subcommittee on Science, Technology and Space.[4] This former Apollo astronaut was highly critical of the Carter Administration's preparations, charging that the White House was oblivious to what was happening.[5] Schmitt has stated repeatedly that national telecommunication policy must be closely coordinated with other domestic and international policies. The type of counsel this lawmaker would give to policymakers is revealed in the following quote:

> "If we believe in the free flow of in formation we should stick with and force others to come into line.
>
> If we believe in free access to space, we should stick to it and force others to accept that principle."[6]

The Department of State has the major responsibility for the foreign policy aspects of U.S. telecommunication treaties. The Federal Comunications Commission coordinates domestic policy and the public hearing process. The National Telecommunication and Information Agency sets the technical standards for the United States' proposals. The Department of Defense also participates in planning for military communication which is the single biggest use of the electromagnetic spectrum. The head of the WARC delegation holds the rank of Ambassador. The Department of State also maintains a Telecommunications Attache office at the U.S. Permanent Mission in Geneva.

The dynamics of international economic and political systems produce additional forces that impinge on negotiations at meetings like WARC79. A former staff member of the Senate Foreign Relations Committee wrote, "...the shape of things to come will not only rest on the 'demands' of the Third World. It will be molded by the rapid advances of technology, the actions of the industrialized nations in limiting what can or cannot go into computers and be transferred to other computers abroad (the transborder data flows question), the decisions regarding Direct Broadcast by Satellite (DBS), and the international meetings where information/communications questions are coming up on agendas more and more frequently. At some of these meetings outside events such as Mideast or Southern Africa Issues, can temporarily sway voting patterns."[7]

It is generally agreed by most experts in this field that technology is the foremost influence affecting telecommunication, however, there are many ancillary issues injected into the process from a broad range of interest groups. The United States is in the minority when comparison is made between state-controlled and free enterprise media systems. Furthermore, this country is unique by any comparison with other developed countries in its fragmented policy and planning process. The purpose of this chapter is to examine each stage in the preparatory process and report on the major decisions reached at WARC79 as they impinge on U.S. policy.

Preparations

The United States government initiated a vigorous schedule of preparatory activities five years before the WARC was to begin. The broad range and depth of coverage given to numerous details prompted comparison of the WARC with the Olympics.[8] The comparison proved to be ironic in that both "teams" prepared for a contest that they would not encounter.[9] The boycott of the Olympics, of course, was a result of the invasion of Afghanistan by the Soviet Union. The ideological wrestling match at WARC did not hamstring the plenary sessions, but sparring did go on behind the scenes, at the committee level and during informal negotiations.[10] The U.S. delegation, according to some members, was not prepared for this situation. Nor was the delegation sensitive to the issues of importance to developing countries once the conference was underway.[11]

For the purposes of this discussion, U.S. participation spans the time period from 1973 when the WARC was mandated at Malaga-Torremolinos, through the eleven weeks of negotiations in 1979 and subsequent Congressional hear- ings pursuant to Senate ratification of the Final Acts. The U.S. submitted a 300 page document containing almost 900 proposals to the ITU in January 1979. Time and space constraints prohibit an analysis of every one of these largely technical proposals. Selected proposals will be studied and summarized as representatives of the issues.

Resolution No. 28 of the Malaga-Torremolinos Convention called for a World Administrative Radio Conference for the General Revison, as necessary, of the Radio Regulations and the Additional Radio Regulations.[12] The United States experienced trouble and frustration during the negotiations at Malaga-Torremolinos due to the political squabbles taking place between North/South and East/West countries.[13] The report of the delegation devotes a considerable amount of commentary to the political problems encountered at the Plenipotentiary Conference.

The last Plenipotentiary Conference, prior to 1973, was in Montreaux in 1965. Between 1965 and 1973, many more countries joined the ITU. The People's Republic of China sent a large delegation in 1973 and was participating in a Plenipotentiary Conference of the ITU for the first time.[14] Speaking for many developing countries, the delegate from China pointed out that, "...the small- and medium-sized countries should unite to oppose superpower monopoly of radio resources and change this irrational state of affairs."[15] At the next two administrative conferences *a priori* plans eroded the ITU's long standing first-come, first-served policy. It will be shown that WARC79 delivered the coup de grace.

The meeting in Montreaux extended the powers of the Administrative Council. The Malaga-Torremolinos Convention increased the size of the Council from 29 to 36 members

and placed developing countries in the new seats. The U.S. was unconvinced of the utility of the change, stating that, "(w)hile the new Council is probably too large to operate with efficiency, there are some pluses in that new members on the Council do obtain experience, knowledge and an understanding of the functions of the ITU; therefore, the increase could turn out to be a useful change."[16]

The frustrations of some members on the U.S. delegation prompted them to suggest pulling out of the ITU altogether.[17] The general tone of the report is one of resentment and condenscension directed toward the developing countries.

"Unfortunately, the emphasis was on political matters even more so than at the Montreaux Conference in 1965 and on technical assistance."[18]

Veiled threats to withdraw support and membership from the ITU were a common response of the U.S. and other Western countries to the needs of Third World countries. The U.S. report clearly warns that "it is a danger to which many of the developing countries ought to give serious thought if they are interested in continuing to have an effective worldwide organization in the international telecommunications field."[19]

The first official reference by the ITU to the spectrum and the geostationary orbital path as limited natural resources was made at the 1973 Plenipotentiary Conference (Article 33).[20] The U.S. report, however, provided no space

to discuss this characterization. The delegation's report mentioned the resolution calling for a WARC to be convened in 1979, but did not indicate any specific position taken by the U.S.[21] The following year, the U.S. began initial preparation for WARC79.

It can be said that U.S. preparations for WARC79 were conducted in light of changing institutional features of the ITU.[22] However, this did not insulate the delegation from having difficulties explaining its proposals to non-aligned countries at WARC79.[23] Furthermore, there are some who argue that the premises upon which the U.S. based its negotiating position were, in fact, the source of the problem.[24] Linkage of telecommunications to economic and social concerns gave rise to the so-called "North/South" dichotomy in the ITU.[25] The government was anticipating an open confrontation at WARC79 over the redistributive goals of the new international economic order proclaimed by the U.N. General Assembly in 1974. Also, in that year, the principle of equal rights was being applied to maritime frequencies in the ITU. In 1977, the principle was extended to satellite frequencies and orbital positions. The U.S. proposed an alternative at the satellite conference in 1977, but the concept of "evolutionary planning" was shot down by the proponents of the a priori method.[26] The U.S. plan was rejected the first day it was discussed in committee.[27] At WARC79, the developed countries assumed a defensive posture

regarding their own proposals and what they perceived to be demands from developing countries.

Before submitting its proposals to the ITU, the Federal government sought input from many users, producers, regulators and researchers in the field. The FCC held public hearings, formed industry and citizen advisory committees and conducted bi-lateral discussions with other countries.[28] More than 2,000 formal recommendations were submitted to the FCC with suggestions for the U.S. proposals to WARC79.[29]

The delegation was formed in two stages. An initial core group of twenty persons was set up to coordinate and finalize the U.S. proposals. The second stage was the formation of the full delegation, over 100 people comprising delegates and support personnel.[30] On 7 January 1978, Glen Robinson, Professor of Law at the University of Virginia, became Chairman of the U.S. Delegation. Wilson Dizard was named Staff Director and Coordinator for Political and Public Affairs. Richard E. Shrum was the Technical Director and Coordinator for the Delegation.[31]

The Initial Delegation Group (IDG) met for the first time on 21 June 1978. The IDG was assisted by an Advisory Committee with members drawn from government, business, education and consumer interests. Former FCC Commissioner and newly appointed U.S. Ambassador to WARC, Glen Robinson, was the Chairman of the group. The group met once every two weeks to incorporate new developments and positions into the emerging U.S. proposals. The Advisory Committee was divided

into five working groups:

> International Broadcasting and the International Frequency Registration Board (IFRB);
>
> Domestic broadcasting and mobile telecommunications;
>
> Satellite frequency allocations;
>
> Notification and coordination procedures and related issues, and;
>
> Special problems of developing nations (and specific developed nations as well).[32]

A survey of world opinion along with efforts to explain the general position of the U.S. was begun in 1977, (following the tumultuous WARC-BS). Bi-lateral discussions took place throughout Europe, Asia, South America, Africa and North America. In many instances the consultations were in sever stages. The U.S. also participated in multi-lateral deliberations in NATO, CEPT (European Conference of Postal and Telecommunications Administrations) and CITEL (Inter-American Telecommunications Conference of the Organization of American States). The U.S. contacted countries on both sides of the East/West and North/South divides, including a visit to the Soviet Union.[33] The goal of the United States in these endeavors was to accommodate other countries' interests, consistent with its own requirements and to "avoid or limit the impact of politically inspired efforts to impede fair and efficient use of the spectrum."[34]

An information management group assisted the U.S. delegation in consideration of the more than 15,000 proposals

submitted to WARC79. The NTIA had a team of computer programmers working on software for three years prior to the Conference.[35] The delegation brought along a minicomputer to Geneva.[36] It also was linked to computer facilities in North America via the ARPANET network. After the computer was updated with every country's proposals it was possible to summarize and compare them with the U.S. positions.

The machine was used to keep track of meeting times and places as well as the delegates who were responsible for any particular committee or working group. The U.S. representatives on the various committees would file daily and weekly status reports. The management information system was interactive and on-line for the executive meetings held each morning.

The computer operated as a word processor when preparing reports and position papers for the staff. All materials were automatically cross-referenced with other proceedings of the Conference.[37] A software package of 12 engineering programs allowed the technical support personnel to model different uses of the frequencies. For example, one program was used to evaluate the degree of interference between geostationary satellite networks sharing the same frequency.[38] This program is based on procedures set forth in the Radio Regulations of the ITU. Any country proposing to utilize a frequency assignment at an earth or space station in a geostationary satellite system must be prepared to coordinate such assignments with other countries having

similar uses.[39] A related program assists administrations who want to erect earth stations in the same geographic region where other administrations are operating terrestrial stations in the same frequency bands. The program indicates the existence of interference which is to be resolved under the provisions of Article 9A of the Radio Regulations. "Based on the most unfavorable case assumptions, it establishes a coordination area around the earth station within which a terrestrial station may cause or be subject to more than a permissible level of interference."[40]

Many countries took notice of the U.S. computer. The information management group demonstrated the machine to a steady parade of delegates. Some of the visitors would bring a particular problem with them to be solved at the demonstration. They would then receive a print-out to take back to their own delegation for review. The head of the technical support group remarked after the Conference, "The ITU decided a number of years ago not to provide computer services at WARC'79. I think we've convinced them it's a necessity."[41] This vicarious interest developed into strong enthusiasm on the part of some countries. Some delegations were so impressed, they were ready to buy immediately, but the U.S. delegation cautioned them that the computer by itself wouldn't answer all their problems.[42]

When the FCC filed its Report and Order with the State Department in December 1978, it had completed a process including nine formal notices of inquiry. These notices

offered tentative proposals to be considered by the public The FCC received over 2,000 comments concerning the issues set forth in the notices of inquiry.[43] Meanwhile, the NTIA was responsible for the governmental uses of the spectrum. The Interdepartmental Radio Advisory Committee (IRAC), composed of 19 agencies, worked with NTIA to coordinate the proposals effecting military and governmental uses of the spectrum. Most proposals formulated by the American delegation called for spectrum sharing by different services.[44] This approach was the cause of many differences of opinion at WARC79.[45]

At the last general WARC in 1959, Pakistan proposed a change in the Radio Regulations that would have lessened the advantage enjoyed by industrial countries in obtaining frequency assignments.[46] The proposal was rejected by the industrial countries who comprised a controlling majority in the ITU at that time. Since then, significant changes in global politics have taken place. For the most part, however, the U.S. and other Western countries prepared for WARC79 as though these global changes had no effect on the ITU.

Comparison of WARC79 with other international conferences has been made in the literature.[47] The Law of the Sea Conference was used as an example as well as the Communication Commission of UNESCO. Glen Robinson dismissed these analogies as inappropriate and superficial.[48] According to the head of the U.S. delegation, the WARC should be viewed, "...as distinctive, even if not in all aspects unique."

The United Kingdom made preparations for WARC79 that were similar to those made by the United States, but on a smaller scale. The Home Secretary invited comments from the public in January, 1977, about the proposals that were to be submitted by the Home Office Radio Regulatory Department.[49] Responses came from 104 organizations and individuals to produce 91 formal statements.[50] The Home Office issued a report summarizing the issues and positions to be taken up at the Conference.[51] The British also engaged in bilateral discussions leading up to the WARC.[52] The geopolitical factors impinging on the policy formation process among European countries are more strident than in North America.

Some critics of Britain's preparatory efforts pointed to earlier mistakes made by the government and expressed doubts over the chances of success in Geneva. One British magazine described the problem as follows:

> "At a minor radio conference of the ITU in 1975 the British civil servants bungled their demands for medium wave allocations. Radio 3's air space was lost to Albania, and November's (1978) expensive and (let us face it) unsatisfactory shift of BBC wavelengths was the result"[53]

In the same article, the United States was praised for its "Olympian" efforts.[54] Both countries still face impending disputes between land mobile services and television services. In England, the question comes down to how two bands in the VHF spectrum will be used after the BBC abandons the old 405-line, black-and-white television channels operating in this range.[55] In America, the mobile versus TV issue is about

allocations in the UHF band.[56] In addition, the U.S. must harmonize its proposals with the Canadians who prefer television to the U.S. backed expansion of land mobile in this band.[57] The British users of land mobile radios labelled the U.S. proposal to reduce channel spacing from 12.4 KHz to 2.5 kHz as ludicrous. Manufacturers of CB radios in England are working on 5 kHz, but most feel the FCC is trying for the impossible.[58]

The U.S. proposals consisted of eleven documents corresponding to the committee structure of the Conference.[59] The package contained nearly 900 individual proposals and filled over 300 pages.[60] The proposals were made public when they were sent to the ITU in January, 1979.[61] The U.K. proposals were sent to Geneva at the same time, but they were not made public until March, 1979, prompting complaints from some who saw little opportunity for any last minute changes.[62]

The United States did receive further input, largely from the continuing work of government agencies, and eventually submitted more than 900 proposals to WARC79.[63] In addition, the delegation utilized more than 2,000 pages of position papers containing analyses of virtually every major proposal filed in advance with the ITU.[64] This information included U.S. responses and fall-back positions to the proposals.[65]

There were few U.S. proposals for changing the rules on the use of frequencies, owing to the delegations belief that

existing provisions were adequate.[66] One proposed change that was made consequential to another U.S. proposal in the allocation table was to amend Article N7/5 of the Radio Regulations. The U.S. suggested that the Allocation Table's technical description be changed from: 10 kHz to 275 GHz; to read: 10 kHz to 300 GHz.[67] WARC79 did change the title, but not the way the U.S. proposed. Instead, it now reads: 9 kHz to 275 GHz. It would be incorrect to assume, however, that the U.S. "lost" on this because the effect of the adopted change will not interfere with any immediate uses of the spectrum.

Many proposals of the U.S. and other countries were of the variety described above. It would not be possible to evaluate the thousands of proposals considered at WARC79 on a strictly win or lose basis. Or, as Ambassador Robinson put it, "To say we lose if we don't get exactly what we propose is silly."[68] Few proposals actually could be viewed as such, but their importance is qualitative, not quantitative. An example of this kind would be the U.S. proposal to expand the AM band. This would have created 700 new AM radio stations in the United States.[69] It was not accepted because a majority of nations in the Western Hemisphere opposed the U.S. plan. An increase in the upper limit of the AM band was adopted at 1705 kHz.[70] The U.S. wanted the upper limit extended to 1860 kHz, but as one member of the delegation put it, "The extension of the AM bands from 1605- to 1705-kHz was consistent with United States policy to increase the number of stations operating on medium wave."[71]

So, although the original objective was not achieved, the United States still reported the actions taken by WARC on this issue were satisfactory. A delegate from the FCC went so far as to say that more than 95% of the U.S. objectives were accomplished.[72] Another member of the U.S. delegation offered an alternative view,

> "...I am arbitrarily stating that the Third World, meaning developing countries, achieved 95% of its 'basic objectives' at WARC 79."[73]

What follows then, is not to be construed as the "final score," but rather, an exposition of the salient issues. The mercurial environment created by the mere presence of so many diverse cultural and political points of view provides an opportunity to study America's response to a new world information order. Perhaps America did prepare for WARC79 as for the Olympics, but the very reason an International Telecommunication Union exists is for cooperation, not competition.[74] It is only through a process of mutual gain that the management of the spectrum and orbital paths can be coordinated.

Work of the Delegation

While in Geneva, industry representatives on the U.S. delegation received salaries and expenses from their employers. Government employees were given a $100 per diem, plus their salary and travel costs. Under the Biden amendment, delegates from public interest groups were entitled to the per diem and transportation costs.[75]

The large U.S. delegation with its sophisticated computer and technical personnel proved very effective for participating at all levels of WARC79. Representatives sat on all committees. Nearly every working group had a member from the United States. During the first half of the Conference, the working groups concentrated on distilling thousands of proposals into a concise series of alternatives for the committees to consider. The second half of the WARC was devoted to marathon committee meetings and the formal plenary sessions.

In the early weeks it was seen that the U.S. objective of maximum flexibility was not going to be fully accepted. Most countries preferred separate allocations for fixed, mobile, and broadcasting services, as opposed to co-equal primary status.[76] The U.S. proposal for a footnote in regard to a solar power satellite also met resistance.[77] The major concern by countries objecting to the proposal was the lack of research on possible environmental impact of a satellite using microwave frequencies to beam millions of kilowatts of electricity from outer space, through the atmosphere, to special earth stations.

The regulatory discussions proceeded slowly, but without major diversions from U.S. proposals. It is interesting to note the U.S. response to the Algerian proposal for an allocation procedure favoring developing countries. The weekly summary report of the delegation stated, "There have been only behind-the-scene discussions of the Algerian proposal

that the HF fixed-service bands be split on a 70-30 basis in favor of the developing countries; the Algerians may be studying the shortcomings of their proposal as pointed out by the U.S. and others."[78]

As the WARC began, Western observers thought a proposal for an HF broadcasting conference would have little chance of winning approval.[79] But before the Conference was even half over it became an inevitability. The weekly report of the U.S. delegation remarked after the fourth week of the Conference,

> "An ad hoc group has been set up to examine all proposals related to high frequency (HF) broadcasting (excluding proposals for frequency allocations) in the context of an HF broadcasting conference.[80]

The U.S. accepted the idea of a conference with the caveat that it should be predicated upon substantial increases in broadcasting allocations.[81] The proposal for the expansion of allocations was strongly opposed, only a small increase was acceptable to developing countries that still rely on these frequencies for fixed services.[82]

The second plenary session was held during the seventh week of WARC79. The plenary did not deal with allocation matters, but did consider items covering technical regulations and administrative matters.[83] The U.S. reiterated its interest in keeping the agenda of any proposed planning conference open-ended to permit flexibility.[84] It was feared that time would run out before all matters under consideration could be resolved. The committee working groups

were sub-structured into specialized units in order to step up the pace of the Conference.

The Conference documents pertaining to HF broadcasting were saved for the HF Broadcasting conference (HFBC) instead of being considered at WARC79. The Conference adopted committee resolutions calling for an HFBC to be convened in two parts. This manuever reduced the work of the Conference, but also delayed the time when a solution could be found for the congested HF bands. Other matters were postponed by planning separate conferences or directing one of the permanent organs of the ITU to conduct further study of technical issues. One example of the latter is the issue of single sideband transmission which was referred to CCIR.[85] The U.S. continued to oppose planning conferences in principle, however, it was willing to discuss their eventual existence. Some of the difficulties recognized by the U.S. were:

> "...accommodation of long range requirements (predictions) with near-term technology;
>
> ...freezing of technology;
>
> ...inhomogeneity of FSS systems;
>
> ...unused orbit/spectrum resources;
>
> ...inflexibility of a detailed plan (does not accommodate new countries)."[86]

When U.S. proposals to expand allocaions for HF broadcasting were defeated by close votes in the Allocations Committee, the U.S. reserved the right to re-open the

discussion in plenary.[87] Other industrial countries such as West Germany and Great Britain followed suit.[88] In a Protocal Statement, the U.S. later affirmed its right to use additional HF bands for broadcasting until the specialized HFBC is concluded.[89]

A decision had been made not to hold more than five meetings simultaneously in order to allow countries with small delegations to participate as much as possible in activities of the Conference.[90] This situation produced some beneficial results, but also was responsible, in part, for many issues being postponed for future specialized meetings.

It has been stated previously that the MF Broadcasting expansion was not all that the U.S. proposed. Broadcasting will be increased from 1605 to 1625 kHz on an exclusive basis, and between 1625-1705 kHz it will be on a primary basis, with fixed and mobile services on a permitted basis and radiolocation on a secondary basis.[91] WARC79 also adopted a resolution calling for a broadcast planning conference in Region 2 in 1985.[92] The use of the newly allocated frequencies for broadcasting will not be until mid-1987 for the 1625-1665 kHz band and mid-1990 for the 1665-1705 kHz.

At the lower end of the AM band, efforts are already underway to see that the FCC acts promptly to freeze further applications for the Traveler's Information Service, which is now using the frequencies, until a decision is made whether or not to use the 525-535 kHz band for broadcasting.[93]

According to the FCC, "(t)he U.S. had proposed internationally that the broadcast allocations in the two bands used domestically for TIS (525-535 kHz and 1605-1615 kHz) be limited to public service information and restricted to a maximum transmitter power of 50 watts. The broadcasting allocations were adopted, but the WARC did not agree to the TIS restrictions."[94] Also between 525 and 535 kHz, the WARC adopted coequal sharing on a primary basis for broadcasting and aeronautical radio-navigation services. This will necessitate new decisions to satisfy non-directional beacon requirements within the radiolocations service.[95]

WARC79 allocated more spectrum in the upper HF bands (9, 11, 15, 17, and 21 MHz) for broadcasting services.[96] The net increase for HF broadcasting was 33 percent.[97] Improved reception in this crowded and acutely political segment of the spectrum will not actually be achieved until the end of the decade. This is because the HFBC must do the actual planning of HF broadcasting services. In the crucial 6 and 7 MHz broadcasting bands, U.S. proposals for expansion were not approved because most countries have a continued need of these bands for fixed services.[98] Twenty countries, including the U.S., took reservations in respect to the use of extra bands for broadcasting until the successful conclusion of the HFBC.[99] According to Robinson, the inability to obtain more frequencies for the Voice of America, Radio Free Europe, Radio Liberty and the Armed Forces Radio Service was the major disappointment at WARC79

for the United States.[100] The increases for HF broadcasting are dependent on the reaccommodation of the fixed services that will be displaced by the new allocations.[101]

The U.S. had no proposals relating to allocations for VHF broadcasting and no changes in this area were made by WARC79 that will adversely affect U.S. interests.

Within the UHF band the U.S. achieved limited success in connection with its proposal to allow sharing by land mobile and fixed services. The "chief nemesis" of the U.S. plan was Canada.[102] Sharing on a primary and coequal basis was granted between 806 and 890 MHz, but the U.S. wanted the same sharing rights extended to the bands between 470 and 806 MHz and above 890 MHz. The Canadians were joined by other countries in Region 2 in insisting that coordination of services be conducted with the assistance of the International Frequency Registration Board.[103] This procedure was unacceptable to the United States. The response was to take a footnote allocation protecting national land mobile services and providing for its future growth. The delegation's final summary report stated that, "...the U.S. reserved its right to conduct coordination without these burdensome requirements."[104]

The U.S. wanted the Table of Allocations to sustain coequal sharing in order to "...give it leverage in seeking Canada's agreement on UHF-mobile sharing near the border."[105] The present situation is that the Canadians want to protect their UHF television service and do not want new mobile

services causing interference.[106] The official response by the U.S. has been to simply go ahead and operate if Canada continues to refuse to discuss the matter of coequal sharing.[107]

The U.S. had three primary objectives for the amateur service. These were: 1) to maintain existing HF bands with small increases to bridge gaps between present allocations; 2) to maintain existing VHF, UHF, and Microwave allocations, most of which are shared with the radiolocation service, and adding new bands in newly allocated spectrum above 40 GHz; 3) to provide access for amateur satellite service to several bands between 1 and 10 GHz, where conditions are most favorable for space communication.[108]

These objectives were fully obtained at WARC79. However, the fixed and mobile services were permitted on a shared basis on some of the bands which may create problems for amateur operations because of the difficulty of protecting such services.[109] Private individuals may now use amateur and amateur satellite services in the bands between 40 and 275 GHz.

At one point during the WARC, the amateur service in the 7.1 to 7.3 MHz band was almost eliminated in favor of a worldwide allocation of this band for the broadcasting service.[110] It required some "frantic behind-the-scenes deliberations" to restore the band to amateurs in the Western hemisphere, with a footnote asserting that no constraints would be imposed on broadcasting services using the same

band in other parts of the globe.[111] A member of the U.S. delegation who also works as Director of Engineering for RFE/RL described some of the possible pitfalls of the "constraints" footnote. The potential exists for some European, African or Asian broadcaster to "...take liberties in the amateur 40-meter band. For example, a European broadcaster wishing to use a frequency in that band to broadcast to the Americans, could schedule a transmission during prime time in the Americas in a westward direction. In registering the frequency, the broadcaster could show its target area as Australia, and transmit in English."[112] Could this be reverse cultural imperialism? Because of the "constraints" footnote, amateurs would have little recourse.

One of the primary objectives of the U.S. delegation at WARC79 was to ensure sufficient allocations for the new satellite navigation system called NAVSTAR, or the Global Positioning System (GPS). The system has six satellites in operation with plans for a total of 24 satellites in continuous polar orbit. The Department of State indicates that the system was initially designed for military use but also notes it can be adapted for civilian use, "...by not supplying some of the sophisticated technology."[113] The GPS is the most accurate radionavigation system known.

In the aeronautical service, U.S. objectives were met. All existing allocations were retained and a slight amount of additional spectrum space was provided. Within this service the microwave landing system (MLS) received priority

status in the 5000-5250 MHz band. This decision is in compliance with a recent recommendation of the International Civil Aviation Organization (ICAO) to provide frequencies for this next generation of approach and landing aids.[114]

The maritime mobile service encountered problems at WARC79 in not obtaining all the increases sought by the United States. No final solution yet exists, because this service will be subject to planning at a future mobile conference.[115] Although the increases that were granted actually were greater than what the U.S. had proposed, the U.S. was unhappy with the minor increases below 10 MHz. Consequently, a Protocol Statement was inserted by the U.S. reserving its right to meet its requirements under the primary mobile allocations which were adopted.[116]

Serious difficulties may be just over the horizon for the government's radiolocation services (radar) either because of the reduced status now given this service or as a result of interference caused by incompatible services which will share the band. The U.S. took a reservation stating that it would operate in the designated radiolocation bands without guaranteeing protection from interference to the other services using the band.[117] A compromise between radiolocation and FSS in the 3400-3600 MHz band will facilitate the needs of INTELSAT with a footnote The footnote contains a formal declaration by the U.S. and others of their intention to accommodate the FSS wherever feasible.[118]

Although the U.S. delegation report stated that a substantial portion of its proposals were successful at WARC79, this does not appear to be the case with proposals dealing with satellite communications. This is because most of the satellite issues remain unresolved.[119] The WARC recommended that conferences be convened for planning the use of various space services including the critical geostationary orbital slots.[120]

There exists a sharp difference of opinion between industrialized and lesser developed countries over the approach to be taken by the planning conference. The developing nations want orbital slots and communication satellite frequencies set aside to guarantee access to these resources when they are ready to launch their own systems. These countries feel that unless there is some procedure for reserving segments of the orbital path and the spectrum, they will be "frozen out" permanently.[121]

The developing countries use the principle of equal rights in asserting their positions and can be expected to carry this into the planning conferences scheduled for the 1980's. Essentially, the U.S. supported the concept of equal access by all countries. However, the definition of equal rights is not explicit, although the term appears in the Final Acts. The U.S. favors its own interpretation and terminology in the phrase "equal access." It will be incumbent upon the satellite planning conferences to define

the concept in a way that is acceptable to all countries--or at least a majority of those in attendance.

An important aspect of FSS is its ability to function as feeder links for the broadcasting satellite service. One factor that made this topic extremely controversial was to put the uplink frequencies in the 14.5 - 15.356 GHz Band. This was further complicated by proposals to share the allocation on a primary basis with terrestrial fixed and mobile services. This is one of the few instances where the U.S. predisposition toward sharing proposals was not put forth. The main reason for the U.S. objection in this case was due to the global use of the mobile services. A compromise was offered by the U.S., which gives countries the option to use several bands for uplinks within the range between 14.5 and 15.35 GHz.[122] The use of this principle, i.e. allowing countries and not services to determine how a band will be used is seen by some as a possible precedent that could be used by developing countries for reserving orbital slots for their future use.[123]

Since 1971, both fixed satellite and broadcasting satellite services have shared the 11.7 -12.2 GHz band. Since the 1977 satellite conference this band has been subject to the constraints of arc segmentation in the geostationary orbital path. The decision by WARC79 was to separate the services, consistent with U.S. proposals, and eliminate the need for arc segmentation. This development

will increase the number of orbital slots and permit individual countries to place their satellites in orbital positions that are most convenient to their specific needs.[124]

The geostationary orbit is known as the "most valuable parking-place in space" because there are already over one hundred communication satellites utilizing this unique natural resource.[125] Geostationary satellites orbit the Earth in the plane of the equator at 35,800 km and with the same period as the Earth's rotation.[126]

The frequency band 12-14 GHz is ideal for geostationary satellites transmitting data communications. The data communications bandwidth was doubled, but the demand from developing countries for reserving orbital spots is increasing.[127] The United States domestic satellite networks (SBS, Western Union and AT&T) are all planning launches to provide numerous services. "These include low- and high-speed data communications, high-speed facsimile transmission and teleconferencing."[128] The international rules for using the geostationary orbit are primarily the Outer Space Treaty of 1967 and the Malaga-Torremolinos Convention of 1973.

The need for regulation in this area is based on the fact that it is a limited natural resource with many potential applications. For example, the most propitious orbital slot for locating a solar energy satellite is on the geostationary path.[129] Monitoring weather patterns and crops are two more examples, however, the first and foremost use

is for communications satellites. The frequencies used by these satellites and the assignment of orbital positions is coordinated by the ITU. The need for internationl cooperation in managing these resources put special emphasis on WARC79 to extend planning methods to the radiocommunication services using the geostationary orbit.[130]

The U.S. proposals for using the geostationary orbit opposed service-specific orbit assignments. The advantages to be gained from economies of scale cannot be realized if space platforms offering various service capabilities are prohibited.[131] The procedures adopted by WARC79 for guaranteeing access to the geostationary satellite orbit were summarized by the Chairman of the International Frequency Registration Board (IFRB) at a recent symposium:

> "...'advance publication' of information on all planned new satellite systems, in order that all countries may be informed and those which could be affected may make themselves known;...coordination between countries with existing or planned systems liable to interfere with each other; this coordination becomes mandatory when the mutual interference exceeds a predetermined limit and must be conducted in accordance with a specific procedure in which the IFRB may be called upon to provide assistance."[132]

In addition, WARC79 decided to allow fixed (point-to-point) and broadcast (multi-point) satellite services to be assigned individual frequencies. This will eliminate the need for stringent arc segmentation and permit the location of both fixed and broadcast service satellites across the entire visible arc of the geostationary orbit.[133]

A resolution was adopted by WARC79 recognizing, "that in the case of the geostationary satellite orbit for space services, attention should be given to the relevant technical aspects concerning the special geographical situation of particular countries."[134] This relates to the claim by some equatorial nations that they have sovereignty rights to the portion of the geostationary orbit over their country. It has been pointed out by developed countries that global aviation and space exploration has been feasible only because vertical claims to air space, historically, have been disregarded.[135]

Radio astronomy requirements seem to have been shunted aside by competition from both national and international services. Radio astronomy began in the United States in 1932 with the discovery of background radio noise coming from the central regions of the Milky Way galaxy.[136] This science deals with the location and measurement of extremely faint signals emanating from cosmic objects.[137] The search for extraterrestrial intelligency has been dubbed SETI. It is an entirely passive service, which means that we are not yet at the stage where anyone is recommending the sending of a signal giving notice of our own presence in the universe. Such a signal would, ipso facto, describe our location. Developments in this field have lead to refinements in antennae and low-noise receiver technology. Some innovations, such as the Very Long Baseline Interferometry

technique, are being applied to geophysics and may eventually help in the prediction of earthquakes.[138]

NASA commissioned a blue-ribbon panel in 1977 to study the requirements of the search for extraterrestrial intelligence, also known as SETI. A contiguous band of frequencies between 1400 and 1727 MHz was recommended by the study.[139] This band is known as the "water hole" because it conforms to the spectral lines of the hydrogen atom (1430 MHz).[140] The SETI report also reasoned that 1727 MHz would be the upper limit for anyone who wanted to send interstellar signals because of the increased energy requirements of higher frequencies. Below the water hole region, static emitted by our galaxy and others would interfere with the signal. The same physical limitations confronting Earth astronomers would also exist for extraterrestrials. The SETI report quoted an earlier study in describing the unique characteristics of this band:

> "Standing like Om and Um on either side of a gate, these two emissions of the disassociation products of water beckon all water-based life to search for its kind at the age-old meeting place of all species: the water hole."[141]

Unfortunately, the frequencies between 1400 and 1727 MHz are also used for meteorology, land mobile, ship-to-shore navigation and satellite services. Low-powered earth-based stations can share the frequencies with SETI, however, satellite transmitters such as those used by NAVSTAR can interfere with radio astronomy.[142] Satellites have already been responsible for misinterpretations. Secret military

satellites of the United States produced one false alarm when the Russians received the signals. The Russians contacted the U.S. embassy and were told the signals could not have been from American space activities. It was later discovered through further analysis that the signals occurred on a regular basis around the clock, whereas, signals coming from outer space would be received for 12-hour intervals, due to the earth's rotation relative to the source.[143]

With so many existing services already using the frequencies that are most suitable for radio astronomy, the FCC claims that it is a "domino problem." This means, if one service is told to move, it will cause someone else to be displaced and so on.[144] Supporters of the SETI program counter with the argument that the interfering services could just as easily use other frequencies whereas the radio astronomers are bound by the laws of nature to operate their observatories in those frequencies containing the basic spectral lines of life-supporting molecules. Therefore, when the delegation reported that all U.S. objectives for radio astronomy were fully achieved, this did not mean that radio astronomers received what they really wanted. The conference did approve a new article in the Radio Regulations providing guidelines for protecting radio astronomy from interference. This new regulation was accomplished largely through the initiative of delegates from the U.S., Netherlands, India, Nigeria, and West Germany.[145]

The U.S. delegation reported that all of its proposals for space research activities were satisfactorily considered and approved by WARC79.[146] The delegation's report stated, "(w)hile we did not achieve primary status in every band we believe the accommodations at a secondary level will satisfy our need."[147] The space research service supports a wide variety of scientific and technological activities. These include (1) upper atmosphere measurements of pollution in the ozone layer; (2) studies of the ionosphere and its affects on radiocommunication; (3) measurements of solar activity and its affect on the earth's weather; (4) astronomical observations of stars, galaxies and other interstellar objects not visible through the earth's atmosphere; (5) interplanetary exploration; and, (6) earth-based and orbiting observation platforms for radio-astronomy.[148] No explanation is given why radio astronomy service is listed separately and as part of the space research service. The U.S. proposals stated that, "(o)bservations from the Earth's surface will be generally confined between 1 and 25 GHz with particular attention given to the band 1400 to 1727 MHz."[149] If scientists can convince national administrations (including the U.S. vis a vis the FCC) of a universal interest in learning of the existence of extraterrestrial intelligence, then the search for other worlds will proceed. If, on the other hand, competing, albeit less eloquent, services continue their rapid expansion, they will nullify earth-based SETI experiments.

Many countries, including India, China, USSR and Iraq, made proposals for a future WARC to plan space services. Some were very modest, such as the USSR proposal for planning only BSS feeder links and others, such as Iraq, called for complete planning in all space services and all frequency bands used for space services.[150] All of the proposals had one thing in common, which was the need to replace the old first-come, first-served methods with newer principles of equal rights for all countries in gaining access to limited resources. These proposals agreed that the geostationary orbit was rapidly filling up. On the other hand, the U.S. and other industrialized countries argued that planning was not suitable for space services. With new technology, they contend it is possible to place nearly 2000 satellites in geostationary orbits.[151] Furthermore, the advent of the NASA Space Shuttle, presents the possibility of constructing enormous space platforms offering a variety of services.[152]

Although the ITU is 115 years old, it has only been dealing with the allocation of orbital slots for about 20 years and the management of the electromagnetic spectrum for about 50 years. Therefore, it is necessary to conduct planning conferences to ensure the principles upon which the ITU fulfills its purpose are consonant with modern legal norms, technical developments and political realities. A number of proposals circulated during the Conference contained ambitious formats and agenda, however, the compromise

resolution was more reserved. WARC79 stipulated that a satellite planning conference shall decide which space services and frequency bands should be planned and then establish guidelines for such planning and regulatory procedures.[153] The U.S. accepted the compromise, reversing its long-standing opposition to any kind of planning for space services. Some observers have pointed out that this may be because of the satellite conference's, "...recommendations not taking effect before 1990 at the earliest; by which time brand-new technologies may enable the richer countries like the USA to move to even higher frequencies that are not affected by the WARC's proposal."[154]

The satellites launched before 1984 most likely will not be subject to the provisions of the 1983 planning conference and some of the American companies are waiting in the wings to put up whole networks before that deadline.[155]

The technical description of interference was changed by WARC79. The new definition specifies the effect rather than defining the magnitude of what constitutes a potentially interfering signal.[156] In a related development, the U.S. and Israel issued separate statements at the final protocol concerning jamming of their broadcasts. The U.S. referred to this practice as "willful-harmful interference."[157] Although the Soviets ceased jamming the Voice of America broadcasts after years of official protests, they continue to jam Radio Liberty and Radio Free Europe programs. One encouraging sign was seen when the USSR elected

not to file a counter-reservation to the U.S. and Israeli statements.[158] One possible compromise is to provide the Soviet block with the right of reply to broadcasts they find objectionable. The Israeli's point out that jamming effectively wastes more than 50% of the HF spectrum available for broadcasting. Jamming not only affects the target stations, but also adjacent frequencies. Israel officially notified delegates to WARC79 that it would raise the issue again at the HF planning conference.[159]

Summary of the Chapter

The ITU cannot compel any sovereign nation to comply with the Radio Regulations. It must rely on a common desire to avoid chaos on the airwaves by promoting cooperation among diverse governments. Within the context of this international legislative process, each country has one vote. The extent to which America is successful in achieving its objectives depends on its ability to persuade a majority of delegations at the Conference to support American proposals. The U.S. government, inter alia, participates in a normative process that is intended to equitably distribute portions of a global resource based on technical, economic, political and cultural factors. The U.S. government prepared for WARC79 as if the technical and economic factors were the only important items to be considered. Ambassador Robinson said, "Nations will start from their own legitimate needs, not from their ideology or because they are Africans. They'll listen to their engineers as to what

their needs are."[160] In fact, the delegation treated political and cultural issues as somehow being outside the scope of the ITU. This attitude "...contributed to the lacklustre performance at WARC" by the U.S.[161]

Some U.S. delegates suggested, as in previous specialized WARCs, that their country should withdraw membership from the ITU. This argument is based on the contention that the U.S. need only conclude bilateral agreements with the countries near its borders. Such isolationist views were not shared by most U.S. delegates, however, the feeling of frustration that prompted the call for a withdrawal was common. The delegation benefited greatly from the support it received from its technical staff, but in other ways, it suffered due to a neglect of political and cultural aspects during the negotiations. The situation was not helped by the re-assignment, as the WARC opened, of the Senior Political Officer assigned to the U.S. delegation.[162] One mistake that nearly blossomed into a full-fledged blunder was the lack of any Spanish-speaking delegates. Besides being one of the official languages of the ITU, Spanish is the dominant language spoken in Region 2. The U.S. encountered problems in a subgroup, chaired by Cuba. This body considered the expansion of the AM band in the Western Hemisphere. Translators were not initially available at the subgroup level. The U.S. was unable to meet informally with other members of the working group

unless English was spoken.[163] In fact, there were only four or five members of the delegation who were fluent in any foreign language.[164]

The arrogance of one U.S. delegate was portrayed at the first official meeting of the delegation in Washinton, D.C., who said, "...these banana boat countries don't know how good they are going to have it at WARC."[165] Although the U.S. did conduct many bilateral meetings with other countries, these efforts were mainly to explain U.S. proposals, not to gain input or make changes. Or, as one delegate put it, "(h)aving already constructed a house of proposals, we were told at the bilaterals (a) 'you've built in a swamp' and (b) 'we own your land!'"[166]

One Biden Amendment member put it succinctly when she said,

> "During the pre-conference planning process, the heads of the various affected agencies (and, indeed, the head of the delegation) appeared to have little understanding of evolving changes in U.S. policy positions, or more importantly, of the real-world implications of the positions. This clearly worked to the long term disadvantage of the United States."[167]

The U.S. government should establish a single unit within the Department of State for coordinating and setting international telecommunication policy. Presently, policy making occurs at the middle-levels of government. The U.S. does not have a continuing international telecommunications policy that can be viewed on a long-term basis. It isn't only the Executive Branch that suffers from this exigency.

One U.S. Senator commented during a hearing in the early 1970's, "This International Telecommunications Union, just what kind of labor organization is this?"[168] It is crucial for the U.S. to make the transition from bilateral to multilateral diplomacy. This change must occur in three areas: governmental organization, perspective on international organizational activities, and attitude toward other peoples and their values.[169] When this has been accomplished then, too, the fears concerning planning conferences will fade, giving way to a new international order of communication.

AFTERWORD

Since the close of WARC79, diplomats and journalists alike have expressed relief that a major North/South confrontation was avoided. But the real test of the ITU's ability to resolve difficult questions will have to wait for the planning conferences scheduled for the present decade. Even though WARC79 appeared relatively tranquil, under the surface, major problems were evident in the number of footnotes and reservations in the Final Acts; the postponement of major problems until special conferences can be held; and, numerous resolutions and recommendations calling for increased attention by the ITU to the needs of developing countries.

It is becoming apparent that the present method of placing all global issues in the sphere of East/West relations or simply ignoring them will no longer suffice.[1] The centers of power are shifting to locations where poverty, religious antagonism and developmental time lags are commonplace.[2] It is both appropriate and necessary that organizations such as the ITU give greater attention to these factors than they have in the past.

A post-industrial model of the world has been proposed based on the effects of technological breakthroughs in telecommunication, cybernetics, new energy sources and space

exploration.[3] These developments have led to an awareness of the growing interdependence within the world community. Consequently, the argument for expanding the functions of international law directed towards cooperation is gaining acceptance among leaders of many countries.[4] For industrialized countries, cooperation can facilitate efficient use of the electromagnetic spectrum and the geostationary orbital path. For Third World countries, cooperation can provide access to technology for development purposes and preservation of their fragile cultures.[5]

The ITU is presently undergoing changes to meet the requirements of all its members. The chairman of the IFRB has pointed out the need to ". . . define new relationships between the developed and developing countries, especially with a view to the transfer of technology through the ITU consultative committees and to seeking new administrative and financial means of improving cooperation between countries."[6] Although the IFRB has the ability to provide technical assistance for training in spectrum management and controlling harmful interference, it does not have the resources to assist countries with the financial burden attached to spectrum reallocation. Numerous spectrum economies are technically feasible, however, the cost of upgrading equipment is too great for many countries. One solution that has been suggested is to establish a trust fund for spectrum reallocation.[7]

Another way to ease tensions between ITU members would

be to hold future WARC's more often.[8] In light of the enormous cost of meetings such as WARC79 and the length of time that key personnel are absent from their regular duties, it appears unlikely that more frequent conferences will solve the problem.

One option that the ITU might explore is the growing field of teleconferencing. WARC79 dealt with issues arising from the use of some of the most sophisticated technology produced in this century, and yet, the conference itself was conducted in much the same manner as the first ITU meeting in 1865.

Aside from the obvious advantage of eliminating the cost of supporting a delegation in one of the most expensive cities in the world, many ancillary benefits could accrue from teleconferencing. Developing countries that could only afford to send a few people to Geneva could allow more of their telecommunication personnel to participate. Full-motion, color videoconferencing sessions could be recorded for viewing by individuals who are unable to attend the meeting.

Finally, the new technology of computer conferencing seems ideally suited to the complicated negotiations associated with telecommunication planning and use. With this unique form of communication, participants are not required to share the same place or time. In addition, millions of pages of draft proposals and other conference documents would only have to exist on reusable magnetic tape, saving

the ITU the heavy cost of hard copies. The flexibility of use along with the access to powerful information processing capabilities would greatly increase the likelihood of successful negotiations.

In addition to the use of advanced telecommunication techniques, the ITU must encourage member countries to offer solutions based on greater sensitivity to the needs of the world community as a whole. This implies a commitment to sustain the interdependence of nations and to uphold the human rights of all the inhabitants of this planet.

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...a broader and somewhat more generous view of the adjustments that can be made without fundamentally distrurbing the existing hegemony". Ideas circulated by members of this school have included: "simple basic" and other relatively rudimentary needs of the poorest and "equitable social order". Some members of this group might be categorized as self-interested philanthropists. (3) A semi-official Third World perspective - "a form of radical perspective shaped less by abstract analytical categories then (sic) by existential political struggle". The group is somewhat ambivalent, ideologically, including persons with Marxist, as well as liberal economics backgrounds. Among the views espoused are: the self-interested wielding of power by the presently disadvantaged majority; self-reliance (where possible in collective modes) accompanied, where necessary, by radically reduced and redefined goals and desires; pragmatic and eclectic sociopolitical and economic policies and philosophies and creative restructuring. (4) "The neo-mercantilist perspective, which sees economic policy as an instrument of political goals...", but which, nevertheless, concedes the need for change. In this framework the state is viewed as the determining economic factor; but the points of departure of the proponents vary, including: neo-moralism, skeptism about radical proposals for change, nationalistic realism, historical realism and nostalgia over past glories, and exploitation by developing states of the weaknesses of the external forces upon which they are dependent. (5) The historical materialist perspective, focusing, depending on the advocates, on either (a) the importance of revamping the process and relations of production, e.g. reversing the alleged center-periphery syndrome of international capital, by re-ordering the international division of labor, by reorganizing or destroying the current international economic class structure (e.g. by reducing the scope and function of the multinational corporation) or (b) the need to reconsider and, possibly, restructure the global and sectoral "sociopolitical basis for the policy route towards overcoming development".

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