Telecommunications in
the Caribbean Islands

by Felipe Noguera

Chapter I

The Caribbean

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Revolutionary changes in information technologies have left few economic

sectors untouched and the much-touted global information village has brought the

earth's inhabitants closer. Access to, and control of, information is replacing

access to natural resources as a determinant of the socio-economic position of

nations. Although this holds great promise for eradicating poverty and under-

development, the dichotomy between rich and poor, the metropolitan and the

peripheral, the developed and the underdeveloped instead could be widened by

these same technologies.

The Caribbean is a microcosm of this world-wide phenomenon. It

consists mainly of tropical island nations, many quite small in both size and

population, which were fought over and colonized by Europeans since they first

reached them. The region's pre-Columbian peoples have, now long ago, been lost

to genocide and disease or largely mixed with the newcomers, including -- mostly

as slaves or indentured workers -- Africans, Chinese, East Indians, and Javanese. Spanish, French, English, and Dutch are official languages in various places. All this makes the Caribbean incredibly diverse in customs and ancestral homelands, as well as in the diffusion and overall level of economic development. About half of the region's population of just over 35 million (1994 July estimate) live in its two poorest countries -- Cuba, with 11.1 million people, and Haiti, with 6.5 million.

Although the Caribbean is not a populous or rich region, it is nonetheless a major telecom market. Indeed, parts of it have telecom infrastructures as advanced as any in the world. Proximity to North America and a heavily service-oriented economy, with particular emphasis on tourism, is the principal reason for this. At the same time, the poor in general, and those in rural areas in particular, often do not even have convenient access to pay phones, let alone their own lines. One of the major challenges for the region is balancing the business sector's demand for enhanced services with demand for basic services for ordinary citizens.

The activities of CANTO (the Caribbean Association of National Telecommunication Organizations) are extensively discussed because of the organization's importance to its members and, by extension, to telecom

development in the region and because it offers lessons for smaller telcos and governments both directly and as a model of regional cooperation.[1]

As is often the case, the Caribbean as a region is not quite the same as its namesake, the Caribbean Sea. Although most of the islands lie in a chain forming the sea's northern and eastern edge, three are in the North Atlantic (Bermuda, the Bahamas, Turk and Caicos Islands). The shores of Jamaica, the Cayman Islands, Aruba, and the Netherlands Antilles are washed on all sides by the Caribbean. The region covers 1000 square kilometers. Table 1 provides data on the region.

Cuba is covered in a separate chapter and Belize plus three small nations on the northeast coast of South America are included because, like many of the islands, they were colonies of countries other than Spain and thus have more in common with parts of the Caribbean than with the mainland. Additional material on Jamaica and Cable & Wireless are in the Jamaica chapter.

1   Service Providers

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[1]   As Strategic Planning Manager of the Trinidad & Tobago Telephone Company, I was the founding organizer of the inaugural CANTO conference, held in April 1985, and at the conference was appointed CANTO's Secretary General.

Telecom services were introduced into the region not long after Bell's invention of the telephone had become commercially available in North America and Europe. Owned by private, government-regulated monopolies based in the European metropole, international services were developed to support mercantile interests. Local public services, offered under monopoly franchises by the colonial governments, were invariably less developed.

Although Haiti and the Dominican Republic ended colonial status with the anti-slavery revolution of Toussaint L'Ouverture in the 1790s, they did not formally declare independence until later, and by the mid 19th century both had been reduced to an extremely dependent neo-colonial status relative both to their former colonial patrons -- France and Spain, respectively -- and the United States, their powerful neighbor to the north. The Dominican Republic integrated domestic and international services under Codetel, a subsidiary of US-based General Telephone (GTE) in 1930. This succeeded an antiquated system. Codetel and government-owned Corporation Teleco d'Haiti operated as tele-mercantile monopolies. Evidence of this is Haiti's telephone penetration rate of 0.07 per 100 inhabitants some 200 years after nominal independence.

The 1960s was a decade of world-wide decolonialization, and the Caribbean was part of this as the most-populous English-speaking Caribbean

nations became independent. At this time, a US company, Continental Telephone (Contel) bought the telcos providing domestic service in Barbados, Jamaica, and Trinidad and Tobago, and the provider of both domestic and international service in the Bahamas. Contel installed new electro-mechanical switching and transmission systems. Cable & Wireless, then owned by the UK government, continued to provide service elsewhere. (Privatized in 1985, C&W owns communications companies in the Caribbean, United Kingdom, and Hong Kong.)

As part of the philosophy of nationalism, state ownership of the "commanding heights of the economy" was prevalent in what was then referrred to as the Third World. In the countries discussed here, the consequences were mild by comparison to the more radical socialist policies pursued by Fidel Castro in Cuba. Still, popular pressure from black-power and trade union movements were primarily responsible for nationalization of Contel's telephone companies. Contel was compensated, and was quite happy to divest its holdings.

In the late 1960s UK-based Cable & Wireless signed Heads of Areements with the governments of Barbados, Jamaica, and Trinidad and Tobago to provide international service through subsidiaries (Barbados External Telecoms, Jamintel, and Textel), and in the mid 1980s acquired interests in the domestic Barbados, Jamaica, and Trinidad and Tobago systems. Governments of the Caribbean had

already invested billions on tax ollars to make the systems state-of-the-art.

C&W's further upgrading increased external capacity 60 percent, to 960 circuits,

although the new circuits were not needed at the time.

1.1   Privatization in the 1980s

The ongoing inability of state-owned telcos to satisfy rapidly increasing demand

for business telephone systems in the early 1980s led to allowing a variety of

locally based suppliers to provide equipment directly to users for attachment to

the public switched network. Trinidad and Tobago was the first to liberalize,

establishing technical standards and specifications for interconnecting subscriber

terminal equipment in 1984. By the early 1990s Jamaica, Barbados, the Bahamas,

and Belize had followed. Northern Telecom, Mitel, Ericsson, and Rolm have

been the major sellers of PABX and key business switches.

Network privatizations took place in several countries. Already the

provider of international service in most cases, Cable & Wireless had an intimate

familiarity with the networks and policymakers. This made it easy for them to

become the investor of choice in privatizations in the English-speaking Caribbean.

It is difficult to analyze the terms of the deals Caribbean governments made, and continue to make, with C&W because they have never been made public (see Dunn 1995). Indeed, many negotiations took place clandestinely. Certainly "bad deals" were made in at least some instances.

Ironically, heavy investment by state-owned telcos in extending and improving their networks, which had become more than 75 percent digital during the 1980s, was an important factor leading to government divestment. The state-owned telcos had trouble servicing their debt, which led to pressure from international lenders -- the International Monetary Fund and World Bank in particular -- to privatize the systems as a way to reduce debt. This was specifically relevant in Grenada, Guyana, Jamaica, and Trinidad and Tobago -- all former British possessions.

Debt, however, was not the only incentive: access to state of the art technology was also an important criterion. For the Bahamas, Barbados, Belize, the Netherlands Antilles, and Puerto Rico it has been a major factor in the privatization debate. Another factor has been the need to conform to the trend toward trade liberalization and privatization (as per GATT and NAFTA discussions) as a prerequisite for obtaining foreign investment capital for other sectors of the economy.

Those investing in the region's telecommunications systems requested removal of statutory limits on returns on investment in Barbados, Grenada, Jamaica, and Trinidad & Tobago. At the time of privatization, governments by and large did not impose conditions on setting standards or technology transfer, and extending service into rural areas was not a requirement. In general, the former state monopoly has simply been replaced by a private one, which, since it has an important foreign element, has implications for the erosion of sovereignty. Belize seems to have been the only exception to this. However, rate hearings presided over by various Caribbean public utilities commissions remain a form of regulatory pressure.

Thus, the failure of the government of Guayana to approve rates for Atlantic TeleNetwork, which owns GT&T, has resulted in a vexing liquidity problem for the company. The company has been unable to charge for local cellular calls, but is collecting activation and basic monthly fees. In mid 1995 hearings were underway regarding GT&T rates.

In 1985 the Belize government wholly owned the local telco but Cable & Wireless (West Indies Ltd) wholly owned the external system. C&W retained 87 percent of revenue on international calls, compared to just 50 percent in Jamaica, 65 percent in Barbados, and 70 percent in Trinidad and Tobago. Extensive

negotiations led to the government securing British Telecom as a minority

investor. The government sold BT 24 percent of a new company, Belize

Telecom, and sold 25 percent to employees, keeping 51 percent. The new firm

then purchased C&W's external service and merged with the local service. Since

the formation of the British Telecom-MCI alliance in 1994, MCI has taken over

all BT holdings in the Americas, including the minority share of Belize Telecom

Ltd.

Table 2 shows the providers of telecom services in the major Caribbean

nations.

2   CANTO

The Caribbean Association of National Telecommunication Organizations is the

region's telecom trade association and lobby. Among other things, it acts as an

information clearing house for Caribbean operating telcos and carriers. A major

goal has been to help the region see itself as a whole, regardless of differences in

size, language, and colonial experience. The great shared resource for this is

information. By creating innovative means to share data on equipment,

technology, suppliers, training, and finance, CANTO seeks to assist its members, which include most of the telecom service providers in the region.

CANTO was formed in 1985 by seven operating telcos whose executives felt the need to establish an independent forum through which regional telecom organizations could exchange information, set a Caribbean telecom agenda, and influence regional policy. Gathering in April in Port of Spain, Trinidad, their inaugural meeting was keynoted by Richard Butler, former secretary-general of the ITU (International Telecommunication Union). He encouraged the CANTO initiative as being consistent with ITU objectives of fostering technical cooperation and information-sharing among developing countries.

One factor leading the seven then state-owned telcos to establish CANTO was the discrepancy they saw between the high levels of investment they were making in domestic infrastructure and the capital expenditures for international calling made by Cable & Wireless, which was making much higher returns. In most instances, C&W had only to react to increases in demand, rather than try to stimulate growth or generate traffic.

CANTO members had plans to -- and did -- spend US$1 billion on telecom plant and equipment in the 1985-90 period. This raised the question of how this expenditure - virtually all of which would be for imported technology

and equipment - would provide macroeconomic benefits to the region.

In the early 1990s, CANTO began to work with the newly formed CTU (Caribbean Telecommunications Union), the ITU (International Telecommunication Union), CBU (Caribbean Broadcasting Union), and the region's communications ministries to formulate regulatory policy.

CANTO also has actively worked to improve human resource development in the region. This has involved attempting to anticipate training and work force requirements so that, through cooperative efforts in mounting seminars, symposia and courses, they can be met more efficiently and comprehensively within the region at reduced costs.

Based on the fact that the Caribbean is technologically a generation ahead of many developing countries, CANTO established a Human Resources Skills Bank in 1989 to market its telecom expertise to other countries. Uruguay, Venezuela, Botswana, Swaziland, Tanzania, and Zimbabwe indicated early interest in the consulting services, but were constrained by finances in pursuing them.

The Bank was superseded in 1992 when CANTO established a Consultancy Assistance Bureau (CCAB) to provide technical assistance and advice to its members and other developing countries. Jamaica has provided

techinical expertise to Suriname in digital central office switching installation and maintenance. The Curacao and Jamaica members of CANTO were part of an ITU fact-finding and technical assistance mission to restore Haiti's telecom network in January 1995. Outside the region, The 52-member Organization of African Unity (OAU) and 15-member South Pacific Forum (SPF) Secretariat have requested assistance from CANTO regarding such topics as bulk purchases of equipment and technology and negotiating international call accounting rates.

CANTO signed an agreement in 1994 formalizing the exchange of technical expertise, documentation, invitations to seminars and meetings, and the like, with AHCIET (the Asociacion Hispana de Centros de Investigacion y Estudios de Telecomunicacions), the largest regional telecom organization in Latin America.

Headquartered in Port of Spain, Trinidad, CANTO has a staff of 7 (full-time equivalents) and an annual budget of about US$1 million. Funding comes from members (about 65 percent) as well as internal initiatives such as consulting, publications, and conferences.

3   Level of Service

Most Caribbean countries compare favorably with other developing countries in terms of teledensity measured in lines per 100 population. However, this is a crude measure that says little about accessibility to phone service. Many Caribbean phone lines are at businesses, and specifically at tourist and financial services facilities, so density significantly overstates accessibility for most individual residents. Moreover, as Eric Williams, once Prime Minister of Trinidad and Tobago, observed, "What good is it for me to have a telephone on my desk when it doesn't work or the number I am calling does not work."

Access to working telephones as a form of "social justice" was first popularized by Rajiv Gandhi when he was prime minister of India. He was, more generally, attempting to improve the infrastructure of rural areas, ending the pattern of technological advances being concentrated in urban centers. His goals included improving rural education, health, and other social services as well as telecommunications. As befits a large, poor country, the initial telephone goal for India was modest: a public phone in each village. This has proven difficult to achieve even in small, poor countries: as of 1995, it had yet to be done in the Dominican Republic, Guyana, Haiti, Jamaica, Mexico, Suriname, Trinidad and Tobago, and Venezuela.

Table 3 provides data on various measures of service.

By the early 1990s over 75 percent of phone lines in the region were digital, with Dominica Telco (owned by Cable & Wireless) being heralded as the first fully digitalized network in the world, although with only some 5,000 lines that is a small-scale boast.

Whereas in the United States and United Kingdom, divestment by AT&T and British Telecom was geared toward promoting competition in the provision of long distance and value-added services, the Caribbean's largely unmet demand for basic telephone service -- POTS -- requires that operating telcos be committed to providing public network use and access to subscribers at "reasonable" prices. Although rate structures should in general cover specific costs, I feel it is appropriate to subsidize provision of service to low-revenue-yielding rural areas. This does not, however, mitigate the fact that, unlike the United States and United Kingdom, competition in the provision of basic and value-added services -- with the exception of equal access in Puerto Rico -- is non-existent in the Caribbean telecom sector. Call-back services are the new exception to this. Although outlawed in many Caribbean territories, they continue to thrive because of the existing rate structures.

3.1   Wait Lists

Demand for telephone service in all these countries has been generally strong,

with the result that there are wait lists for services. These vary in size from

Jamaica where, in 1990 unsatisfied demand for new lines almost equaled the

installed base of 88,000 lines. In Trinidad and Tobago, the wait list was over 40

percent of the installed base of 216,000 lines and over 7 percent of the population

in the same year.

3.2 Rates

Telephone charges vary widely among countries in the region. This reflects both

government policy and the quality and extent of service available. All of these are

continually changing. In general, in the early 1990s English-speaking countries

had relatively higher rates than elsewhere in the Caribbean, with Belize and

Guayana being low-cost exceptions. On the other countries with higher rates also

generally had better -- more varied and reliable -- service.

3.3 Satellite Services

There are few data on satellite services. Most satellite transmission systems

facilitate broadcasting services. As noted in Table 1, many of the countries have at least one INTELSAT link, sometimes as a nonsignatory user rather than as a member. The Bahamas and Cuba are members of Inmarsat and Cuba is a member of Intersputnik.

In 1987 the Trinidad & Tobago Telephone Company together with Intelsat, Textel, TTT, and CANTO initiated Project SHARE (Satellites for Health and Rural Education). This for the the first time linked by satellite two developing nations -- Tanzania and Trinidad & Tobago -- facilitating a dynamic exchange amng health care professionals on nutrition, public health, and sexually transmitted diseases.

The University of the West Indies, which has campuses in Mona, Jamaica; Bridgetown, Barbados; and St Augustine, Trinidad, utilizes the UWI Distance Teaching Experiment (UWIDITE) satellite system to reach St Lucia, Grenada, Dominica and other non-campus sites.

4   Telecom Equipment

Subject to meeting technical specifications, subscribers can obtain equipment

from sources other than the operating telco. There are a number of companies offering equipment as retailers and distributors. There are no import-substitution policies in the region for telecom products; no government policies encourage local technology development. There were discussions in the early 1990s about developing a science park in cooperation with the University of the West Indies, but these have yet to yield concrete results. The talks' focus has been on assemblying telephone and cellular equipment in the region. Where to locate the park has been one of the stumbling blocks. In 1990 Northern Telecom indicated it would apply its volume discount rebate to establish a Distance Learning Centre, but CANTO members could not agree on where it would be headquartered.

Northern Telecom, based in Canada, is the dominant supplier of central office equipment, with over half the installed base in 1994. This is larger than its world-wide share, but consistent with its generally strong position globally. LM Ericsson, a Swedish company, is a distant second, with At&T and NEC trailing in the distance. Other product lines, including PABX and cellular systems, have a larger number of players, although again Northern Telecom is dominant, with 40 percent of the PABX and subscriber terminal equipment base in 1994. Mitel, a Canadian-based supplier of PABX and key systems, is a distant second. NT is particularly strong in cellular switching equipment. It is also supplying the

region's first major high-capacity synchronous digital hierarchy (SDH) fiber optic network. Announced in January 1995, it will serve over 500 business customers of a Cable & Wireless subsidiary in the Cayman Islands.

In earlier technological eras, ITT -- once a major factor in the hemisphere's telecommunications -- was instrumental in introducing step-by-step and cross-bar analog switches. NEC analog switches were sold to the Bahamas, Barbados, Jamaica, and Trinidad in the late 1970s and early '80s, but the Japanese company provided poor maintenance support, exacerbated by language problems. The appearance of digital switches led to the displacement of NEC equipment everywhere except Jamaica.

4.1   Local Producers

In the mid 1980s two government-owned telcos -- the Trinidad and Tobago Telephone Co Ltd and Telesur, in Suriname, became the only two equipment manufacturers in the region.

T&T's then director or research and development, Dr Stephan Gift, developed a device, dubbed the subscriber pair identifier, to identify local faults on the main distribution frame. It was subsequently patented. A Canadian

distributor has made it available to the small, regional telco operating companies in that country, and it has been sold to other Caribbean telcos. Influenced by Cable & Wireless, which became a 49 percent owner in 1991, T&T has eliminated R&D. The stated rationale is that it is too costly for a small country to undertake effectively.

In Suriname, which has had a relatively undeveloped telephone system, Telesur came to equipment production as a result of the financial constraints on expanding and upgrading the system. The telco's training center began to make minor adaptations to equipment, which led to producing a wireless, solar-powered public phone to provide service in rural areas. Telesur has also manufactured a PABX handling two external trunk lines and 16 internal extensions. Used throughout Suriname, attempts have been made by CANTO to market it elsewhere in the Caribbean. The center's fundamental objective is to reduce dependence on foreign technology and expertise and to foster local capacity, while keeping abreast of new technologies available internationally.

Every new recruit to Telesur works in the research and training center for nine months prior to being deployed elsewhere in the company. Research has been incorporated into the training process, including ongoing training for experienced technicians. This has meant continuous upgrading of instructors'

knowledge, shorter adjustment periods for new job environments, and reduced staff needs (in comparison to separate training and research departments, as all researchers are instructors).

A number of companies in Suriname use Telesur's center to train their employees. In the early 1990s, the ITU studied the feasibility of making the center a regional one. The ITU's support of Telesur's Training and Resource Center continues, including holding a training seminar on signalling attended by CANTO members from 18 countries in November 1994. Telesur hosted an ITU network planning and management software training symposium (PLANITU) for Latin America and the Caribbean in April and May 1995.

Tariffs on parts are considered by some to be a barrier to emergence of more local production. In any case, no local private capital has made any effort to invest in production or even assembling telecom equipment thus far. With transnationals having significant stakes in many of the region's operating telcos, it is unlikely there will be much encouragement from them to change this situation.

4.2   Cooperation vis-a-vis Transnational Suppliers

In 1988 CANTO negotiated a volume discount agreement with Mitel. The

agreement provided for rebates or credits once CANTO members had purchased a specified aggregate amount of Mitel PABXs. These discounts would be prorata among the members. That year there were US$70,000 in discounts based on US$1.4 million in purchases. In 1989 Northern Telecom signed a similar agreement for the same product lines, giving CANTO members over US$1 million in credits toward future purchases based on US$18 million in purchases that year.

The number of suppliers and product lines covered by volume discount agreements has subsequently grown steadily. In 1994 agreements were in place wtih AT&T, Ericsson, MER Communications Systems, Mitel, Newbridge Networks, Northern Telecom, Quebecor Printing, Southwestern Bell, Tellabs International, and Teleco Systems. By combining analysis of previous purchases with forecasts from individual companies, CANTO can negotiate with aggregate numbers that do not compromise specific buyers, as well as cross-reference suppliers' reported sales with purchases recorded by members' invoices.

Many, including myself, feel this should be a first step toward joint regional purchases of equipment by CANTO a single purchasing body. In the early 1990s CANTO members began reviewing their tender procedures with a view toward this. Joint purchasing can serve as the foundation for regional

manufacturing, which I feel very strongly is something that should be done to strengthen the economic base of the Caribbean in the information-media age. As a minimum, it can help justify customization of equipment for the specific circumstances of the region. However, joint purchasing has not yet occured.

CANTO has created a Products and Standards Evaluation Team that has carried out preliminary feasibility studies that have identified several product lines for which it was felt the technical means and economies exist to support regional assembly or manufacture. However, it will take impeccable planning and firm resolve to overcome the obstacles to realize this goal. A CANTO Standards Bureau, created in the mid 1990s, is attempting to deepen this process. Each of the telcos, governments, and current suppliers (including both local representatives and the transnationals themselves) have different needs and goals. Even leaving aside the opposition one can expect from existing vendors, reconciling the diverse interests is a major problem.

CANTO has also succeeding in pursuading suppliers to provide financing for equipment purchases. In this and its other activities vis-a-vis vendors, CANTO has avoided becoming simply a sales agent for suppliers.

A CANTO-inspired ITU study on traffic routing patterns, authorized at ITU's Americas Telecom Development Conference in Acapulco in 1992, was

completed in 1994. The sensitive traffic data generated will enable CANTO to negotiate volume discounts for regional traffic and optimize members' network capaciy by re-routing transit traffic within the region. This represents another new frontier in regional cooperation and the first step toward direct South-to-South telecoms.

4.3   Setting Technical Standards

The ITU appears to be bowing to pressure from commercial interests in the industrial countries for a more flexible, liberalized approach to defining standards for spectrum and orbital slot allocation. This is clearly so in direct broadcasting by satellite (DBS), high-definition television (HDTV), and broad-band ISDN. Developing nations, including those in the Caribbean, may simply have to accept an international standards regime which they have no role in shaping. Caribbean and Latin American nations have been able to reserve space segments in the 12 Ghz band. However, prohibitive cost factors have prevented many of the region's countries from making effective use of this resource. (I was instrumental in getting the government of Trinidad & Tobago to license CaribSpace, the first Caribbean satellite tooffer digital braodcast via satellite in the C band.)

I feel it is incumbent on the region to develop creative negotiating

strategies which use rights to geosynchronous orbits as a bargaining chip to lease

transponders dedicated to the region in order for Caribbean telcos to undertake

their own tests. This will go a long way in helping them determine what

standards are appropriate for regional telecommunications and broadcasting

development.

4.4 Technology Transfer

Not only is there no production of sophisticated telecom equipment in the region,

there is little in the way of technology transfer even at the level of training in

maintenance of the equipment purchased from transnational suppliers. Although

extended warranty programs are clearly a protection to equipment buyers, in

practice they mean that anything beyond basic upkeep is done by foreign

specialists or even remotely from Canada or the United States.

5 Strategy for Integration and Cooperation

Throughout this chapter I have expressed my feeling that cooperation and integration among the region's telcos, and the development of local telecom equipment production, are important goals. As secretary-general of CANTO I have worked to promote them.

To this end, CANTO sponsored, with the Trinidad Express Newspapers Ltd, From 1989 to 1992, a conference series entitled Caribbean Media and Telecommunications in the Informatopm Age, also referred to as the Trincom Conference Series. Representatives from many organizations in these fields attended, including members of the Caribbean Broadcasters Union, CARIMAC (the Caribbean Institute of Mass Communications), CAMWORK (Caribbean Media Workers Association), CANA (Caribbean News Agency), and the Caribbean Telecommunications Union (CTU). Among the resolutions passed was a call that all of these organizations be recognized by the region's governments and afforded favors such as concessionary rates from telecom carriers to promote their operations. Delegates also resolved to organize a conference dealing specifically with the "Caribbeanization" of programs for the region, which was subsequently held. One important result of TRINICOM was that in 1992 the government of Barbados cracked open the door to ending monopoly in Caribbean telecommunications by providing both the CBU and CANA with licenses to

uplink their programs via satellite, something that had until then been an exclusive

franchise of Cable & Wireless. This was a serious policy shift which could

influence policy makers in the future.

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Chapter I

Caribbean

Table 1.1

Caribbean Countries that are Members of CANTO

Popu-lation \1	Tele-phones \1	GDP per capita \2	Lan-guage \3	Became inde-pendent	Country
7	1	b 6,800	English	not	Anguilla
65	7 *	5,800	English	1981	Antigua and Barbuda \4

a   1992 estimate.   c   1986 estimate.

b   1991 estimate.   d   1987 estimate.

Source: Compiled for the author from data in US Central Intelligence Agency: *The World Factbook 1994*, Washington DC, except CANTO membership dates are from CANTO.

TYPOGRAPHER: The x in note 2 is

the actual roman numeral page number in the source.

66	73		17,400	Dutch	not	Aruba
273	99 *		16,500	English	1973	The Bahamas
256	89 *		8,700	English	1966	Barbados
61	53 *	a 27,100	English	not	Bermuda
13	3	b 10,600	English	not	British Virgin Islands
32	35 *	b 23,000	English	not	Cayman Islands
11,064	229 *		1,250	Spanish	1902	Cuba
88	5	a 2,100	English	1978	Dominica \4
7,826	190 *		3,000	Spanish	1844	Dominican Republic
94	6	a 3,000	English	1974	Grenada \4
429	57 *	b 8,400	French	not	Guadeloupe
6,491	36 *		800	French	1804	Haiti
2,555	127 *	a 3,200	English	1962	Jamaica
393	69 *	b 9,500	French	not	Martinique

13	3	a 4,300	English	not	Montserrat
186	.. *	9,700	Dutch	not	Netherland Antilles \5
3,802	1000 *	a 7,100	Spanish	not	Puerto Rico (US)
41	2	a 4,000	English	1983	St Kitts and Nevis \4
145	10	3,000	English	1979	St Lucia \4
115	6	a 2,000	English	1979	St Vincent ... \4, 6
1,328	109 *	8,000	English	1962	Trinidad and Tobago
14	1 *	a 6,000	English	not	Turks and Caicos Islands
98	89 *	d 11,000	English	not	Virgin Islands (US)
209	9 *	2,700	English	1981	Belize
139	18 *	c 4,390	French	not	French Guiana
729	27 *	1,900	English	1966	Guyana
423	28 *	2,800	Dutch	1975	Suriname

1   In thousands; 1994 July estimates.

2   In US dollars on a purchasing-power parity (PPP) basis (see source, p x); 1993 estimates
    unless noted. Note that although PPP provides a better comparison of development than the
    exchange-rate method, GDP per capita is a crude measure of living standards as it says
    nothing about income distribution or even the total amount of income received by
    individuals.

3   Principal official language. This also indicates who the colonial power is, or was prior to
    independence, except for Puerto Rico (a US commonwealth) and the US Virgin Islands.

4   Member of the Organization of the Eastern Caribbean States (OECS).

5   Often called Curaçao (the main island).

6   St Vincent and the Grenadines.

*   At least one INTELSAT earth station.

Chapter I

Caribbean

Table 1.2

Telecom Providers in the Caribbean and CANTO Members, 1995

CANTO member since	Company	%	Private ownership Company (based in)	Country
1991	Cable & Wireless West Indies Ltd	100	Cable & Wireless (UK)	Anguilla

1985	APUA \1 \2	0	-- Antigua and Barbuda	
1991	C&W \3	100	Cable & Wireless (UK)	Antigua and Barbuda
1988	SETAR	0	-- Aruba	
1985	Batelco	0	-- The Bahamas	
1985	Bartelco	100	C&W (85%) others (15%)	Barbados
1989	Ministry of Telecom-munications \2	0	-- British Virgin Islands	
1991	C&W \3	100	Cable & Wireless (UK)	British Virgin Islands
1991	Cable & Wireless West Indies Ltd	100	Cable & Wireless (UK)	Cayman Islands
1992	Ministeriod de Comunicaciones	0	-- Cuba	
1991	Cable & Wireless West Indies Ltd	100	Cable & Wireless (UK)	Dominica

1987	Codetel	100	GTE (US)	Dominican Republic
1985	Grentel	80	Cable & Wireless (UK)	Grenada
1987	France Telecom	0	-- Guadalupe	
1988	Teleco d'Haiti	0	-- Haiti	
1989	Telecom of Jamaica	79	Cable & Wireless (UK);	
			Workers own 11%	Jamaica
1992	France Telecom	0	-- Martinique	
1991	Cable & Wireless			
	West Indies Ltd	100	Cable & Wireless (UK)	Montserrat
1986	Setel de Curacao	0	-- Netherland Antilles	
1994	Telbo Bonaire	0	-- Netherland Antilles	
1986	PRTC	0	-- Puerto Rico	
--	Telefonica Larga			
	Distancia (TLD)	100	Telefonica de España \4	Puerto Rico

1991	Skantel	100	Cable & Wireless (UK)	St Kitts & Nevis
1991	Cable & Wireless West Indies Ltd	100	Cable & Wireless (UK)	St Lucia
1991	Cable & Wireless West Indies Ltd	100	Cable & Wireless (UK)	St Vincent and the Grenadines
1985	Telecom Services of Trinidad & Tobago	49	Cable & Wireless (UK)	Trinidad & Tobago
1991	Cable & Wireless West Indies Ltd	100	Cable & Wireless (UK)	Turks & Caicos
1990	US Vitelco	100	Atlantic TeleNet (US)	Virgin Islands (US)
1985	Belize Telecom	25	British Telecom, MCI; Workers own 24%	Belize

1992	Telecommunicaciones de Mexico			Mexico
1993	Iusacell	100	Bell Atlantic (US) 42%, Grupo Iusacell 58%	Mexico
1985	GT&T	0	--	Guyana
1989	Telesur	0	--	Suriname
1992	CANTV	50	GTE (US) 30%, AT&T (US) 5%, Telefonica de España 3%, trade unions 12%	Venezuela

1   Antigua and Barbuda Public Utilities Authority

2   Company provides only domestic service.

3   Company provides only foreign service.

4   TLD provides only long distance service within Puerto Rico. Telefonica de España is is 34%-owned by the

Spanish government and state agencies.