

## E I G H T

# The Doldrums of Europe's TV Landscape: Coronet as Catalyst

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MARIO HIRSCH

The careful observer of developments in the fields of television and communication in Europe will be struck these days by what seems to be an amazing contradiction. On the one hand, one senses everywhere in Europe the awareness that something has to be done to react to the threat associated with what is widely seen as an hegemonial plot by U.S. interests in the field to take control of European developments. On the other hand, Europe is quite definitely caught up in political and industrial policy contradictions that prevent the continent as a whole from making use of its combined resources and creativity.

The Coronet project, initiated by the Luxembourg government under Prime Minister Pierre Werner in 1983, with the help of an American midwife, Dr. Clay T. Whitehead, highlighted in a unique way these contradictions. The fact that one of the smallest European countries had come up with what was unanimously acknowledged as a bright idea was not especially helpful since it was the source of quite some resentment. After all, you cannot expect, acting from a Luxembourg base, to get away un-

harmful, having proved to the larger European countries that they were heading in the wrong direction. Confronted with the Coronet concept, most of the other European satellite projects appeared as cumbersome, lame-duck undertakings where neither the technology nor the economics were quite what was required to meet the U.S. challenge and the needs of the market.

The Coronet project has run into considerable difficulties on the political and the regulatory front. Its promoters and the Luxembourg government underestimated the power of vested interests in the field of TV and communications. At the same time, Coronet has received support from precisely those sectors that are essential for the success of the project, namely, programmers and would-be programmers, electronics companies, advertising agencies, and a few of Europe's seedling venture capitalists. It remains to be seen how this bold project to expand television offerings in Western Europe will fare in the future.

### THE EUROPEAN BROADCASTING PICTURE

Direct broadcasting by satellite has captured the imagination of European governments, satellite manufacturers, broadcasters, cable television operators, and film makers. The expectation is of course that millions of homes will receive extra television channels beamed from a satellite to a small dish aerial.

Most of the European projects, all of them government sponsored and tepidly supported by industry, have become aware of the fact that the risks are enormous and the start-up costs huge. These high costs, together with changes in technology, have called into question the suitability of the very high powered satellites envisaged originally for DBS. In Europe, the power levels for DBS were established at the WARC 1977 in Geneva. But since then there have been major advances in the technology, not so much in the satellites themselves but more so in increasingly sensitive and sophisticated reception equipment. The result is that it is no longer clear that Europe needs the high power satellites now on the drawing board and expected to become operational two years from now.

There are many indicators that Europe is having second thoughts about the DBS technology, this quite independently from the Coronet project. It is however fair to say that the emergence of this project has focused existing suspicions. It has prompted the conclusion that all these undertakings amount to what Brenda Maddox has termed a "desperate attempt in pursuit of the unviable" (in reference to the British DBS Unisat).<sup>1</sup> In France, the same point has been made quite conclusively in the famous Théry report early this year. This was an official investigation commissioned by the French Prime Minister into the TDF-1 DBS project which concluded that high power DBS was "passé." The European controversy is also fueled by the apparent contradiction between the ambitious cabling policy pursued by most of the major European countries and satellite broadcasting. It would seem that the cabling policy will make sense only if satellites are used to feed the programs they carry into the cable networks. However in order to achieve this, medium-powered satellites are all you need. This might explain the amazing success of the concept behind the European Communications Satellites (ECS) operated by Eutelsat. A much better bet would be, of course, the use of a medium-powered satellite of a kind still classifiable as DBS by the International Telecommunication Union rules. This is precisely the idea behind the Coronet concept. Such a satellite would allow both for individual reception and for the feeding of programs into cable networks as well as collective antenna systems.

It is a pity that Europe is not prepared, from a technological point of view, to give the right answer to these impending questions. It just so happens that Europe's aerospace industry has not yet caught up with the trend toward medium-powered satellites which seem to serve best its present needs. For that reason Coronet is obliged to rely on American hardware. But on the other hand, the lingering threat of Coronet has persuaded both the French and the German governments that it would be prudent to see the handwriting on the wall and they are thus accelerating the development of so-called "second-generation" satellites which will be most likely modeled on the Coronet technology. When one's detractors begin directly to imitate, it is a telling symbol of how Coronet has led the way.

Even more irritating to European governments, keen on keeping a tight control on broadcasting as they are, were the implications of technological advances for the regulatory environment. As a rule most European governments are not yet prepared to acknowledge that improvements in reception technology blur regulatory distinctions between high-powered DBS and medium-powered satellites, which operate under different rules but are still capable of delivering programs that can be picked up by individual homes. It is true that the medium-powered satellites operating in the Ku Band have not been designed for transmission to individuals. Also, they make use of frequencies not initially intended for direct broadcast to individuals, being considered point-to-point or Fixed Service facilities rather than facilities for general Broadcasting Service. But the improved reception technology together with the pressures of the marketplace have already made anachronistic the existing regulatory structure. Some of the problems Coronet has run into with European PTTs and Eutelsat are related to this lag, common in many technologically sophisticated industries, between actual practice and the regulatory environment.

Coronet, which prides itself on being the first private satellite television distribution company in Europe, has been seen, of course, as a major threat to state monopoly broadcasting prevalent in Europe. David Webster has proposed an excellent definition of the European way of doing things in broadcasting: "Europe has put its faith in a system which relied on the reallocation of resources in the name of the public good, by financing the bread from the revenues of a limited number of circuses."<sup>2</sup>

## PUBLIC VERSUS PRIVATE BROADCASTING

There is an increasing awareness in Europe that the internationalization of broadcasting will not bypass the Continent. This means of course that existing structures will have to change. This applies especially to the state monopoly over broadcasting that has existed in most European countries. Satellite broadcasting techniques render national boundaries meaningless.

The Commission of the European Communities has urged EC governments in the recent "Green Paper on the Establishment of a Common Market in Broadcasting" to move toward a "common market for broadcasting" based on harmonized legislation capable of exploiting the looming expansion of radio and television transmission by satellite and cable.<sup>3</sup> The commission is of the opinion that the creation of a common market for broadcasting and cross-frontier distribution of broadcasting services will help push through the new information and communication techniques needed in terms of the economy as a whole. The possibility of a community-wide approach, including licensing to transmit via cable, the regulation of advertising, and the protection of minors has been widely hailed by most parties active in the field. The EC Green Paper recommends, for example, that advertising be limited to 20 percent of total cross-frontier broadcasting time. This is higher than several countries presently allow, but it is a measure of the advertising demand which the commission has identified.

The significance and prospects of this policy have been outlined explicitly in the document:

Attractive broadcasting in the Community will pave the way for even more significant innovations in information and communication techniques. The cross-frontier distribution of broadcasting will provide listeners and viewers in the Community with new channels and programmes, which in turn are a necessary precondition for stimulating private demand to make use of the new transmission techniques. Investment of the order of over 100,000 million ECU in the Community as a whole will be required to establish viable information and communication networks. The main initial beneficiaries will be the whole telecommunications industry. The establishment of a viable infrastructure will create a need for new items of consumer electronics equipment, and private and commercial users of the information and communication infrastructures will require new and additional items of consumer electronics and office equipment. The demand for programmes will increase sharply, opening up new marketing possibilities for the originators of creative works and new employment perspectives for performing artists. Lastly, the commercial utilization of the new

communication networks will enable firms in the Community to increase their efficiency and cut their costs, as is essential if they are to maintain and improve their international competitiveness.

Despite this eloquent plea for an "open skies" policy in broadcasting, it must be added that for the time being this amounts largely to wishful thinking on behalf of the commission. True enough, some private groups like Coronet and Thorn-EMI (which directly or indirectly controls four out of twelve pay TV-channels in Europe), for instance, have decided to move ahead, even though the framework for their ambitious plans is still largely hostile. Market research undertaken by Coronet has identified a potentially promising marketplace that will develop from a total of 33 million European homes connected to cable today to 54 million in 1990 and approximately 70 million in 1995. But it is far from clear today whether things will proceed in this optimistic fashion or how open viewers (and their governments) will be to cross-border programming.

Major research done by the Economist Intelligence Unit and by CIT Research recently has raised further questions regarding the pan-European market and its growth prospects, pointing, among other things, to the uncertainty and unease with which the European cable industries currently view their development.<sup>4</sup> The suggestion here is that the entire European cable development program is in danger of being undermined by well-intentioned, but unrealistic governments, which are imposing technical, commercial, and financial burdens that the fledgling cable industry cannot support. This remark applies equally well to satellite policies. As it is, ends and means are proving everywhere hard to reconcile, as one notices a striking contradiction between the enthusiasm for high technology at almost any price and a lack of realism about subscription services, programming, and the investment picture. Unless the discrepancies between European policy and practice can be corrected, the impetus for these new developments may be lost. Although there is little pay TV yet in Europe, it is being looked on favorably by most countries eager to encourage cabling. At the same time commercial, trans-border satellite distribution is developing; and despite the fact that

existing broadcasting is still reasonably cheap to viewers, the new techniques are challenging quite obviously the assumptions of European broadcasting and telecommunications policy and eroding the structure on which the existing industries and institutions have been built. The main factor in this erosion comes, of course, from the need to fund broadband cable development. Add to that the commercial pressure from program distribution and cable operators, the need for broadcasters to generate extra revenues, the redundancy of national regulations in the face of cross-national satellite distribution, the technical momentum in communications development, and one gets a good picture of the knots Europe must untie.

Most European governments are desperately trying to keep things under control. Faced with losing control over the television signals entering their countries, and thereby over the whole structure of their broadcasting (satellite signals are almost impossible to jam), most European governments have tried to set up broadcasting Maginot lines. Technical standards incompatible with those of other countries were and still are a convenient means to achieve this. As of today television standards remain incompatible in Europe and attempts to reach a common standard for DBS transmission have proved to be futile so far. The reason for this reluctance to embark on common standards can be seen in the fact that the present situation of incompatible standards suits some governments because it enables them to control the signals to be received in their countries.

Cable turns out to be an excellent national filter as well, insofar as it enables national governments to rig the market to inhibit the spread of satellite reception directly by individuals. As a matter of fact, it looks as if direct reception will be discouraged by technological standards and by an economic structure that makes cable cheaper for the consumer. Another reason why preference is given to reception via cable has to do with the fact that cable systems, being a public franchise, can be regulated *ad libitum* by government agencies.

European governments are slowly but inevitably recognizing that this leaves them with a troublesome problem. The recognition is dawning that without new, attractive, and suitable

programming the ambitious largely government-financed cabling policies will most likely turn out to be a flop. In Europe programming, not channel capacity, is indeed the new scarce resource and most observers readily admit that the realities of commercial programming have yet to be effectively addressed. CIT research managing director Patrick Whitten has summed up the situation in a telling simile: "I believe that there has been too much concern about the quality of the road surface and not enough attention to where it is leading or the traffic it is carrying. We would like to see a thriving European cable industry with all its opportunities for new programmes and services and we believe it will develop. But our research suggests that it is being rather sidetracked."<sup>5</sup>

A good example of this sidetracking can be seen in the rather futile debate on American cultural hegemony. Coronet became a prominent victim of this lament, because it was widely but wrongly seen to pave the avenue for a forceful entry of American media companies into the European market. This is, of course, a caricature of Coronet's role. Coronet views itself as an instrument in the service of Europe's programming industry, which confined to the few public networks existing in most European countries has not had the outlets to grow. By offering up to sixteen transponders, Coronet will for the first time in Europe create unique opportunities for the whole production field. It is true, of course, that few European countries have the production base to feed multichanneled and transborder television for the simple reason that the production sector has been trimmed down to the limited needs of public broadcasting which more often than not is lacking the budgetary means to stimulate a genuine and lively home-grown production.

Because of this obvious deficit in programming, quite a few people are afraid that the only way to feed the insatiable and indiscriminating appetite for programs cable systems will be faced with, if they want to become attractive and viable, will be to rely even more heavily than now on U.S. programming resources and products. It is, of course, true that the only source of popular entertainment at the right quantities and at the right price is the United States. In 1983 the Commission of the European Communities published an interim report on "Realities and Ten-

dencies in European Television”<sup>6</sup> which contained a shattering and embarrassing revelation about the foreseeable deficits in the programming industry in the advent of channel multiplication and a more liberal framework. On the assumption that on the average around thirty channels would be available in most European countries in the near future, the commission estimates the programming needs at 1.5 million hours per year. If you discard rediffusions and direct broadcasting of current events you are still left with some 250,000 hours of original programs. On the other hand, if you put together all the existing production resources in the television and movie business in the European Community as they exist today you barely manage to come up with programming not in excess of 2,500 hours per year. The gap is enormous and disquieting. In the “Green Book” the commission comes to a slightly more positive assessment of the situation that will prevail after 1990. Among other things it rejects the argument that the coexistence of two types of television organization—one financed from license fees and the other financed on a commercial basis—will inevitably lead to a drop in the high quality of programs.

### THE CORONET CONCEPT

Jonathan Miller has argued persuasively that Europe can learn quite a bit from American experience:

Europeans, who are still grappling to find an appropriate satellite strategy, would be wise to recognize the crucial role already played by satellites in energizing the American cable industry . . . By creating the possibility for economical distribution of new programmes to cable systems, and in particular, the distribution of pay-television services, the satellite carriers provided cable operators with an opportunity to double their revenue from existing subscribers, and an economic incentive to build new systems. It is no accident that the growth of cable in the past ten years tracks exactly the growth of the domestic satellite industry, and the new availability of satellite earth stations priced at a level that even the smallest cable operators could afford.<sup>7</sup>

Dr. Clay T. Whitehead, promotor, has also drawn the attention of Europeans to another development in the United States, a development he was himself instrumental in helping to bring about as one of the artisans of the Galaxy system developed by Hughes Communications. The new service emerging in the States and known as Satellite Master Antenna Television (SMATV) could turn out to be very promising in Europe if one keeps in mind the troubles the gigantic cabling policies have run into. SMATV is a hybrid between direct broadcasting and cable. The combination of medium-powered satellites and inexpensive earth stations opens the opportunity for small communities (they could be as small as a single apartment building) to establish their own self-contained program-distribution networks. The arrival of medium-powered satellites, which have an output of around 50 watts, is bound to create a new market for direct-to-home services. Coronet has not emphasized this dimension, largely to avoid provoking more European regulatory agencies, but everyone who is aware of the technical capabilities of medium-powered satellites knows that this possibility exists, provided the regulatory environment doesn't hamper it. Because medium-powered satellites have around twenty-four transponders, (although Coronet will only use sixteen to save the remainder as back-ups), they offer programmers an attractive device for clustering services, while at the same time providing consumers with an attractive supply of programming that will justify the purchase or rental of the necessary receiving equipment. Coronet is the only private enterprise satellite project currently underway in Europe. Unlike the government-sponsored satellite projects, Coronet is the only satellite television project designed technically, economically, and politically to tap the potential of the European commercial television market.

Coronet will provide the first private enterprise satellite for transmission of commercial television programs, including both pay TV and advertising-sponsored programs and new services such as teletext and direct delivery to VCRs. The system is designed to provide distribution to all three means of reaching TV sets: cable, collective antenna systems, and individual antennas. Coronet will have the capacity to provide between four to six audio

channels for each video channel allowing simultaneous, multi-lingual service. Programmers will thus have not only their own natural linguistic market, but all of the western European market.

Unlike other European satellite systems that have been initiated for other purposes (aerospace subsidization, national broadcasting, or telecommunications), Coronet has been specifically designed to deliver commercial television to all European households in the most cost-efficient manner, either directly or through cable and collective antenna systems. This concept includes the satellite itself (which will be of well proven, reliable, commercial design and manufacture), the antennas (which will be small and affordable) and the common uplink facility in Luxembourg. Coronet is at the forefront in implementing the commercially viable technology in each of these areas. There may be further developments in antenna technology and manufacture which would lower the cost and allow Coronet to offer even more services than anticipated on current information.

Until recently, it was commonly believed that satellite transmission into antennas of less than one meter in diameter required very high-powered satellites. Conventional telecommunications satellites were thought to be useful only for sending signals into 4–5 meter antennas. This distinction has disappeared for all practical purposes as conventional satellites have become more powerful and as receiving technology has undergone significant improvements.

Specifically, because of recent advances in antenna and receiver design and better modulation techniques, medium-powered telecommunications satellites can transmit into antennas 0.9 meter in diameter with power levels of 50–53 dBW over most of Western Europe. This is only one-tenth the power of satellites considered necessary under WARC '77 rules.

The significance of this is that medium-powered telecommunications satellites can transmit television pictures of high quality into small antennas suitable for individual reception as well as into antennas at cable or collective antenna systems. These satellites cost less than half the price of higher powered ones and they have up to five times as many channels resulting in a dramatically lower cost per channel.

## COMPETITION AND THE REGULATORY ENVIRONMENT

The Coronet technology will be optimized for TV transmission to all three means of video distribution: cable systems, collective antenna systems, and individual antennas. Coronet reinforces but does not compete with these three means of video distribution. Satellites have proved to be by far the most cost-effective means of sending video signals over a widespread geographic area to any or all of these ultimate consumer reception points. Most importantly, cable systems will need the large number of new programs brought by the Coronet satellite to become economically viable.

Laws and regulations concerning copyright and licensing of intellectual property are changing in Europe. The holders of rights to films and video material recognize that it is in their economic interest to secure a broad distribution base and they are working to ensure that the emerging rules in this respect are realistic. Programs are currently being transmitted by FSS satellites across national borders in both North America and Europe. This trend toward the acceptance of signals transmitted from across borders is likely to continue and to be encouraged by policy initiatives such as those outlined in the "Green Paper" of the Commission of the European Communities. Provisions in the Treaty of Rome concerning the free circulation of goods and services in Western Europe are cast in general terms and do not explicitly address questions of the right to receive television signals. The jurisprudence of the Court of Justice of the European Communities has however made it clear repeatedly that this kind of service falls under the provisions of articles 59 et seq. of the EEC Treaty which outline the principle of freedom to provide services.

Despite these provisos, the Coronet project has run into heavy waters because of the lukewarm if not openly hostile attitude of most European PTTs and their international bodies CEPT and Eutelsat. Eutelsat, a common organization of European PTTs that operates the ECS satellite system, has tried to get rid of Coronet by pushing it into a corner where it obviously doesn't belong.

Eutelsat has repeated several times in the recent past

the case for maintaining a "single regional international telecommunications satellite system" in Europe.<sup>8</sup> Ever since November 1983 the organization has made it clear that because it is still in its initial stage of operation and its economic viability is still being gradually established, any new satellite system, and consequently GDL (GDL stands for Grand-Duchy of Luxembourg and refers in Eutelsat jargon to the satellite system Coronet is planning to operate), whose mission is to provide "international public telecommunications services" in Europe could not fail to cause "significant economic harm" to the organization.

Eutelsat sticks to an almost all-encompassing definition of what falls under "international public telecommunications services," reflecting the preoccupation of European PTTS to keep as much of their monopoly as they can. At a meeting of the Assembly of Eutelsat Signatory Parties held in Paris in early November 1983 and which dealt extensively with the GDL/Coronet dossier, it was already established that the satellite television distribution service is indeed a public telecommunications service as defined by the Eutelsat Convention and by the Radio Regulations of the International Telecommunication Union. Eutelsat is of the opinion that the market in Europe for satellite communication has not yet developed to the extent where more than one system can be justified. The organization also likes to emphasize that its operational planning is already such as to envisage meeting Luxembourg's requirements for international telecommunications.

Eutelsat believes that by its determination, it is reaffirming the preeminence of a regional satellite system in Europe, operated jointly by twenty telecommunications administrations or entities (including the Luxembourg PTT), whose public service role should be preserved in the interest of the users and to make worthwhile the considerable investments such a system has required. This attitude was strongly reaffirmed at the end of September 1984 when Eutelsat's policy making body, the ECS council gave the green light for the launch of a third ECS satellite (Eutelsat F-3). The three satellite-in-orbit system Eutelsat will have at its disposal will provide several more transponders for TV relay, and also more capacity for the business services system (SMS). This decision was quite clearly a victory for Eutelsat's secretary general

Andrea Caruso, who has been Coronet's most outspoken opponent. He declared himself confident that his organization will now be able to meet the transponder demand in Europe, particularly for TV relay, and he added with a glance at Coronet: "This should stop certain private initiatives announced in a number of countries in Europe."<sup>9</sup>

The rift between Coronet and Eutelsat has been limited so far to serious warnings addressed to Luxembourg. For instance, Eutelsat's assembly of signatory parties adopted at its sixteenth meeting in November 1983 a resolution stating that participation by signatory parties in the use of the GDL networks, with the consequent extension of their services beyond the Grand-Duchy of Luxembourg, to provide international public telecommunications services in Europe, will have serious consequences on the Eutelsat system and the investment and objectives of the CEPT administrations which are members of Eutelsat. This attitude was restated at the seventeenth meeting of Eutelsat's assembly of signatory parties (Paris, May 14-17, 1984) and the assembly decided to "urge all Eutelsat signatories to refrain from entering into any arrangements which may lead to the establishment and use of any new satellite systems providing international public telecommunications services in Europe and which might cause potential harmful competition to Eutelsat."<sup>10</sup>

It must be noted that the secretary general did not succeed with a resolution that contained much stronger wording that has been outlined in a document with the title "GDL System Compatibility with the Eutelsat System."<sup>11</sup> In this document the secretary general invited the assembly to "conclude that the proposed GDL system and any other European network intending to provide international public telecommunications services in Europe has to be considered in the same way as the proposed competitors of INTELSAT over the Atlantic basin." The secretary general did not hesitate to deride the Coronet project in order to gain support for his hostile attitude. In the document he expressed his personal conclusion in the following way, which in turn provoked a strong reaction from Luxembourg's prime minister, Pierre Werner: "It is clear that the GDL project is driven by North American private interests in the spacecraft manufacturing and the distri-

bution of TV material. These interest groups may, via this project, dump their surplus facilities and already available American programmes over Europe."

While this extreme view was not ratified by Eutelsat's bodies, it gave the start to an all-out campaign against the Coronet project and its American coloration masterminded by France. France was, of course, afraid that Luxembourg might drop out of an arrangement between the two countries for the exploitation in common of the French DBS TDF-1 that would allot two out of four transponders to Luxembourg-based commercial broadcaster "Compagnie Luxembourgeoise de Télédiffusion" (CLT/RTL).<sup>12</sup>

At a meeting of the telecommunications commission of CEPT (Conférence Européenne des Postes et Télécommunications) in Montpellier, June 20–27, 1984, the Coronet project was once more a prominent topic. Without taking a binding decision, the telecommunications commission subscribed to the view adopted by another CEPT body the CCTS, at its meeting in The Hague, April 25–27, 1984. Both CEPT bodies take note of the problems caused by the establishment of the GDL system. They also recall that the fourteenth session of the INTELSAT meeting of signatories (Washington, D.C. April 1984) unanimously adopted a resolution on the implications of the development of separate systems on the viability of the INTELSAT system and the economics of its service offering. The two CEPT bodies also restate that this INTELSAT resolution invites the signatories not to enter into agreements that might lead to the establishment and subsequent use of separate systems to carry traffic from or to their countries. Both CCTS and the telecommunications commission emphasize that Eutelsat system viability might be seriously jeopardized if one or more systems separate from Eutelsat were established in Europe to carry international telecommunications traffic. Consequently, both bodies invited the CEPT administrations to adopt the same firm attitude vis-à-vis these systems as they adopted at the INTELSAT meeting of signatories with respect to the separate trans-oceanic networks.

Luxembourg feels that these actions on the regulatory front are no serious impediment to the GDL/Coronet plans, the more so since some other major European countries have come

to realize that the monopolistic attitude taken by Eutelsat could seriously hamper their own national telecommunications satellite plans. The general feeling is that Coronet was a test case and most countries are in a way happy that Luxembourg offered itself to bear the brunt by testing ways and means to achieve deregulation in Europe. Luxembourg is confident that the winners in the satellite race will be those who provide their customers with the best service at the best price. In view of the significant volume of unsatisfied demand for TV transponder leases in Europe, Coronet is confident it will find a market for its services.

## NOTES

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4. Cable television in Western Europe: "A Licence to Print Money?" the Economist Intelligence Unit, London 1983; "Cable TV Communication," in Western Europe, CIT Research, London, 1984.
5. Quoted in *Cable & Satellite Europe*, April 1984.
6. Commission of the European Communities, *Realities and Tendencies in European Television: Perspectives and Options* (Brussels, 1983), COM (83), 229 final.
7. Jonathan Miller, "Europe Needs an Open Market", *Cable & Satellite Europe*, June 1984.
8. Cf. Interim Eutelsat, press release No. 27, May 18, 1984.
9. Quoted in *Cable & Satellite Europe*, Oct. 1984.
10. The minutes and decisions of this meeting are reproduced in Eutelsat document APS 17—3E.
11. Eutelsat document APS 17—16E, May 4, 1984.
12. On CLT/RTL and its French connection, see Mario Hirsch, "Radio-Télé-Luxembourg: Gebremster Vormarsch?" *Rundfunk und Fernsehen*, Feb. 1983.