

Luiz VIDAL

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INDIAN AREAS THREATENED BY
HYDROELECTRIC PROJECTS IN BRAZIL¹

Paul L. Aspelin
and
Silvio Coelho dos Santos

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AUTHOR INFORMATION

Paul Leslie Aspelin is a social anthropologist. He received his Ph.D. degree in anthropology from Cornell University in 1975. At present, he is an Associate Professor of Anthropology at Cleveland State University in Cleveland, Ohio, 44115, USA and Visiting Professor of Anthropology at the Universidade Federal de Santa Catarina in Florianopolis, Santa Catarina, 88.000, Brasil. He has conducted fieldwork among the Nambicuará, Kaingang, and Guarani of Brazil, and in Guatemala. His research interests include economic and applied anthropology, social impact assessment, and tourism and economic development. He is on the editorial staff of The Annals of Tourism Research and is the author of numerous monographs and articles.

Silvio Coelho dos Santos is also a social anthropologist. He received his Doctor of Anthropology degree from the Universidade de Sao Paulo in 1972 and his Livre Docencia in Sociology in 1974 from the Universidade Federal de Santa Catarina in Florianopolis, Santa Catarina, 88.000, Brasil, where he is at present Professor of Anthropology and Vice-President (Pro-Reitor) for Post-Graduate and Research Studies. He has conducted extensive fieldwork among the Xokleng, Kaingang, and Guarani of

southern Brazil and is the author of numerous books and articles (some of which are listed in the bibliography to this document) regarding them. His research interests include anthropology and education; energy, capitalist development and native peoples; and visual anthropology.

CONTENTS

AUTHOR INFORMATION	i
CONTENTS	iii
Hydroelectric Power Development and the Indians of Brazil	1
A Comparative Study is Necessary	6
Indian Areas Threatened by Hydroelectric or Flood Control Projects in Brazil	8
1. <u>The Uruguay River Basin Hydroelectric Project</u>	8
1.1. The KAINGANG and GUARANI Indians, Chapeco Post	19
1.2. The KAINGANG Indians, Toldo of Irai	21
1.3. The KAINGANG Indians, Ligeiro Post	23
2. <u>The XOKLENG Indians and the Itajai River Flood Control Project</u>	26
3. <u>The GUARANI Indians and the Salto Santiago (Iguacu River) Hydroelectric Project</u>	33
4. <u>The Itaparica (Sao Francisco River) Hydroelectric Project</u>	38
4.1. The TUXA Indians, Rodelas Reservation	39
4.2. The TRUKA Indians, Assuncao Island	44
4.3. The PANKARARU Indians, Pankararu Post	45
4.4. The ATIKUM Indians, Atikum Post	48
5. <u>The Tucurui (Tocantins River) Hydroelectric Project</u>	50
5.1. The PARAKANAN Indians, Pucurui and Parakanan Posts	56
5.2. The SURUI Indians, Sororozinho River	73

5.3.	The GAVIOES Indians, Mae Maria Reservation	75
5.4.	The GUAJAJARA/Tenetchara Indians of the State of Maranhao	83
5.5.	The AMANAYE and the ANAMBE Indians, Moju and Capim Rivers	86
5.6.	The ASSURINI Indians, Trocara Reservation	91
6.	<u>The WAIMIRI-ATROARI Indians and the Balbina (Uatuma River) Hydroelectric Project</u>	93
7.	<u>The Xingu River Basin Hydroelectric Project</u>	104
7.1.	The ASSURINI Indians, Koatinemo Reservation	112
7.2.	The ARAWETE Indians, Arawete Occupation Area	115
7.3.	The KOKRAIMORO Kayapo, Kayapo Indian Park (KIP)	117
7.4.	The KRIKETUM Kayapo Post, KIP	121
7.5.	The KUBENKRANKEGN Kayapo, KIP	122
7.6.	The PITUIARO Kayapo, KIP	123
7.7.	The GOROTIRE Kayapo, KIP	124
7.8.	The XIKRIN Kayapo, Bacaja and Caetete Reservations	125
7.9.	The MEKRANGNOTI Kayapo, Jarina Post	126
7.10.	The MEKRANGNOTI Kayapo, Kretire Post	130
7.11.	The Tribes of the XINGU NATIONAL PARK	131
7.12.	The KARARAO Kayapo, Kararao Reservation, Xingu and Iriri Rivers	135
7.13.	The "ARARA", Arara Attraction Area, Iriri River	141

7.14. The MEKRANGNOTI Kayapò, Mekrangnoti and Bau Posts, Iriri and Curua Rivers	147
7.15. The PURO Kayapo, Iriri River	150
8. <u>The AVA-CHIRIPA and MBYA GUARANI Indians of Paraguay and the Itaipu Binacional (Parana River) Hydroelectric Project</u>	154
Conclusions	160
POSTSCRIPT: Dam Construction and the Rights of Indigenous Peoples	163
FOOTNOTES	169
ACRONYMS AND ABBREVIATIONS USED	183
REFERENCES CITED	185
ABSTRACT	198

LIST OF MAPS AND PHOTOGRAPHS

MAPS	
Figure 1: Threatened Areas	4
Figure 2: Uruguay Basin	11

PHOTOGRAPHS

7

Hydroelectric Power Development and the Indians of Brazil.

In Brazil, as in many countries at present, high priority is being given to developing domestic energy sources due to the spectacular increase in the cost of imported petroleum in recent years. In addition to increased exploration for domestic petroleum and coal, coal gasification, production of alcohol from manioc, and the development of alcohol-burning automobile engines, Brazil is also currently enlarging its hydroelectric production in many parts of the country.

Brazilian electrical energy consumption was expected to increase by over 12% in 1979 alone and hydroelectricity is expected to replace thermal (oil-burning) electrical generation at an even faster rate, as the Brazilian government accelerates its program to stimulate the substitution of hydropower for petroleum wherever possible. Therefore, new hydroelectric sources are going to have to be developed very rapidly. However, comprehensive hydroelectric power projects must be carefully researched, designed, and integrated; their design and construction takes time. They are also very costly. In 1979, again for example, Brazil had to borrow from abroad over one-third of the funds necessary for its electrical energy program for that year alone (roughly 54 billion out of a total of 154 billion cruzeiros). The commitment

of the Brazilian government to hydroelectric development, in terms of both time and money, is thus very great.

The first step in increasing hydroelectric production is to research the hydroelectric potential available. For this purpose, preliminary studies or "inventories" of the hydroelectric potential of the huge Iguacu/Parana, Jatapu/ Uatuma, Sao Francisco, Tocantins/Araguaia, Uruguay, Tapajos, Trombetas, and Xingu river basins have already been undertaken (that we know of) and similar studies were supposedly to begin in 1978 regarding the Madeira. Presumably, all major Brazilian rivers have recently been studied for this purpose, or are being so studied at the present time. Some indication of the relative importance of these new energy possibilities for the continued growth and stability of the Brazilian economy can be seen in the fact that the potential of the Tocantins/Araguaia and Xingu River systems alone was estimated in 1979 at approximately 45,000 MW, which was just about double the installed generating capacity of the entire country in 1977, only two short years before (Almeida 1977: 47; ELETRONORTE 1980: 1).

The next step is to design, finance, and build the facilities necessary to utilize this potential. Since it is predicted that even if all of the available hydroelectric sources in the major southeastern industrial heartland of Sao Paulo, Rio de Janeiro, and Minas Gerais

were fully utilized, this area would still run short of energy by 1995, urgent attention must be paid to developing such potential energy sources elsewhere so that in addition to supplying the present local needs of those areas, their energy can be transferred to the Southeast, or so that a major portion of the Southeast's probable industrial growth can be transferred there (these energy-exporting areas would be the North, South, and Central-West; the Northeast will be a net energy importer; Jornal do Brasil, August 4, 1979, p. 19). In each of these areas of important and immediate potential hydroelectric development, there are Indian people living today.

To date, we have identified at least seven hydroelectric projects, each involving from one to as many as seven individual dams or complexes of dams, and one flood-control project, either planned or under way, which threaten between 32 and 34 separate Indian areas in Brazil at the present time.

These projects, and the Indian areas they threaten, are scattered all over Brazil, as shown on the following map (Figure 1). With few exceptions, they are all very large and extremely expensive projects, designed to harness large rivers or river systems and to generate large amounts of hydroelectric power. In order to do so, however, they will also inundate many thousands of square kilometers of forest and productive farmland,



FIGURE - 1:
THREATENED AREAS

0 200 400 600 800 1000 Km.

▨ - INDIAN AREA
● - CITY

displace well over one hundred thousand (non-Indian) people, and employ many tens of thousands of workers in their construction. Once done, they will have profound effects on the tectonics, ecology, and ichthyology of their respective regions. During and after their construction, they will also have very serious consequences for the lives, health, and cultural existence of the Indian peoples in their vicinity as well. The purpose of this Document is to examine each of these projects in turn, in terms of what each one will mean for the Indian people in its area.

The combined impact of all of these large or small individual projects, when taken together, appears to be so great as to threaten the continued existence of Indian people and Indian culture in Brazil during the next twenty-five years. A total of at least 100,000 hectares of Indian land (or nearly one hectare for each remaining Brazilian Indian) will be flooded or otherwise expropriated by these projects. Past efforts by the Brazilian National Indian Foundation (FUNAI) to protect the Indians from pressures of "national development" such as these have not been sufficient, given the overwhelming priority given to such development efforts by most of the other sectors of the Brazilian power structure. Research, planning, publicity, and political pressure are necessary to ensure that their efforts regarding these hydroelectric projects are more successful.

A Comparative Study Is Necessary.

A large-scale comparative study is urgently needed to assess the present situation of the Indian people in Brazil who live in areas of hydroelectric potential, whether presently under development, already developed, or awaiting future possible use, and to prepare assessments of the probable economic, social, cultural, and physical consequences of such hydroelectric development for the Indian groups involved in the light of past Brazilian and international experience in such matters (e.g. Barabas and Bartolome 1973; Bennett, Colson and Wavell 1979; Dasmann, Milton, and Freeman 1973, especially pp. 218-225; Diamond, Sturtevant, and Fenton 1964; ELETROSUL 1979; Euler and Dobyns 1961; Henningsgaard and Clay 1980; Kleivan 1978; Mariella 1979; Mesa Directiva 1980; Morgan 1971, especially chapters 10 and 11; Partridge, Brown and Nugent 1980; Salisbury et al. 1972; Sanders 1973; Scudder 1973; and Waldram 1980; among others).

Such a project should necessarily be interdisciplinary and should involve specialists in the ethnology of the groups concerned, those with international experience in similar cases, technical specialists to advise on ecology, health, and engineering, and representatives from the hydroelectric agencies in question as well as from the Brazilian National Indian Foundation (FUNAI), which is charged with protecting and furthering the welfare of

the Indian groups in Brazil. The bureaucratic problems inherent in such a multi-disciplinary attempt (such as Orlando Sampaio has already encountered in the case of the Tuxa and Pankararu) also have to be taken into account, of course. Additionally, official permission would have to be obtained from the FUNAI to allow on-site research among the Indian groups involved.

Given the rapid pace of recent Brazilian economic development, the recent rapid growth in the demand for hydroelectric power, the tenuous hold Brazil has historically permitted the Indians within its boundaries on their lands and cultures in the face of national economic expansion (Davis 1977; Ribeiro 1957), and the size and complexity of the research project here suggested, it should be initiated at once if it is to provide the full comparative perspective of the different groups, areas, problems, changes, and reasons involved which would be both scientifically and indigenously most useful. From either point of view, it is both urgent and necessary. It is especially important considering how little we thus far know about questions such as what happens to indigenous groups in these situations and why, and what could be done to better the results in terms of humane planning, adaptation, and minority-group rights.²

The Uruguay River Basin Hydroelectric Project (URBHP) is one of the few in Brazil, to date, in which

prior impact studies have been undertaken regarding the Indian population involved. Perhaps it might serve as a model or a precedent for other such cases.

Indian Areas Threatened by Hydroelectric or Flood Control Projects in Brazil.

1. The Uruguay River Basin Hydroelectric Project.

Although it has been a focal point of Brazilian economic development for many decades, the southern part of Brazil still contains a sizeable indigenous population, numbering possibly as many as twelve thousand individuals (depending on how the southern part of the country is geographically defined; Jornal do Brasil, May 5, 1978, p. B-8; S. Santos 1978: 36-37).

In order to meet the present and anticipated requirements for the electrical power necessary to sustain the industrial and urban growth of this area, several huge hydroelectric projects are currently underway or under study for those parts of its major river basins which are as yet undeveloped: in general, the Parana/Paraguay, Iguacu, and Uruguay river systems. The best-known of these is probably the huge Itaipu hydroelectric complex presently under construction by Brazil and Paraguay on the Parana River, which will flood over 1,400 km² (as discussed in section 8, below). The Parana River basin

as a whole (including the above-named rivers as its major tributaries) is the second largest (after the Amazon) in terms of hydroelectric potential in all of Brazil. It is not surprising, then, that recent interest has been especially concentrated on the development of hydroelectric projects in the Parana basin area (J. Magalhaes 1977; O Estado de Sao Paulo, April 20, 1978, p. 23).

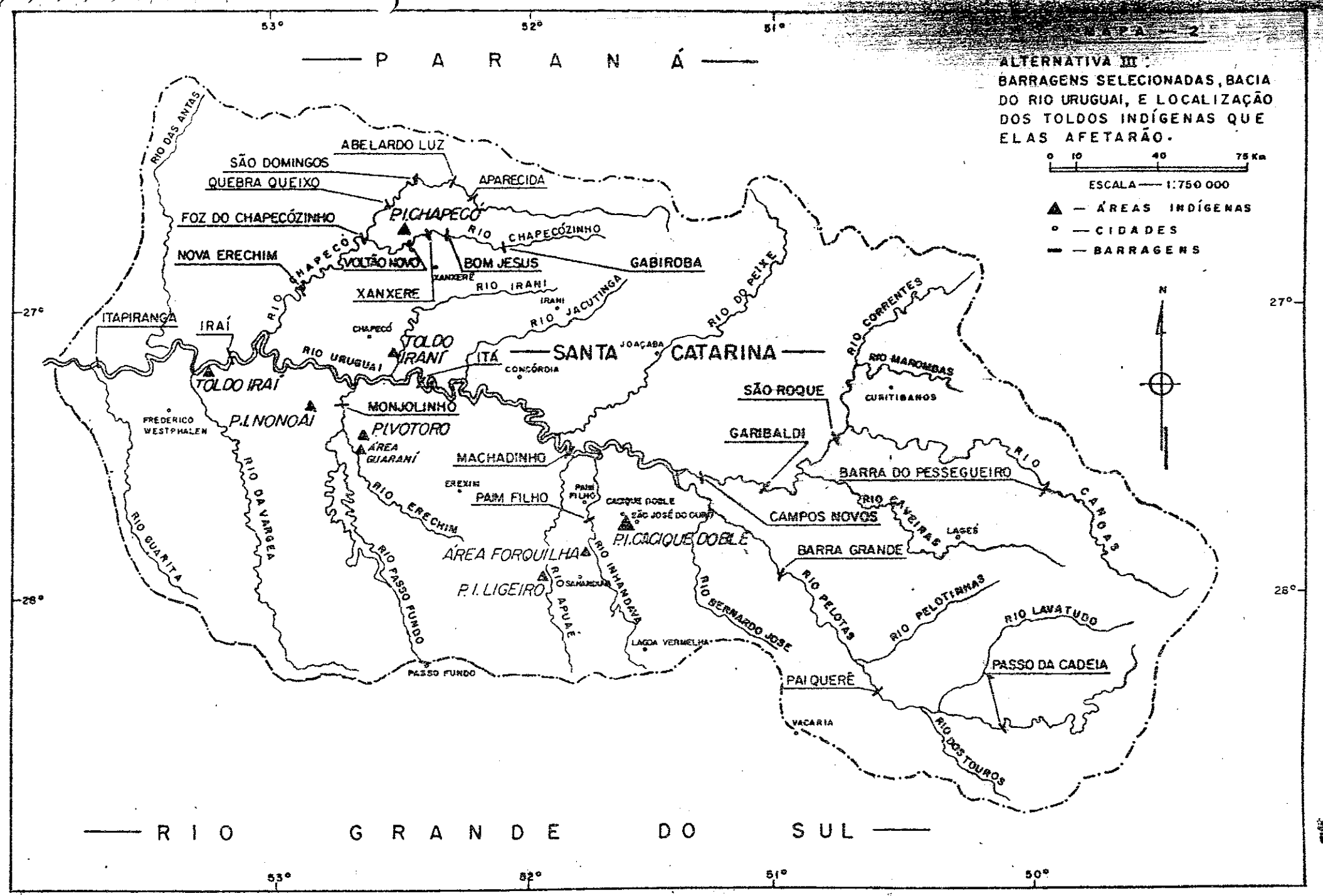
Many of these projects will affect members of the Kaingang or Guarani Indian groups in southern Brazil. Even though most of the Indian groups in southern Brazil have been in contact with the national society for several generations, it remains to be seen whether the effects of the hydroelectric projects in the South will be any less pernicious for their respective Indian populations than those elsewhere in Brazil.

Although so-called "impact assessments" regarding the possible consequences on the human and non-human environment of the construction of major public works, such as roads or hydroelectric projects, are now required by law in many countries (such as the United States), no such legal requirement appears to exist at present regarding such impact analyses in Brazil. Recently, however, at least one branch of the National Brazilian Electric Power Agency (ELETROBRAS), specifically that concerned with the southern region of the country (ELET-

ROSUL), has itself commissioned a set of such analyses regarding a proposed series of dams on the Brazilian portion of the Uruguay River and its tributaries. Among these, one (Santos et al. 1978) was dedicated to the probable consequences of these dams for the Indian population of the area. In the Brazilian context, this was apparently an unprecedented study in that it was commissioned before rather than after the final configuration of dams was selected from among the various possible alternatives, specifically to allow that decision-making process to take into account the relative impact of each of these possible alternatives on the various Indian communities involved (cf. HIDROSERVICE/ELETROBRAS 1971).³

Originally, forty possible dam sites were considered on the (Brazilian) Uruguay River and the following of its tributaries: the Chapeco and Chapecozinho, the Inhandava or Forquilha, the Pelotas, the Canoas, and the Caveiras (listed from west to east). The Uruguay and Pelotas Rivers form the boundary between the southernmost two states of Brazil, Santa Catarina and Rio Grande do Sul (as shown in Figure 2). The Uruguay basin as a whole occupies 46,300 km² of western Santa Catarina and 29,000 km² of northern Rio Grande do Sul, for a total of some 75,300 km² (see R. Santos 1977).

Of the forty possibilities in the Uruguay basin, approximately twenty-two were ultimately to be selected



by a group designated for this task within ELETROSUL itself. The forty original dams were divided among seven mutually-exclusive alternatives, each with a slightly different set of between twenty-two and twenty-seven of the forty possible dam sites. Beginning in mid-1978, ELETROSUL contracted with several different organizations for a series of studies considering the cost/benefit ratios of each alternative in terms of energy production; construction and maintenance costs; relocation of the (non-Indian) population affected; disruption of transportation, communication, services and industries; archaeological loss; effects on the Indian groups of the area; etc. The balance of these various analyses was then weighed by the ELETROSUL group, which selected one alternative in November, 1978.

The anthropological research regarding the Indian population was carried out under contract AS-278000478, between ELETROSUL and the Master's Program in the Social Sciences of the Federal University of Santa Catarina, Brazil, during the August-November academic semester (meaning that the anthropologists could not devote their full time to the project). Nonetheless, extensive background research was undertaken on hydroelectric dams in general, on the areas in question, on the Indian groups involved, and on comparative cases in Brazil or abroad. The various dam sites and Indian areas possibly

to be affected were visited, and the legal status of Indian lands in this area reviewed with the advice of qualified lawyers. The authorization and cooperation of the FUNAI facilitated the acquisition of much of the necessary information regarding the Indian areas involved.⁴

In this study, the possible effects on the Indian groups were divided into two major types: direct and indirect. Direct effects involve the direct physical contact of either the dam itself (i.e. the construction site), or the water which it stores, with the Indian's land: flooding, resource and infrastructural loss, population relocation, raw material procurement (sand, gravel, etc.), and access road or workers' camp construction are a few of the direct effects which may be foreseen. Indirect effects are those possibly less tangible, but not necessarily less important effects of dams or flooding located at some distance from the Indian area. (A radius of approximately twenty kilometers from either a dam or its water's edge was used to determine the probable zone of indirect effects in these cases.) They include such things as long- and short-term modifications in the local ecosystem, disruption in local social and marketing arrangements, procurement of Indian women as companions or prostitutes for the thousands of workers nearby, new disease vectors and patterns (especially schistosomiasis), political pressures on the remaining

Indian lands as long- or short-term refuges for the thousands of non-Indian families displaced by the dams (an estimated 7,000 families in the Uruguay basin, compared to estimates of 1,000 families for Salto Santiago; 2,500 to 5,000 families for Tucurui; and 8,000 families in the case of Itaipu), and (since not all of these effects are negative) such things as increased opportunities for fishing, the opening of new educational and employment possibilities (if the Indians want them), an increased tourist market for the Indians' handicrafts (e.g. Aspelin 1977), and improved regional health-care facilities (built originally for the construction workers, but which the Indians may later be able to use, with the general population).⁵

As a result, the anthropologists concluded that it was not possible, in good conscience, to recommend positively any of the seven possible alternatives, for all of them involved consequences for the Indian populations which we considered unacceptable in the context of the Indian situation in this area today. Therefore, we recommended against all of the alternatives studied. It was possible, however, to indicate which of the seven alternatives would probably be the least prejudicial to the Indian population, although still unacceptable. Nonetheless, energy considerations ruled against the selection of that alternative in ELETROSUL's decision-

making process, since it would have produced by far the least energy of them all.

In reaching their decision, ELETROSUL essentially tried to reach a balance or compromise, choosing that alternative which would produce the greatest amount of electrical energy for the least monetary and (non-Indian) social cost. For example, the particular alternative which would have produced the greatest amount of electricity of them all would also have cost the most money to build and maintain, would have flooded the largest (non-Indian) area, and would have caused the displacement of the largest number of (non-Indian) people; therefore it also was unacceptable.

The range of variation of the effects of these alternatives on the Indian population was relatively much more narrow, however, since each of the six alternatives which provided an electrical output acceptable to ELETROSUL involved essentially equally severe damages to the Indian population of the Uruguay basin as a whole, although some particular effects might be shifted slightly from one specific Indian area to another, depending on the alternative in question. In short, the "Indian cost" factor was relatively constant (though nonetheless serious) in the six alternatives actually considered viable in terms of their energy production.

The alternative which was finally selected by ELETROSUL should generate a total of about 10,000 MW, flood a total of about 1,525 km² (or 152,500 hectares), and displace between 30,000 and 36,000 non-Indian people (or as many as 7,000 families). Included in these figures are a minimum of about 1,556 hectares of Indian land (only 1.0% of the total area to be flooded but nearly 8% of the three Indian areas to be affected) and between 310 and 370 Indian people (only about 0.86% of the total number of persons to be displaced, but about 18% of the Indian population of these same three areas; the Indians' rate of loss, in terms of both their land and the percentage of their people to be displaced, is thus disproportionately high). It will directly affect two of the ten Indian areas in this part of the Uruguay basin, namely the Chapeco Reservation in Santa Catarina and the Ligeiro Reservation in Rio Grande do Sul. Both of these areas are under the supervision of the FUNAI and are known in this part of Brazil as Indian Posts (Postos Indigenas). It will also severely, although only "indirectly", affect a non-FUNAI-reservation area, known as the Toldo of Irai, in Rio Grande do Sul.⁶

Of the ten Indian areas in the Uruguay basin, four or five (Carreteiro and Guarita in Rio Grande do Sul; Palmas, which is partly in Santa Catarina and partly in Parana; Votouro in Rio Grande do Sul; and possibly

Nonoai, also in Rio Grande do Sul) were never really in danger once their exact geographic location and the regional hydrography were established. (In the case of Nonoai, the accuracy of the topographic maps available at the time made it difficult to be entirely sure of this). All of these Indian posts are under the jurisdiction of the 4th Regional Office of the FUNAI in Curitiba, Parana.

Two of the Indian areas which were potentially endangered, Irai in Rio Grande do Sul and Irani in Santa Catarina, are not presently under FUNAI control but represent small groups of Indians trying to hold on to small remnants of their previous land on their own. These areas are called "toldos" in this part of Brazil. ELETROSUL's chosen alternative relegates these to the category of areas only indirectly affected, however in the case of Irai these effects will still be quite serious.

A third Indian area, Cacique Doble and the Forquilha Area in Rio Grande do Sul, is partly a "posto indigena" and partly a "toldo" (i.e. with part of its lands "officially" recognized and part not). It was also scheduled to be affected, to lose approximately 75 hectares of its "toldo" area, located on the Inhandava or Forquilha River, due to the construction of a control dam near the town of Paim Filho. This dam, which figured in the

alternative finally selected by the ELETROSUL group, was, however, subsequently eliminated in March, 1979.

It is interesting to note that each of the three "toldo" areas eliminated by ELETROSUL's selection process from direct involvement (i.e. from potential expropriation; Cacique Doble/Forquilha Area, Irai, and Irani) would have necessitated a judicial decision regarding the legality of the Indians' land claims to begin with, a decision which would have had far-reaching and important consequences for the Indian population of the country as a whole. In the anthropologists' understanding of the legislation involved, the Indians have clearly been defrauded of these lands by private and public action. The court cases might have done much to encourage the investigation and redress of these situations.

Thus, of the five Indian areas (including both Indian posts and "toldos") initially really threatened by the URBHP's forty possible dams, only two (Chapeco and Ligeiro) will actually be directly affected by the selection finally made. Since both of these are supposedly under FUNAI protection and control (the latter supposedly necessary for the former), the challenge to that agency to actually afford some protection to these people in this instance cannot easily be avoided.

Each of the Indian areas (Postos or toldos) to be either directly (Chapeco and Ligeiro) or indirectly but

severely (Irai) involved, is inhabited predominantly by Kaingang Indians. Ligeiro and Irai are exclusively Kaingang; Chapeco has a substantial, though numerically smaller, Guarani population as well. In the cases of both Chapeco and Ligeiro, a part of the Indian population will be displaced by flooding. In Chapeco, the material losses will be especially great. In Irai, the indirect effects will be very severe.

1.1. The Kaingang and Guarani Indians, Chapeco Post.

Of all the Indian areas in the Uruguay basin, the Chapeco Post is clearly the most endangered by ELETROSUL's hydroelectric scheme. Perhaps fortunately, however, it will also be one of the (chronologically) last areas to be affected, since the dams planned for its vicinity will produce less energy per unit investment than the other dams elsewhere in the system. Dam construction in this part of the Uruguay basin will probably begin only early in the next century.

The PI Chapeco, known in the past as the PI Dr. Selistre de Campos or, sometimes, at least informally, as the PI Xanxere, is located at the confluence of the Chapeco and Chapecozinho Rivers in western Santa Catarina, twenty kilometers north of the town of Xanxere (see S. Santos 1970). It contains 15,286 hectares, of which perhaps twenty to twenty-five percent is still relatively

luxuriant forest. Approximately 1,420 Indians live on this Post, of which perhaps 200 are Guarani and the rest Kaingang. They live in about eight small communities within the post, or else dispersed throughout its rich farm and forest lands. Their major support comes from their own agriculture and handicrafts, and from working for local non-Indian farmers. The forest of the post is presently being exploited by the FUNAI, a part of the income from which supposedly returns to help the Indians, although there is considerable question as to who is benefitting whom. This area has been reserved for them since 1902, under the supervision of the States of Parana (to which the area once belonged) or Santa Catarina, or the Brazilian Federal Government.

No less than six dams on the Chapeco River and three on the Chapecozinho (or "Little Chapeco") will affect the Chapeco Post. Four of these nine will be built either on or within one kilometer of the Indians' land, while the other five will either be built or will flood to within two to twelve kilometers of it (depending on the dam in question).

As a consequence, the Chapeco Post will virtually become an island in a chain of man-made fresh-water lakes, losing in the process a minimum of 1,373 hectares (or approximately 09%) of its land, including 359 hectares of mostly prime agricultural land and 1,014 hectares of

some of the last virgin forest in this part of southern Brazil.

This will require the relocation of between twenty and twenty-five percent of its population (250 to 350 people), the rebuilding of 35 to 50 houses and related buildings, replacing or realigning at least one major bridge and many kilometers of access roads, the probable relocation of a native cemetery with some 30 burials and of the FUNAI sawmill complex, and may well also cause the FUNAI to relocate its administrative headquarters for the post. It will certainly also have an indirect (as defined above) and psychological impact on these people which will be multiply-compounded and pose a severe threat to their continued cultural existence, unless appropriate remedies are taken.

1.2. The Kaingang Indians, Toldo of Irai.

Both Irai's (town and toldo) are located on the southern bank of the Uruguay River, at the confluence of the Mel River (which joins it from the south), in the northwestern part of the State of Rio Grande do Sul. The Indian area is located directly across the Mel River from the town, some two kilometers up the Mel River from its junction with the Uruguay. It is linked to the town by an (artificial) foot crossing.

The Toldo of Irai will probably suffer no more than indirect effects, as defined above, from the construction of the Irai dam approximately nine kilometers up the Uruguay River from the town of Irai. However, the resultant proximity of the construction site for such a big dam to the Indian area and the already decadent nature of the relationship between the town and the toldo (where the Indians are exhibited and visited as tourist attractions across from the hot springs resort which forms the basis of the town's economy) make the impact of these "indirect" effects as potentially severe for this group as any direct ones might be. Existent problems of prostitution, health, and identity will only be aggravated unless access to the Indian area is strictly controlled rather than patently encouraged (as is presently the case). The contact situation, both presently as well as in the future (with hordes of workers and later even more tourists), needs careful attention here.

Approximately 80 Kaingang Indians live in the toldo of Irai, occupying 17 miserable shelters built to accord with what the town's mayor thought Indian houses should look like, for tourist purposes. The Indians are prohibited from building other more substantial homes just as they are also prohibited from clearing the adjoining "forest preserve" to provide them with agricultural land for their subsistence. They live on the production of a few

small vegetable gardens, from the sale of crafts, and by posing and prostituting for tourists. They are, in turn, dependent on the town for whatever health or educational services they receive. The FUNAI provides essentially no assistance whatsoever, even though the Indians have apparently resided at this location for over seventy years.

1.3. The Kaingang Indians, Ligeiro Post.

Demarcated in 1911, the Ligeiro Post is located on the western bank of the Apuae or Ligeiro River, about eighteen kilometers west of the town of Sananduva, in northern Rio Grande do Sul. In the past, it has also been known as the Posto Charrua or the PI Paulino de Almeida. It presently contains 4,551 hectares, of which probably less than ten percent is forested, and is inhabited by approximately 600 Indians, all Kaingang, who subsist on the basis of their agriculture, handicrafts, and labor for outsiders.

The Ligeiro Post will suffer both direct and indirect types of effects, primarily from the construction of the Machadinho Dam near the town of Machadinho on the Uruguay River, considerably to the north. That dam will also flood the Apuae/Ligeiro River, which constitutes the eastern boundary of the Ligeiro Post, and part of the "Lajeado Indigena" stream which forms its northern one.

Approximately four percent of the post, or 188 hectares, including 113 hectares of good-quality farmland and some 75 hectares of forest, will be flooded by this dam, which will require the relocation of approximately fourteen Indian people and the replacement of their houses, the relocation of several kilometers of access roads, and the relocation of several families of Brazilians presently working on the road in that area, by the mid-1980's (Santos et al. 1980).

Although several URBHP dams were originally to have been completed in the 1980's, only the one at Machadinho is now likely to be done by then. Construction of that dam is now estimated to begin in 1983. It should begin to generate electricity in 1987 or 1988. A detailed assessment of the impact of this project on the Ligeiro area has just been completed, again under contract to ELETROSUL (Santos et al. 1980). In this 1980 report, the Indian people of Ligeiro voiced their opinion that adequate equivalent land was not likely to be available in the immediately contiguous area. They therefore requested compensation, instead, in the form of specified improvements to their remaining agricultural base.

The rest of the dams proposed for the Uruguay River basin have been postponed at least ten years each, until the 1990's or the beginning of the next millenium, due to the tremendous inflation Brazil has suffered in the

last few years and due to its consequent attempts to reduce all possible expenses and delay all possible foreign and domestic loans.

In sum, the two directly-threatened posts stand to lose a minimum of some 15 km², or 1,556 hectares, representing 7.8% of their present total of 19,837 hectares. A probable total of about 365 Indian people will be displaced by flooding or dam construction activities, representing 18.1% of the present total population of 2,020 on these two posts.

This population data is, of course, especially likely to change during the time foreseen for the dams' completion, since the Kaingang population is at present growing very rapidly and since there is also likely to be a considerable amount of internal rearrangement on all of these posts in the next few years consequent upon the expulsion of the numerous non-Indian families which had for many years been leasing (from the FUNAI, not from the Indians) or squatting illegally on the Indian lands in this part of Brazil (e.g. Jornal do Brasil, May 15, 1978, p. 7). In the case of these two posts, about 3,992 hectares, or 20% of their total area, had been occupied by 278 such families comprising about 1,682 people (FUNAI/INCRA/Governo do Estado do Rio Grande do Sul 1975; FUNAI/INCRA/Governo do Estado de Santa Catarina 1975).

Thus, it is somewhat ironic that just as the Indians have succeeded in regaining the use of their lands, they are again threatened with losing a good part of them. Their lands have already been reduced very substantially from what they were originally guaranteed by the Brazilian government. They will certainly not take kindly to the idea of losing even more, for whatever purpose. Tensions between Indians and non-Indians in these areas are already very high, due to the expulsion of the non-Indian occupants of the Indian lands during 1978. Timing could not be worse for the ELETROSUL proposal, in this regard. The opportunity to investigate how the Kaingang will react to this problem, politically, socially, economically, and psychologically, and to at the same time perhaps enable them to better understand the forces weighed against them, thus to strengthen their own cause, is a uniquely valuable one. Both for its own sake, and for the comparative reasons previously mentioned, more research is urgently needed on this problem, in this area.⁷

2. The Xokleng Indians and the Itajai River Flood-Control Project.

The Xokleng Indian area, known as the Ibirama Indian Post, is located on the Northern Itajai River (also known as the Hercilio River) in the municipality

of Ibirama in the northeastern part of the State of Santa Catarina. The Xokleng, who are related to the more-numerous Kaingang of southern Brazil, speak a Ge-language. They were the subject of Jules Henry's (mistitled) book, Jungle People: A Kaingang Tribe of the Highlands of Brazil (1941). They have been studied more recently by Silvio Coelho dos Santos (1973) and by Gregory Urban (1978).

This Indian Post, which was founded in 1914, was also known in the recent past as the Duque de Caxias Post. A few Kaingang and Guarani also reside there. It contains 14,156 hectares, of which between 700 and 1,000 will be subject to periodic flooding from a flood-control dam which is being built on the Northern Itajai, about eight kilometers below the Indian area, by the National Department of Sanitation Works (DNOS). The Indian area itself will bear the brunt of this project, accounting for about half of the total of about 1,600 hectares which the dam may flood. As a matter of fact, the Indian area appears to bear the brunt of the whole (larger) Itajai valley flood control scheme, which also involves two other dams which will flood another approximately 2,700 hectares, since the Indian losses will amount to about 20% (between 700 and 1,000) of the total 4,300 hectares involved (O Estado de Santa Catarina, January 19, 1979, p. 9 and February 5, 1979, pp. 8f.)

The part of the post which will be subject to flooding includes a large amount of commercially very valuable forest (estimated to be worth about 400,000 US dollars at present) and much of the suitable farmland available to the Indians. The dam will require the relocation of 50 kilometers of road which will further encroach on the Indians' land. It will also require the relocation of most of its approximately 650 inhabitants, as well as the Indian Post headquarters, to a very steep area which will probably, therefore, soon become severely eroded and agriculturally useless.

The dam, which is the last of the three planned for the Itajai River basin, was to be completed between 1980 and 1982. So far, no move to reimburse the Indians for the land they will thus lose, or to replace it, has been agreed upon, although 60% of the non-Indian inhabitants of the rest of the area to be flooded have already been reimbursed and prices have been established for the remainder. The Indians have brought suit against the FUNAI, through the Brazilian National Association to Support (Back) the Indians (ANAI), to prohibit the cutting and sale of the forest, unless they receive fair reimbursement.

The Indians are becoming anxious to have the situation resolved. The several years of uncertainty and tension since the project was announced have exacerbated political

divisions within the reservation and made their decision-making at this point even more difficult. The Indians want to be reimbursed for their land in equivalent land, rather than by a simple cash payment, and want partial legal control of any cash settlement for other damages. Exactly how to divide any such cash payment is of course a subject of hot debate.

Both FUNAI and the DNOS are agencies of the Ministry of the Interior and so they are supposedly working internally on a settlement of the issue. The Indians appear to be only marginally involved in the decision-making process at this point. FUNAI had suggested a full cash reimbursement, to be invested in an agricultural cooperative, but the Indians were suspicious of this plan and have rejected it at present.

The DNOS then said they might be willing to provide a reimbursement in land and that they (the DNOS) were also considering leasing the land expropriated for the flood-control area to interested farmers, since it would be only periodically flooded.

At that point, the Santa Catarina Association for the Preservation of Nature (ACAPRENA) questioned whether, if this were indeed the case, it would even be necessary to cut the trees at all. It has also questioned whether it would be wise from either the ecological or the engineering points of view to cut the trees on such

steep slopes if they will only rarely be flooded, since the slopes will be too steep to farm and will only badly erode (thus being of little interest to renters after the first few years) and silt-in the dam, while if the trees were left they would not be flooded frequently enough to die but would rather control soil erosion and retard silting behind the dam (O Estado de Santa Catarina, June 9, 1978, p. 9; January 9, 1979, p. 9; January 26, 1979, p. 10; March 9, 1979, p. 5; and March 11, 1979, p. 11).

Although the Ibirama/Itajai River Dam is not yet fully completed, it has already been partially filled several times in the last two years by unexpected floods, unexpected at least by the engineers, who are accused of proceeding on the basis of inadequate pluviometric data (O Estado de Santa Catarina, December 31, 1980, p. 9).

The worst floods were in August, 1979, and in August and December of 1980. They caused severe damage for both the Indian and non-Indian populations of the area, breaking through the diversion dam in two cases, flooding homes and fields and produce in all three cases, and at one time (in August, 1980) isolating as many as 12,000 people for several days by flooding the only access road up the Itajai valley. As a result, one Indian child died of a cause which could have been cured had it been possible to get her to a hospital in time.

The constructing agency (the DNOS) had promised for several years to relocate the access road, however they have not yet done so. Non-Indian sentiment against the DNOS ran so high in late 1980 that acts of violence were threatened against local officials (such as the Mayor) and against the dam works itself.

By the time of the first failure of the diversion dam, in August of 1979, only some 60% of the non-Indian landowners in the project area had been reimbursed for their lands, even though the project had first been announced in 1973. The other 40% suffered, together with the Indians, flooding of their lands, homes, livestock, and produce, all of which should have been expropriated and/or relocated at the DNOS' expense several years before. At this point, the local non-Indians also began to feel the slow pace and inattention of which the Indians had for so long been accusing the DNOS (and the FUNAI). They attempted to apply political pressure on the DNOS, both locally and nationally, to resolve the situation. They were only partially successful, however: it took over a year for them to receive even partial compensation for their losses in this first flood (and by that time they had been flooded, with new losses, once again).

Partly as a result of this political pressure, a commission of the Legislature of the State of Santa

Catarina undertook an investigation of the Ibirama/DNOS Indian situation. Partly as a result of this investigation, in late August, 1979, the DNOS announced that it had sent to FUNAI four proposals to reimburse the Indians for the expropriation of their lands, the "best" of which foresaw the expropriation for the Indians of a 714-hectare tract of land from its non-Indian owners, which tract bordered on the previous Indian reservation, but was located upstream, above any possible flooding. This was to be in trade for the Indians' flooded lands. The latest calculations, the DNOS said, showed that "only" 714 hectares (about 6% of the present reservation's land) would be lost by the Indians in any possible flood. The DNOS also proposed building a new Indian community at DNOS' expense, out of the way of the flood, which would involve relocating the cemetery, building some 70 new houses and a school, church, clinic, and related installations, plus the construction of a new access road and electrical lines into the area.

The Indians, however, claim this new land is not as good for agriculture as the old area was and that they don't want to be relocated in such great isolation from the rest of their world as the new site would involve. Furthermore, they say that they were never consulted about all of these plans to begin with and that once again paternalistic "solutions" to "their" problems are

being forced down their throats by the very agencies which have created these "problems" in the first place.

The DNOS also came out against FUNAI cutting and selling the lumber from the potentially flooded area since, as ACAPRENA had suggested, the trees there would probably survive the periodic flooding involved and would serve to control erosion into the catch-basin. FUNAI, not to lose out, has now instigated some of the Xokleng to themselves press for the sale of the lumber, or for the termination of their legal status as Indians, whereupon the reservation would cease to be collectively owned and could, together with its forest cover or other surface resources, be subdivided and sold individually. Thus, FUNAI and these particular Indian individuals might individually benefit from the situation at the expense of the Xokleng Indian group as a whole (Jornal de Santa Catarina, September 1, 1979, p. 4; December 4, 1979, p. 9; August 28, 1980, second section, p. 1; May 17, 1980, pp. 6 & 9; and Correio do Povo, August 27, 1979, page unknown).

3. The Guarani Indians and the Salto Santiago (Iguacu River) Hydroelectric Project.

The Guarani Indian area of the Mangueirinha Indian Post is located on the southern edge of the Iguacu River in the western part of the state of Parana. It has been

studied anthropologically by Pires (1975) and Schaden (1962: 16). Although the Kaingang have lived there since at least 1882, the area was only officially reserved for the Indian people in 1903. The Guarani themselves apparently first came to this post from Argentina and Paraguay about 1915.

The post, previously known as the Cacique Capanema Post, is divided into three contiguous sections. The northern part, locally called "Palmeirinha," on the Iguacu River, is in the municipality of Chopinzinho. It contains 3,300 hectares and is inhabited by approximately 212 Mbya-Guarani. The southern part, locally known as "Campina," containing 4,100 hectares, is inhabited by about 535 Kaingang, and is in the municipality of Mangueirinha. An intermediate section of 8,976 hectares of extremely valuable, essentially "virgin", forest was illegally taken from the Indians in 1949 and is still apparently in litigation between FUNAI and a politically very powerful lumber company (Pires 1975: 50f.) The Indians have threatened to invade the area if the question is not legally resolved soon (O Estado de Sao Paulo, March 28, 1979, page not available).

Although very little information has been made public regarding it, it appears that as much as 1,000 hectares (or nearly one-third) of the Guarani area may be flooded by the Salto Santiago Hydroelectric Dam, now

essentially completed slightly lower down on the Iguacu River, or expropriated for the relocation of a bridge and federal highway, or for the construction of a related transmission line, in or through their area as a consequence of this.

The Salto Santiago project should generate 2,000 MW, compared to the 2,250 MW Foz do Areia and the 1,050 MW Salto Osorio projects also under construction just above and below the Salto Santiago site, respectively. All of these projects will eventually be interlinked via 230Kv or 500Kv transmission lines with the huge Itaipu project, to provide power to the Southeastern industrial heartland around Sao Paulo. The Salto Santiago Dam will create a narrow reservoir some 95 kilometers long, covering approximately 225 km², displacing an estimated 1,000 families (or about 5,200 people), and employing some 12,000 workers. Construction on the project began in 1976. It was scheduled to begin furnishing electricity in late 1980 or 1981, and appears to be very nearly on schedule (Correio do Povo, February 4, 1979, p. 14; Goodland 1974/5: 8, 18).⁸

These people (the Guarani) live under very precarious circumstances, with some subsistence agriculture and from the sale of their handicrafts. The hydroelectric agency (ELETROSUL) has relocated them in new houses, opened new farm plots, rebuilt their school and clinic,

and opened an access road to their new area of residence, which they selected. The Department of Indian Patrimony (DGPI) of the FUNAI has already cut a large part of the virgin forest in the area to be flooded, utilizing the modern sawmill facilities installed a few years ago to supply timber for the construction project at Itaipu (Pires 1975: 53).

Last year, one of the Mangueirinha Reservation's Indian leaders was assassinated and another was permanently paralyzed by gangs of thugs hired by powerful local non-Indian interests (e.g. Correio do Povo, January 30, 1980, p. 9; ARC/Anthropology Resource Center Bulletin no. 4, January 5, 1980, pp. 12f.) Although this was most specifically provoked by the conflict over the illegally expropriated portion of their reservation (which contains the largest remaining virgin stand of Parana pine in the world), it can also be seen as simply another part of the larger situation of tension and conflict surrounding all of the Indians' lands in this rapidly-developing agricultural area, in which the Indians' losses of land and their resettlement problems due to the construction of the Salto Santiago Dam were an important, contributing, part. The evacuation of several thousand non-Indian families from the areas to be flooded by the Salto Santiago, Foz do Areia, and Salto Osorio Hydroelectric Reservoirs, all in the same immediate

area, has undoubtedly also been a major factor in increasing these tensions and in increasing the pressures on the Indians' lands, since new farmlands are not readily available for the resettlement of these non-Indian people in southern Brazil, so that many of them are now living only marginal lives on the edges of the local towns and nearby cities.

The people of Mangueirinha say that they have not yet received what they thought they were going to receive in return for their land, even though the Salto Santiago Dam project is essentially complete, and they specifically implicate the FUNAI in the mismanagement, delay, and possible diversion of these services and/or funds from their rightful recipients. Whether the Indians will actually receive any reimbursement in cash or land for the land and forest they have lost thus still remains to be seen. (It appears, for example, that the funds already paid to the FUNAI on behalf of the Indians by ELETROSUL, as compensation for the land expropriated for the transmission lines, have completely disappeared within the FUNAI bureaucracy.) Both the Mangueirinha and Ibirama Reservations are under the jurisdiction of the 4th Regional Office of the FUNAI, headquartered in Curitiba, Parana.

4. The Itaparica (Sao Francisco River) Hydroelectric Project.

The Tuxa are one of several Indian groups (along with the Truka, Pankararu, and possibly the Atikum) who are being or will be affected by the construction of a series of dams on the middle course of the Sao Francisco River, just upstream from the city (and previous dams) of Paulo Afonso. The Sao Francisco River has been estimated to represent fully 96% of the hydroelectric potential of the entire Northeastern region of Brazil. Its Xingo (or Quingo)/Paulo Afonso/Itaparica/ Oroco/ Sobradinho series of dams (listed from east to west) thus represents a very strategic factor in the development plans for this impoverished and overpopulated region of the country. The Sobradinho and the Paulo Afonso I-IV series of dams are already in operation. The first of the Paulo Afonso series, number I, was built in 1955; the latest, number IV, is the largest hydroelectric facility yet built on the Sao Francisco. It was inaugurated in November, 1980 (Boletim Especial da Embaixada do Brasil em Washington, December 22, 1980, no. 100: 3). The others are either underway or in the planning stages at present (see, for example, Fucci 1977).

The Itaparica Dam will definitely and completely flood the Tuxa area, the Truka and possibly the Atikum

areas are threatened by it, and the Pankararu area is less than two kilometers from its construction site and workers' camp. (The Pankararu area itself will not be flooded, however.) This dam is being built near the town of Gloria, just to the north of Paulo Afonso, by the Companhia Hidroeletrica do Sao Francisco (CHESF), the regional hydroelectric agency.

Relatively little recent information is available on these groups.

4.1. The Tuxa Indians, Rodelas Reservation.

Of the two Tuxa Indian areas, known together as the Rodelas Indian Post (and previously known as the Felipe Camarao Post), one is located on an island in the Sao Francisco River and the other is located in the city of Rodelas in the State of Bahia, one and a half kilometers away. The Tuxa are reported inhabiting this area as far back as 1759 and possibly as early as 1692, according to early missionary accounts cited by Hohenthal (1960a: 46f.), who visited them in 1952. Many of the Tuxa males were off working elsewhere at that time, some as far away as Sao Paulo, so that an exact census was not possible.. He estimated about 200 Tuxa to be at Rodelas then. Amorim (1975: 7) reports that there were about 357 Tuxa in the early 1970's, living in two areas which totaled 240 hectares.

The most recent data available regarding them are reported by Orlando Sampaio Silva (1980: 5) for 1975. Official FUNAI data provided to him at that time indicated a total of 438 Tuxa at the Rodelas Post. They all resided in some 63 houses on a single residential plot, which also housed the headquarters of the FUNAI post, in the city of Rodelas. An exact measurement of this plot was not available, however it probably contained no more than 50 to 60 hectares (only its frontage of 400 meters was reported).

As Hohenthal (1960b: 78) had earlier reported, there was no farm land set aside for them on the river bank itself (the Indian Post was essentially only a residential and administrative compound) and they thus had to farm on the islands nearby. One such island, the "Ilha da Viuva", belongs to the Tuxa as a whole, constituting the other part of their official "reservation" lands. This island (which is actually in the municipality of Itacuruba in the State of Pernambuco) is one and a half kilometers from Rodelas by canoe. It contains 50 hectares and is used by the Tuxa exclusively for farming. None of them regularly live there. The Tuxa are agriculturalists, having some of the very limited farmable land in this area, since farming is essentially restricted to the narrow band of the river banks or the riverine

islands. The Tuxa have effectively and exclusively occupied the Ilha da Viuva since the 1950's.

Some individual Tuxa also own a few smaller islands near Rodelas, however these are not considered part of the Tuxa's reservation property. The present size of the Rodelas Post thus may be no more than about 100 hectares, as a whole.

The Tuxa supply most of their protein by fishing. They are expert canoeists. Like all of the Indian groups of the area, they also engaged in the gathering of wild foodstuffs when possible.

According to Ribeiro (1957: 95 and 1977: 422f.), their original linguistic classification is unknown and their original language has apparently been totally lost. However, they maintain a sense of ethnic unity and identity, reinforced by local stereotypes. They also retain a distinctive set of rituals (the Jurema and the Tore) which further serve to establish their unique identity in the eyes of all concerned (Hohenthal 1960a: 60f.; Nasser and Nasser 1976).

The Tuxa have expressed a desire to be relocated together with the city of Rodelas, so as not to lose the educational opportunities which it provides for their children. Their first priority, however, is to be relocated in an area which is ecologically similar to that which they now occupy so that they may continue to

farm in their traditional way. Given the limited amount of arable land in this part of the Sao Francisco basin, this is practically impossible. If they accompany Rodelas, it will be even less likely. According to Orlando Sampaio Silva (of Sao Paulo) and Elizabeth and Nassaro Nasser (presently at the University of Florida, Gainesville), who served as anthropological consultants to the regional hydroelectric agency (CHESF) regarding this area, the situation will be difficult to resolve. So far, FUNAI's only suggestion appears to have been to move them over 1,300 kilometers to the west, to the Ilha do Bananal in the Araguaia River, which has already illegally been invaded by some 6,000 non-Indian squatters and which would furthermore put them far from both schools and their traditional environment, to which they were well adapted already (Sampaio Silva 1980: 7; Veja, December 24, 1980, p. 4). Wherever they go, the Tuxa are probably going to have to find a new source of subsistence.

Nothing has as yet been clarified regarding compensation for any of the Tuxa's other belongings to be lost to or otherwise damaged by the Itaparica Reservoir, either.

All four of these groups, the Tuxa, the Truka, the Pankararu, and the Atikum, are under the jurisdiction of the 3rd Regional Office of the FUNAI, headquartered in

Recife, Pernambuco. The Tuxa, Pankararu, and Atikum are each on "official" FUNAI reservations or Indian Posts; the Truka are not. The role of the FUNAI as the "protector" of these groups should be looked at very closely in this situation.

The Tuxa themselves suggested, starting about 1974, that one alternative might be for them to move to Assuncao Island, in the Sao Francisco River (directly south of the town of Cabrobo in the municipality of the same name, in Pernambuco), where their "friends" the Truka live. This would be somewhat ironic, since that appears to be where they came from originally, before moving to Rodelas. Ribeiro (1977: 55f.) states that the Tuxa were cheated out of their lands on Assuncao Island in about 1910 by the Bishop of Pesqueira (Pernambuco), in collusion with a powerful local landowner, and that many of them thus had to move away while some others stayed on, working for the new owner of their land. The two groups (Tuxa and Truka) appear to be very closely related, though little contemporary information is available on the latter. Amorim's (1975) study of contemporary Northeastern Brazilian Indians doesn't even mention the Truka. Hohenthal (1960a: 44f.) found references to the Truka being on Assuncao Island, at the mission there, as early as 1722, when they were known as the "Massacaria de Bahia". He also thought that the traditions of the

contemporary Tuxa of Rodelas indicated that they too originally came from Assuncao Island, presumably having been part of the same mission group as the "Truka".

4.2. The Truka Indians, Assuncao Island.

According to a recent notice in the FUNAI magazine Revista de Atualidade Indigena (no. 2, January/February 1977, p. 55), the Truka number about 418 people. The FUNAI was supposedly trying, at that time, to obtain title from the government of Pernambuco to the 500 hectares on which the Truka lived. (They had previously been without any FUNAI assistance, whatsoever.) Assuncao Island is quite large, measuring some seventeen kilometers long by between two and three kilometers wide, for a total of about 5,000 hectares. (Its location is described in the section on the Tuxa, above.) A large part of it, if not all, will certainly be flooded, however. Whether the Truka area would be large enough to accommodate the Tuxa as well, and how much of Assuncao Island will actually be flooded, we have not been able to determine at present.

There may be no Truka left there by the time the FUNAI and CHESF get around to resolve those issues, however, since recent information indicates that Assuncao Island has been invaded by powerful agribusiness corporations, which are now forcing the Truka out of what

little remained of their traditional lands (Sampaio Silva 1980: 6). Once again, FUNAI's efforts on behalf of the Indians appear to have been worthless, at least as far as the Indians are concerned.

4.3. The Pankararu Indians, Pankararu Post.

The Pankararu have recently been studied by Orlando Sampaio Silva (1978) and Paulo Amorim (1975: 7). They, as with the other Northeastern Brazilian cases mentioned here (the Tuxa, Truka, Atikum, and Pankarare), have adopted a great part of their present culture from the national society, losing in consequence a great part of their own, including their original languages. However, the Pankararu still retain a sufficient amount, especially of ceremonial lore (some of which, actually, may have been only recently invented), to be considered as the masters of "tradition" by still other Northeastern Indian groups, especially the Pankarare, who live (without FUNAI assistance) some fifty kilometers to the southwest and with whom they probably at one time constituted a single mission group (see Soares 1977; Hohenthal 1960a: 47; and Ribeiro 1957: 88). The Pankararu were reported (together with the Pankarare) in this area as early as 1696, when they (like the Tuxa) inhabited several islands in the Sao Francisco River. The Pankararu probably moved to their present location, still within eyesight

of the river, about 1802 (Hohenthal 1960a: 54f.) The present Pankararu, like most of the groups named in this area, probably represent the homogenized remains of several originally diverse groups formed around a mission nucleus three to four hundred years ago (see Lowie, 1946, for further references).

At present, about 2,565 Pankararu, comprising 832 families, live in thirteen separate villages on the Pankararu Indian Post, near the town of Brejo dos Padres, in the municipalities of Tacaratu and Petrolandia, Pernambuco. This post was officially demarcated for the Pankararu by the Brazilian Ministry of Agriculture in 1940. It contains 8,100 hectares, of which approximately one-third are occupied by non-Indians who entered presumably either as renters (from the SPI or the FUNAI) or squatters due to the relatively favorable agricultural characteristics of the post in an otherwise barren area. These non-Indian residents have recently initiated a court action to try to obtain full and permanent title to those Indian lands which they have been occupying for a certain amount of time (Sampaio Silva 1980: 7).

The Pankararu, as with the other Northeastern groups discussed here, live primarily from their own subsistence agriculture. They are apparently more prosperous at this than many of the others. In 1952, Hohenthal (1960b: 78) found them to be one of the few

Northeastern Indian groups whose land was sufficiently large and well-watered to allow them to produce enough food for their own needs and still have a sizeable amount left over for sale. The Pankararu also sell handicrafts of straw and ceramics regionally, which the others do only on a much lesser scale. Many of the Pankarare had already worked for the Sao Francisco Hydroelectric Company (CHESF) when Soares (1977: 4) studied them in the mid-1970's and it was generally expected that this source of employment would expand with the construction of Itaparica. Many Pankararu were also looking forward to that possibility.

The Pankararu Post is directly adjacent to the camp of the workers involved in the construction of the Itaparica Dam, although the Pankararu themselves will not be flooded-out by it. The effects on the Pankararu of the concentration of such a large number of people (essentially involving the building of a complete new urban center) within one or two kilometers of their post will be very severe (especially since it now appears very likely that this "workers' camp" is destined to become the new and permanent site of Petrolandia, now located some 15 kilometers away, the largest of the cities in the area to be flooded by the Itaparica Dam). It is also possible that the new route for the major highway linking Petrolandia to Paulo Afonso may pass

right through the lands of the Pankararu Post, thus dividing the reservation in two and bringing the effects of their new, direct contact with the national society right into the heart of it. The problem of illegal "squatters" within their reservation would become even more serious, were this to happen. The long-term changes which this project also implies, in terms of increased water and power supplies for increased industrial development, urbanization, and irrigation, all of which will affect the relations between the Indians and whatever new form of regional society emerges as a result, are also worthy of continued careful study.

4.4. The Atikum Indians, Atikum Post.

The Atikum or Uamue (also known by several other names; see Malcher 1964: 261 and Ribeiro 1957: 95), who live in and at the foot of the so-called Serra de Uma or Serra do Uruba, slightly to the north of the city of Floresta, in the municipality of Floresta in Pernambuco (just across the river from Rodelas), will also be at least indirectly affected by these projects. In other words, although they will probably not be flooded nor directly encroached upon by the dam's construction, their lives certainly will be affected by the massive social movements which the dams will cause in this area. Furthermore, it is not entirely certain that their

official FUNAI post, now known as the Atikum Post and previously known as the Padre Nelson Post, is totally beyond the water's reach, for a large part of the municipality of Floresta will be flooded by the Itaparica Dam (compare HIDROSERVICE/ELETRONBRAS 1971: map, "Estudo dos Reservatorios"; and Ribeiro 1977: 461). In 1957, there were reported to be about 1,250 Atikum; their original language had been lost (Ribeiro 1957: 95; see also Amorim 1975: 2). They are known to have inhabited this area since at least 1759 (Hohenthal 1960a: 54).

Due to changes in the construction timetable, the Itaparica Dam is now scheduled to begin producing power no sooner than 1984. Construction of the workers' camp and preparation of the site began in 1979. However, although it was given high priority by CHESF, construction was then (again) postponed due to Federal budget cuts designed to control inflation (O Globo, January 30, 1979, p. 35; Jornal do Brasil, August 4, 1979, p. 9).

In the Itaparica Dam area, rising social tensions among and between Indians and non-Indians have already led to bloodshed. The Indian peoples of the Sao Francisco area seem to have to fight even to be recognized as Indians by the FUNAI. Their ability to continue to hold on to what is left of their shrinking lands seems increasingly in doubt due to a lack of practical and legal support from the FUNAI. To date, FUNAI hasn't even

bothered to undertake an official investigation of the San Francisco/Itaparica Dam - Indian problem. Yet, the timetable for the dam's construction moves slowly ahead, tensions in the area grow increasingly larger, and time to resolve the situation grows ever shorter.

5. The Tucuruí (Tocantins River) Hydroelectric Project.

When it is finished, the Tucuruí Hydroelectric Project will apparently be the fourth largest hydroelectric complex in the world in terms of power production, the largest yet built in any tropical forest region, the largest yet built in the Amazon Basin, and the largest wholly within Brazil itself (Itaipu being partly in Paraguay). It is now being built by ELETRONORTE (Centrais Elétricas do Norte do Brasil, SA; the northern Brazilian equivalent of ELETROSUL in the south) on the Tocantins River in the State of Pará, a few kilometers south of the city of Tucuruí, which is about 300 kilometers south of the city of Belém.

At the close of its first stage (in 1985), the Tucuruí Dam should generate 2,000 MW. (This will rise to 4,000 MW after the river's flow is totally controlled by the other dams planned further upstream. The installed generating capacity of the first stage is therefore 4,000 MW, even though it will not be able to achieve that capacity on its own.) A second stage, for the

Installation of which we have seen no firm dates, foresees the addition of another 4,000 MW capacity at Tucuruí itself, to generate a final total of 8,000 MW (8,000,000 KW). This would be the equivalent of 400,000 barrels of oil (if burned for electric generation) per day. The total potential of the Tocantins/Araguaia basin has been calculated at 25,000 MW, of which the second-stage Tucuruí Dam would therefore represent nearly one-third.

The Tucuruí Dam is only the first of a series of seven very large dams planned for the Tocantins and its major tributary, the Araguaia. Six of these will be on the Tocantins itself; one will be on the Araguaia. Together, they form the Tocantins River Basin Hydroelectric Project (TRBHP), an integral part of the overall "Plan for the Integrated Development of the Tocantins River Valley" (PIDTRV).

The next dam upriver on the Tocantins from Tucuruí is planned for a site called Santo Antonio, just a few kilometers south of Imperatriz, Maranhao. The others will be at sites called Carolina (just above the towns of Carolina and Filadelfia), Porto Nacional (just above the town of the same name), Peixe (50 kilometers above the town of that name), and Sao Felix (where the river by that name enters the Tocantins at 13°35'S). The Carolina Reservoir will probably be the largest of these (excluding the one at Tucuruí itself). The waters of

the last one, the Sao Felix Reservoir, will come within 125 kilometers of Brasilia, over 1,300 kilometers (measured in a straight line) from the Tucurui Dam. The TRBHP reservoirs will form an almost continuous chain of lakes over 1,900 kilometers long (actually, only 1,600 kilometers after excluding the unused 300 kilometer stretch between Maraba and Imperatriz) from Tucurui to the headwaters of the Sao Felix Reservoir.

On the Araguaia, which joins the Tocantins just above Maraba, only one large dam has been planned, for a site called Santa Isabel, near the falls of the same name, between 40 and 50 kilometers (measured in a straight line) above where the BR-230 Transamazon Highway crosses it.

The dam at Tucurui will flood an area now estimated at about 2,160 km² (or 216,000 hectares), creating a lake some 200 kilometers long (ELETRONORTE 1980). It will seriously flood two areas belonging to the Parakanan Indians (the Parakanan Reservation and the Pucurui Post), require the relocation of 5,000 non-Indian families (or 20,000 to 30,000 people), six towns, and about 50 kilometers of the BR-230 Transamazon Highway (where it borders the Tocantins River from the Jatobal junction north to Repartimento and simultaneously forms the eastern boundary of the Parakanan Reservation), plus a large part of the BR-422 Repartimento-Tucurui road,

which now passes through the Pururui Post of the Parakanan Indians. The relocation of these two highway segments will further drastically affect these two Indian areas. (The Pucurui Post and the Parakanan Reservation are discussed in more detail, below.)

The Tucurui Dam complex was primarily designed to provide abundant and relatively inexpensive power for the development of mineral extraction and processing facilities in the Tocantins/Trombetas region, and secondarily to supply power to the urban complex of Belem and to the Brazilian Northeast, via an interlinkage to the CHESF system. The primary metallurgical users of this energy will be: (1) the Serra dos Carajas or "Carajas Project" iron-ore extraction, processing, and export complex (located to the southwest of Tucurui), which calls for a total investment of over 33 billion U.S. dollars (at 1980 prices) over the next ten years; (2) the ALUNORTE bauxite, alumina reduction facility to be installed by 1982 in the municipality of Bacarena just west of Belem; at a cost of US\$410 million (at 1977 prices) to reduce between 800,000 and 1,600,000 tons per year of bauxite from the Trombetas River region (to the north) to alumina for; (3) the ALBRAS aluminum facility, also to be installed by 1982 at Vila do Conde (next to the ALUNORTE facility) also in the municipality of Bacarena, at a cost of US\$956 million (also at 1977

prices), to produce 320,000 tons per year of aluminum. Brazilian officials likewise predict the development of steel production facilities for the "Bacarena Industrial Park" in the near future, also utilizing the Tucuruí/Tocantins energy supply and the Serra dos Carajas iron ore. As of 1977, they reported the Tocantins River valley to have the largest mineral deposits yet discovered in the Brazilian Amazon region. Development of the Tucuruí Hydroelectric Project is clearly related to their exploitation. In all of these mineral projects, there is a very large multinational and non-Brazilian (especially Canadian, U.S., and Japanese) interest, although the projects are nominally those of Brazilian corporations (e.g. the Companhia do Vale do Rio Doce; Almeida 1977; Boletim Especial da Embaixada do Brasil em Washington, December 22, 1980, no. 100: 3; Davis 1977: e.g. 35f., 91; ELETRONORTE 1980).

Two 500Kv transmission lines will carry the electricity generated at Tucuruí to its users. One will carry it north-northeast to the aluminum facilities at Vila do Conde, from which a 230Kv line will continue on to Belem. The other 500Kv line will carry it south to Marabá, Pará, at the upstream end of the Tucuruí Reservoir, where it will be hooked directly into the Serra dos Carajas project (to power its electrified railroad from the mines east through Marabá and on to the port of São

Luis, Maranhao) and from which that 500Kv line will continue along the northern edge of the Tocantins at that point, east to the city of Imperatriz (Maranhao) from which it will be tied into the Northeastern power grid via CHESF (this is further discussed below).

The entire Tucuruí Hydroelectric Project was originally estimated to cost 2.5 billion U.S. dollars (at 1975 prices), much of which was to be financed through an agreement with France. However, its real costs will be much greater. The Japanese, for example, appear to have a major interest in the Albras/Alunorte aluminum project, which will be one of the major beneficiaries of the artificially-cheap energy prices provided as a part of the international financing agreement. The sum of the difference between those lower energy costs (pegged at one-third of the current market price) and the prevailing market price, over the twenty years for which they are guaranteed, are, of course, one of the important "hidden costs" which will make the entire Tucuruí/Tocantins project much more expensive in real terms than it appears from the dollar figures announced (Bourne 1978: 136-146; Davis 1977: 90f.; Magalhaes 1980: 11).

The first stage of the Tucuruí Hydroelectric Project is presently under construction. It was originally scheduled to begin producing power in 1982. The first (non-Indian) inhabited areas were to be flooded between

April and July of 1979; the entire Pucurui Post of the Parakanan Indians was to be flooded in 1980 and about half of the Parakanan Reservation in 1982, if work continued as originally scheduled (A. Magalhaes 1977, 1978). The project is apparently already at least two years behind schedule, however (although the available information is somewhat contradictory), and it is now scheduled to begin producing power only in 1984/5. The huge floods along the Tocantins in early 1979 pushed back the project's timetable and inflation-related cuts in the National Brazilian Electrical Power Agency (ELETROBRAS)'s budget have also delayed it somewhat (ELETRONORTE 1980; Folha de Sao Paulo, February 3, 1979, p. 18).

5.1. The Parakanan Indians, Pucurui and Parakanan Posts.

The Parakanan Indian area comprises three separate tracts of land which have been set aside for the Parakanan (and possibly a few uncontacted Assurini) on the west bank of the Tocantins River in the southwestern part of the State of Para. These are the Pucurui and Parakanan Reservations, located respectively about 60 and 90 kilometers south of the town of Tukurui, in the municipalities of Tukurui and Jatobal, Para, along with a third, interdicted, area along the headwaters of the Cajazeiras River, a western tributary of the Tocantins, in the municipality of Itupiranga. The interdicted area measures

approximately 180,000 hectares. It was set aside in 1971 for the pacification of the remaining uncontacted Parakanan who are reported in that area. Once they are contacted, either the area will be "definitively" reserved for them or else they will be moved to join the other Parakanan and this area then opened up for colonization. The Parakanan Reservation was also created in 1971; it contains 1,600 km² or 160,000 hectares. The Pucurui Post contains 14,500 hectares. All three of these areas are under the jurisdiction of the 2nd Regional Office of the FUNAI, headquartered in Belem, Para.

The Tucurui Reservoir will flood both the Parakanan Reservation (the eastern and northeastern portions) and the Pucurui Post and require the relocation of both of the presently contacted Parakanan groups, one of which lives on each. It appears that between 86,500 and 107,600 hectares of these Indians' total land may be flooded by or otherwise expropriated for the Tucurui Project: between 45% or 72,000 hectares, and 60% or 96,000 hectares, of the 160,000 hectare Parakanan Reservation (96,000 hectares would be equal to a strip of land approximately twenty-four kilometers wide by forty kilometers long), either to be flooded by the reservoir or expropriated for the relocated Transamazon Highway segment; plus between 80% or 11,600 hectares, and 100% of the 14,500 hectare Pururui Post. One of the possible

relocation sites is the Cajazeiras interdicted area, however this would require the immediate contacting of the two remaining uncontacted groups in this region, as well as measures to guarantee it from attacks by other Indian groups. (In November of 1977, for example, 16 Parakanan were killed in this area by the Xikrin-Kayapo of the Bacaja River Reservation.)⁹

The best available account of the Parakanan at present is probably the recent article based on an interview with the Brazilian anthropologist Antonio Carlos Magalhaes (who has been studying the Parakanan since 1975) in the FUNAI magazine Revista de Atualidade Indigena (no. 12, September/ October 1978, pp. 17-27). At that time, he estimated that the uncontacted groups might total some 60 to 80 persons. The Pucurui Post group numbered some 30-35; the Parakanan Reservation group, about 110-112 (cf. Folha de Sao Paulo, October 15, 1978, p. 22; FUNAI 1980).¹⁰

The Tupian-speaking Parakanan have been the object of "pacification" efforts since at least the early 1900's, because they effectively blocked the construction of the Tocantins Railroad, begun in 1905 and concluded between 1944 and 1947, which was built to ship Brazil-nuts around the rapids in that area (Mesquita 1977: 292; Ribeiro 1977: 150). During that time, they apparently numbered about 1,000. Many of these "pacifica-

tion" efforts brought only death and destruction to the Parakanan, either through direct hostilities with the railroad construction crews, or through diseases contracted from the SPI/FUNAI "pacification" teams, such as occurred in the early 1950's when one quarter of the almost 200 Parakanan then contacted by the SPI (the Indian Protection Service, which preceded the FUNAI) died within a year from disease and the rest fled back into the forest, many still sick and dying (Arnaud 1961; Davis 1977: 66; Malcher 1964: 144).

The two presently-known Parakanan groups were contacted (or "pacified") by the FUNAI in 1971 (the Parakanan Reservation group) and 1976 (the Pucurui Post group), during the construction of the Transamazon Highway. They have already suffered severe cultural changes, having at one time been prohibited by the FUNAI agent from making fires inside their houses, for example (it was supposedly prejudicial to their health). They were also moved around needlessly, and illegally, being exposed to disease, losing their farm plots, their burials, many possessions, and their sense of control over their own lives. The group contacted in January of 1976 numbered forty people; by February of 1977, after having been moved 300 kilometers away, 10 had already died of disease. (The additional three members of this group are survivors of the other group attacked by the

Nikrin in 1977.) Thirty-five women of the Parakanan group contacted in early 1971 had venereal disease by late 1971; so did two of the local FUNAI agents and probably many of the Transamazon Highway construction workers who had also violated them, too. Eight children were later born blind to these women and two of the women later became blind themselves, as a result (Davis 1977: 67; Magalhaes 1980: 7).

According to the latest official FUNAI report (FUNAI 1980), there are now two large non-Indian farming operations installed less than an hour's walk from the Pucurui Post. Brazilian farm hands were regular "visitors" to the post, hunting most of the game left on its lands with their high-powered shotguns and disturbing the lives of those Parakanan living there in other ways, as well. What that official FUNAI report did not say was that the huge sawmill complex installed by the FUNAI itself, only one kilometer from these Indians' village, has also gravely depleted the game of the area, first by destroying the forest and scaring the game away with the noise of its operation, and second through the extensive hunting practiced by the sawmill's own employees with their high-powered shotguns and modern mechanical traps (Magalhaes 1980: 8, 12). FUNAI did, however, report that its employees were themselves gathering and selling that post's Brazil-nut harvest to outsiders (implying

that the Indians were not yet competent to, nor interested in, doing this themselves). The net result is that, since the streams in the area of this post are too small to support many or very large fish, the protein sources available to these Parakanan have just about disappeared.

In addition, roads have been cut around and through the post and mineral prospectors are reported to have invaded the area, as well. The net effect of all of this on a group contacted less than five years ago has been devastating. FUNAI's "protection" has caused them as much (if not more) harm as good.

The Parakanan Reservation population has suffered similarly disastrous contacts, though its larger reservation size has given its people some protection. That larger size has also brought them some disadvantages, too, since it is harder to police any intrusions of squatters or poachers onto their more extensive lands. A portion of the Transamazon Highway presently forms the eastern border of the Parakanan Reservation. Its Parakanan now regularly install themselves there to sell game and Brazil nuts, and to prostitute their women, to the members of the national society travelling by.

The Parakanan are not raising any garden products at either of their two reservation or post sites now, since they have been moved around, and know they may again be moved around, enough to lose interest in investing

the necessary time and labor and care in a garden, only to have to abandon it against their will, before they have been able to harvest its results. Traditionally, however, they did grow garden crops.

Fish are presently available in the larger rivers of the Parakanan Reservation, though not in the smaller ones of the Pucurui Post. Even those of the Parakanan Reservation are predicted to decrease substantially due to the changes in riverine ecology occasioned by the rise of the hydroelectric reservoir (Goodland 1977: 68). Therefore, both at present and for the foreseeable future, if things continue as they are now, the Parakanan are and will continue to be dependent on the FUNAI for most of their staple foods.

The Parakanan are selling or losing what remains of their livelihood, or more appropriately, their lives, in return for nothing. It is not surprising, therefore, that the population of each of the Parakanan groups has declined seriously in the very few years since their respective contact with the outside world: those of the Parakanan Reservation from about 150 to only 92 in the first year of their contact alone, and those of the Pucurui Post from about 40 to only 29 from 1976 through 1978 (Magalhaes 1980: 7f.)

The nearest medical assistance for either Parakanan group at present is the ELETRONORTE clinic at Tukurui,

which is 68 kilometers by road from the Pucurui Post and 129 kilometers by road from the Parakanan Reservation. Neither has adequate transportation for cases of illness, nor does either have adequate care facilities or personnel to aid a patient until help could be obtained from outside. Since the creation of the Tucurui Reservoir is predicted to severely increase the impact of several very serious diseases, especially malaria, schistosomiasis, and onchocerciasis (river blindness), as well as that of equally-devastating water-born diseases fostered by poor sanitation, such as giardia, amebiasis, bacillary dysentery, and the like, and to greatly increase the incidence of viral diseases which thrive on crowding and contact or malnutrition, such as measles and influenza, an adverse affect of the Tucurui Project on the physical state of health of the Parakanan can only be expected, unless adequate preventive measures (vaccinations and improvements to sanitation), on-site care (through a permanent local health clinic), and readily available transportation for emergency or extremely severe cases to the Tucurui hospital are made available (e.g. Goodland 1977: 20-53). If ELETRONORTE itself cannot be persuaded to accept this ongoing responsibility as a part of the overall "social costs" of the Tucurui Project, there is nobody left but the FUNAI to do so. Yet, this will only make the Parakanan dependent medically, as well as economically, on a

single unstable and historically inadequate protector, the FUNAI.

This whole process of political and cultural collapse has also left the Parakanan politically and psychologically dependent on the FUNAI, too. For a long time, they were unable even to reach a decision as to what to do about escaping the reservoir's water. They said they would simply wait until it forced them to move. Finally, in late 1978, each Parakanan group chose another part of their traditional area, on their own, to which they would have liked to have been moved, out of danger from the dam and its consequences. The Pucurui group chose an area on the Cajazeiras River; the Parakanan Reservation group, an area on the Murici River (Santos et al. 1980b). This pattern corresponds insofar as possible to the traditional areal distribution of these two traditionally separate units. But, they have not yet been given a chance to move there, nor have those areas been demarcated by the FUNAI for them and thus protected from intrusion by non-Indian squatters in the meantime. Between the time of the Parakanan's visit to choose their new area, in December, 1978, and a visit by the CIMI-Regional Norte II (a Catholic missionary action group) to check on the same area (for the Parakanan) in May of 1979, the number of squatters in that chosen area had already tripled (from

13 to 40 families; Magalhaes 1980: 12ff.)

The Tucurui Reservoir will also flood segments of the BR-230 (Transamazon) and BR-422 (Repartimento - Tucurui) highways, as mentioned above. Since the Pucurui Post will be almost entirely flooded by the reservoir and will therefore probably be abandoned by the Parakanan and the FUNAI alike, relocation of this section of the BR-422 highway, which split the Pucurui Post in half when it was first constructed several years ago, should not in itself affect the Indians this time (Veja, September 13, 1978, pp. 119f.; Isto E, March 7, 1979, pp. 24-27). However, there is some possibility that the Cajazeiras River area to which the Pucurui Post people have elected to move may itself be violated by a part of the relocated Transamazon Highway (BR-230). Depending on how close this comes to them, the Pucurui group may then have to move once again. The consequences of relocating the BR-230 highway through the Cajazeiras region, for any uncontacted Parakanan still in the area of its headwaters, would also be very serious indeed (Goodland 1977: 96).

The section of the Transamazon Highway which will have to be relocated also happens to be the eastern boundary of the Parakanan Reservation, as has been mentioned above. Since that highway will have to be relocated further to the west, it will undoubtedly

alienate another large portion of the Indians' area, although exactly how much depends on its new path through Parakanan lands. Were no long bridges nor floating (pontoon) traverses attempted (as Goodland, 1977: 76, has suggested), and were it not considered possible to simply ship all traffic around the interrupted Maraba-Repartimento segment by lake ferry (as the INPA/Amazon Research Institute of the Brazilian Ministry of Planning has recently suggested), and were this section of the Transamazon Highway therefore simply to be relocated as "inexpensively" as possible, far enough to the west to be above the maximum high water mark when the reservoir were filled to capacity, its new path would cut right through the heart of what was left of the Parakanan Reservation, between 15 and 23 km. to the west of its original route at any particular point. This would decimate what was left of that reservation, bringing death and devastation to the Parakanan's bodies and way of life, and the FUNAI is reported to be (rightly) very worried about this possibility (Goodland 1977: 11 and 75f.; also Goodland 1978; and Correio do Povo, July 14, 1978, p. 29).

In 1977, Antonio Carlos Magalhaes, a master's degree student in anthropology at the University of Sao Paulo who had been studying the Parakanan since 1975, was contracted by the FUNAI with funds provided by

ELETRONORTE to study this situation and to suggest a solution to the problem of "what to do with the Parakanan". It is not clear why this was left to the last minute, since the plans for the dam were drawn up as early as 1973, since the original contact between ELETRONORTE and FUNAI dates from late 1974, and since Magalhaes had been engaged in field research among the Parakanan since January of 1975 (Goodland 1977: 73-76; also see Footnote no. 3, below). Neither ELETRONORTE nor FUNAI can be excused for delaying this for so long (nor for allowing Magalhaes' attempted resolution of the plight of the Parakanan to be aborted in early 1979, just as it was about to bear fruit, as discussed below).

It is not possible to say that the existence of Indians in this area was a complete surprise to ELETRONORTE, since the Parakanan have been known to be in this area for decades and since over 100 of them were contacted and specifically located in this area by the FUNAI in 1971, in conjunction with the construction of the Transamazon Highway (as discussed above). This, as a matter of fact, predates the creation of ELETRONORTE itself (in 1973) by two years.

It is also not fair to say that the decision to consider a hydroelectric project in this area was made so suddenly that no time was then available to ascertain the presence of Indian people there, since ELETRONORTE

merely stepped in where an earlier Brazilian Federal entity (ENERAM: the Amazonian Energy Resources Coordinating Committee) had left-off in their work. Since the early 1960's, ENERAM had been studying the possibilities for a huge dam at this very site, to be known as the Itaboca Hydroelectric Project (after the Itaboca Rapids where the Tucurui Dam is now being built). The Itaboca site was surveyed for just such a purpose in 1962 (this fact was even reported in Roque Laraia's excellent account of one of the Indian groups of the area; Laraia and da Matta 1967: 58; see also Magalhaes 1980: 11). Thus, both ENERAM and ELETRONORTE had ample time to ascertain the presence of Indian people in the area and ample local and national public information was available regarding it, so that there can be no excuse in ignorance. Since a copy of Laraia's report was made available to the SPI/FUNAI, there is also no excuse for ignorance on FUNAI's part regarding the possibility of such a project being considered for this area, either.

What can be said is that ELETRONORTE has ignored the Parakanan (and the Gavioes and the other Indian people to be affected by the Tucurui Hydroelectric Project, as discussed below) until their situation became absolutely desperate; that ELETRONORTE's Tucurui plans seem never even to have mentioned the Indian people of the area until about 1977, nor the problems

these Indian people would face, nor to have made any provision for any indemnification for their losses in this. Likewise, FUNAI appears not to have participated at all in the development of ELETRONORTE's decisions about where to locate the dam nor in ELETRONORTE's plans for assessing its probable consequences or damages for the area. Rather, FUNAI seems to have been presented with a fait accompli which it should have foreseen and early moved to ameliorate, but which even when brought to its attention it has been unable or unwilling to resolve.

Essentially, it appears that ELETRONORTE has thought it unnecessary to consider the presence of the Indian people, and to therefore have to consider a realistic indemnification for their very large losses, because it hoped to be able to infringe on their rights and properties "for free", both under the doctrine of "eminent domain" ("decreto de utilidade publica"), and in the belief that since the Indians were already under the control of the Federal Government (as wards of the State), their lands could be expropriated by another branch of the Federal Government without the indemnification necessary (by law) when expropriating property from private parties. This delusion cannot be supported in Brazilian law, however, since even were a "decreto de utilidade publica" issued by the President of the Republic,

adequate territory would still have to be provided for the Indian people, in exchange. (In this we disagree with Goodland 1977: 68, 73 and Goodland 1978; cf. Magalhaes 1980: 11 and the "Postscript" to this Document. The problem of "emminent domain" is discussed more fully below, regarding the Gavioes.) The FUNAI has, therefore, been especially remiss in not disabusing ELETRONORTE of this perspective.

In mid-1980, the anthropologist under contract to the FUNAI to work with the Parakanan, Antonio Carlos Magalhaes, was dismissed, supposedly due to a lack of continued funding for his project from ELETRONORTE, which had been subsidizing it. However, it is quite clear that the major reason for his departure was his criticism of FUNAI's handling of the entire Parakanan affair. Almost all of the rest of the competent anthropologists in the FUNAI were also fired (or "resigned") at about the same time, but for supposedly different reasons, with the result that there was nobody left to carry on the "Parakanan (Community Redevelopment) Project" which Magalhaes had designed, together with the Parakanan, and had begun to carry out (Correio do Povo, June 21, 1980, p. 28; Cultural Survival Newsletter, Fall 1980, 4(4): 5; Folha de Sao Paulo, June 3, 1980, p. 5; Lustosa 1980; Magalhaes 1980; Veja, December 24, 1980, pp. 3-6).

Magalhaes was dismissed, and the "Parakanan Project" stopped, just as the Parakanan were beginning to regain control over their own lives by planning and carrying out the preparations for their move, such as the selection of their new village sites (discussed above), the initiation of a new farm plot in their newly-chosen area in advance of their move, to be ready to support them when they arrived there, and just as the "Parakanan Project" was about to demarcate that area and to begin removing the squatters residing there by resettling them elsewhere. If this newly-chosen area cannot soon be demarcated and occupied by them, they may well lose it. Then, it appears that the Pucurui group may simply be forced to join (or come live near) its traditional opposition, the Parakanan Reservation group, on what is to be left of the present Parakanan Reservation after the Tucurui Reservoir takes most of it, and where both will suffer the consequences of the relocated Transamazon Highway through their midst. It almost seems as if the Parakanan Project was too close to becoming a success for some interested party, who chose to stop it (Magalhaes 1980: 15f.)

At the close of 1980, the FUNAI was still supposedly trying to decide what to do. However, their vision remains remarkably short-sighted, for their primary concern now seems to be where to relocate the Parakanan

out of the reservoir's way, rather than where can they provide a legitimately demarcated, titled, and registered reservation for the Parakanan, which will also be out of that harm's way. At the December, 1980, "Encontro Parakanan" meeting between ELETRONORTE, FUNAI, and selected anthropologists, for example, the anthropologists made it quite clear that the first thing that they thought should be done was to secure an adequate territory in the name of the Parakanan and then to move them to it. The FUNAI, on the other hand, kept returning to their basic proposition that it was most urgent to move the Indians first and to secure that territory for them later. The anthropologists pointed out that the FUNAI had a very poor record of success in such activities and that the Parakanan were liable to end up with far less adequate land (if any at all) that way than were it first obtained as the price of their removal (as Brazilian law requires; see, for example, Santos et al. 1980b). In the meantime, the Parakanan are still waiting to find out what is going to happen to them. They probably won't like the results but, as both FUNAI and ELETRONORTE are undoubtedly aware, the rising waters will very likely force them to accept it anyway.

While all of this seems somewhat too difficult for the FUNAI to speedily resolve, it certainly lost no time in installing a large sawmill to cut and sell the valuable

hardwood located in the soon-to-be-flooded Indian area. This wood was estimated in 1976 to be worth over 50 million U.S. dollars. Such a sum would certainly have helped the Parakanan to adjust to their move. Although the products of their lands are legally the Indians' to use, FUNAI's history in the exploitation of the Indians' forest resources elsewhere (at Ligeiro in Rio Grande do Sul, at Chapeco and Ibirama in Santa Catarina, and at Palmas and Mangueirinha in Parana, to mention just a few examples) makes it extremely doubtful that the Parakanan themselves will ever see, or otherwise receive the benefits of, any of this income.

5.2. The Surui Indians, Sororozinho River.

The Araguaia River is the major tributary of the Tocantins, generally paralleling it, flowing north and then west, to join it just above Maraba. As a part of the overall Tocantins River Basin Hydroelectric Project, a very large dam is planned for the Araguaia, some forty to fifty kilometers (in a straight line) south of where the Transamazon Highway crosses it. To be called the Santa Isabel Dam, after the falls of the same name nearby, it will be only about thirty kilometers to the east of the headwaters of the Sororozinho River (a tributary of the Sororo/Itacaiunas River system, which enters the Tocantins right at Maraba), on which the

Surui/Mudjetire Indians were located. Only about 50 to 100 of these Tupian-speaking people are left. The anthropologist Roque Laraia, who lived with them for four months in 1961, reports that one of the first reported contacts between the Surui and the intruding regional society occurred about 1920 at a ranch which had been established in exactly this same area, where the Santa Isabel Dam has tentatively been sited (Laraia and da Matta 1967: 29). It is quite clearly within their traditional territory, therefore, and within range to seriously affect their existence today.

The first peaceful contact with the Surui (who were called Mudjetire, or "people of the big penis sheath" by their Kayapo enemies to the west) came in 1953, when about 100 Surui were counted by a local Catholic missionary. Not until 1960 did they allow anyone to enter their single village, however. At that time, already decimated by disease, they came under the control of a local crook who proceeded to introduce some 25 hunters of animal skins into their area, breaking up the village and prostituting the women. By the end of 1960, only 40 Surui were left. Their hidden village surrounded by rivers that only led people away from them was hidden no more; they were no longer isolated and self-sufficient, and until very recently, they were given no aid at all by the SPI/FUNAI, which supposedly should have been

there to help them through all of this. The best account of the Surui is Laraia's (op. cit.; also cf. Kietzman 1967; Malcher 1964: 144; and Ribeiro 1957).

According to Arnaud (1971: 8), the FUNAI had requested a temporary interdiction of the Surui area in 1968, until further measures could be taken. In 1977, Goodland (1977: 65) reported that 78 Surui were then living on a part of the Gavioes' Mae Maria Reservation (discussed immediately below). According to Brazilian law, however, measures should have been taken, and should still be taken, to provide the Sururi with a secure and adequate reservation of their own, in their own traditional area, and to then protect them and that area from the negative consequences of any changes which might occur in that region, such as the construction of the Santa Isabel Dam, should it be built nearby. Adequate representation and assistance by the FUNAI is absolutely necessary for this.

5.3. The Gavioes Indians, Mae Maria Reservation.

Ninety Gavioes Indians inhabit the Mae Maria Indian Post in the municipality of Maraba, Para. (According to a recent report by Goodland, 1977: 65, some 78 Tupian-speaking Surui Indians also live there now, as discussed above.) These people will be severely affected by the construction across their territory of one of the two

major 500Kv transmission lines from Tucuruí. The line which will pass through their territory will link the cities of Marabá (in the State of Pará) and Imperatriz (directly to the east, in the State of Maranhão), integrate the Tucuruí and CHESF (Northeastern) transmission systems, and provide power for the new Carajás Project iron-ore processing and transportation system as well as for other mineral extraction projects planned for the area (Goodland 1977: 69-73).

The Ge-speaking Gavioes had already been decimated by their conflicts with Brazil-nut gatherers during the years preceding their "pacification" in the mid-1950's (see Arnaud 1964) and then were nearly annihilated by the diseases they subsequently contracted, so as to have been essentially on the verge of physical and cultural extinction by the time Roberto da Matta spent four months with them in 1961 (Laraia and da Matta 1967). Their gradual adaptation to these conditions was further severely affected by the construction of Pará's state highway PA-70 through their territory. Recently, however, they have developed their own, very successful, Brazil nut collecting enterprise, with the advice of Iara Ferraz and Lux Vidal of the University of São Paulo. The southern part of the State of Pará is the center of most of Brazil's Brazil-nut production (Arnaud 1975; Goodland 1977: 99; Ramos 1977: 277-280).

ELETRONORTE has already directly affected the lives of some of the Gavioes. Seventeen of them had originally lived in a village located on the banks of the Tocantins, right where ELETRONORTE decided to build the Tucuruí Dam. By 1977, they had already been moved by ELETRONORTE to the Mae Maria Post. Supposedly, they have received some indemnification from ELETRONORTE for this, however what and how much is not specified, nor is it clear how FUNAI was involved in this, if at all (Goodland 1977: 69).

The ELETRONORTE transmission line, which in June, 1977, the President of Brazil authorized to cross the Gavioes' Mae Maria lands, will run slightly to the north of, and roughly parallel to, the PA-70 highway, which already slices through that reservation from west to east. It will alienate nearly 200 hectares containing 800 of their most productive Brazil-nut trees, which provide their main source of income. In a letter to the President of the FUNAI in September, 1978, they calculated the loss of this income (for the 10-year useful life of the trees) at the equivalent of 300,000 U.S. dollars and the value of the hardwood lumber to be cut for the right-of-way at another U.S. \$260,000. They asked the President of the FUNAI to make sure that they actually receive this compensation and mounted sentries at the entrances to their reservation to monitor the contractor's

operations in their area (Isto E, March 7, 1979, pp. 24-27).

ELETRONORTE had argued since 1976 that, according to their interpretation of Brazilian law, the Indians didn't really own the trees or other natural surface assets on their reservations, but were only guaranteed the right to use them. Therefore, there was no legal necessity to compensate the Indians for their loss, since if the trees weren't there, they simply could not be used. The decree of "emminent domain" ("decreto de utilidade publica") for the corridor which ELETRONORTE obtained from the Brazilian President in 1977 further made any indemnification altogether unnecessary, ELETRONORTE said (Goodland 1977: 72).

When the FUNAI essentially threatened to go along with ELETRONORTE's idea (that no compensation whatsoever was really necessary), leaving the Indians with no one officially on their side, the Gaviões were forced to accept ELETRONORTE's minimal terms. Under this extreme pressure, the Gaviões signed a contract which would have reimbursed them for their lost land, hardwood forest, and source of income, at a level far below their legitimate claims. During these negotiations, it appears that ELETRONORTE tried to widen the original 19-kilometer-long corridor beyond the 100-meter width originally proposed, thus further taking advantage of the Gaviões and further

reducing their subsistence base, but with no proportionate increase in their real compensatory benefits.

Supported by public outcry, that contract was later re-negotiated to more closely approach (though it doesn't fully achieve) the Gavioes' claim.

The longer these negotiations drag on, however, the less the Gavioes actually may get. Part of the problem in all of these recent negotiations has been the annual Brazilian inflation rate of over 100%, which more and more changes the real value of an agreement reached at any given time, the longer it takes to implement it. It makes any specific monetary reimbursement cheaper, in real terms, for ELETRONORTE to pay, the longer they prolong its payment, while it makes the compensation to the Indian (or non-Indian) recipients more and more worthless in real terms the longer it takes them to get it, or the longer it takes the contract to be approved. It will be difficult, therefore, to keep any negotiated settlement adjusted for inflation until the Indians actually receive it.

There might be some other ways to reduce the overall real loss which this corridor represents to the Indians, however. Goodland (1977: 179f.), for example, has suggested that ELETRONORTE might usefully consider some other option for the clearing of the corridor than the clear-cutting and continuous re-clearing which it had

planned. The local inhabitants (in this case the Indians) might instead be allowed to cultivate at least part of that area, raising "soft", low-canopy "perpetual" crops, such as bananas. This would reduce, to some degree, the real subsistence base depletion caused by the cutting of their Brazil nut trees, which any monetary indemnification cannot, by definition, replace. It would also reduce erosion and soil depletion, thus conserving a valuable natural resource. It would likewise reduce ELETRONORTE's annual clearing and maintenance costs for the area. However, neither ELETRONORTE nor FUNAI seem to have taken up this idea (nor does it appear to have been suggested to the Indians, so that they might have lobbied for it, themselves).

Without any desire to minimize the seriousness of these problems, it should be pointed out that at least one valuable precedent has been set in this case. ELETRONORTE has had to abandon its earlier position and to now recognize the legality of the Indians' claims and to negotiate with the Indians regarding them. Their "decreto de utilidade publica"/"emminent domain" argument, and their belief that Indian lands could be expropriated without compensation because the Indians are wards of the state, have been shown fallacious (Jornal de Santa Catarina, June 28, 1979, p. 6; Folha de Sao Paulo, June 3, 1980, p. 5).

Another very serious threat facing the Mae Maria Post is the construction of the electrified railway planned to carry iron ore from the Serra dos Carajas mines (to the west) to the port at Sao Luis in Maranhao. The railroad will require a corridor at least 60 to 70 meters wide which would also slice through the Mae Maria Reservation from west to east, in another strip about 20 kilometers long, again parallel to the PA-70 highway, but this time about 10 to 12 kilometers to the south of it. The railroad would alienate another 200 to 300 hectares of the Indians' land, destroy another valuable part of their only cash income base, further deplete hunting possibilities by displacing the game and disrupting its habits, and effectively slice the reservation into four separate pieces.

The railroad is designed to export this iron ore using the abundant electric power from Tucuruí to mine, process, and ship it to port. According to some sources, the Serra dos Carajas contains the world's largest reserves of reasonably-accessible iron ore. Plans call for twelve huge trains, each pulling 160 freight cars each weighing 80 tons (empty), to pass through the Mae Maria Post each way, every day for the next 80 years, at a minimum velocity of 45 k.p.h. full, and even faster empty. Combined with the railroad's consequences which we have already mentioned above, the additional impact

of its constant noise, dust, and disruption of everyday activities will make it a true "iron devil" as far as the Indians are concerned. The construction and maintenance of such a mammoth project, alone, will severely affect this part of the reservation for years to come: construction and access roads, workers' camps, borrow sites for sand and gravel, water pollution in the affected streams, and the constant presence of the train and maintenance crews will make this another part of the post effectively lost to the Indians.

To date, there has been little public discussion of this problem, since the Serra dos Carajas iron-ore project has been continually postponed for various reasons since first announced. Initial plans, indicating at least the general route of the railroad and the magnitude of the endeavor, have been in existence since at least the time of the Tucuruí planning effort, however, since the two projects were designed to complement each other. Just recently, the President of Brazil finally officially authorized the execution of the Carajas Project plans, which call for an investment of 33 billion U.S. dollars over the next ten years (as mentioned above). It remains to be seen, however, how much, if any, of that tremendous investment will benefit the Indians, as opposed to how much of it will only further prejudice their continued existence (Goodland 1977: 69,

194f.; Boletim Especial da Embaixada do Brasil em Washington, December 22, 1980, no. 100: 3).

Only ten years ago, the Mae Maria Gavioes were in very bad shape. Both the International Red Cross and the Survival International surveys of the current situation of the Indians in Brazil found them to be "a very terrible and depressing sight...the worst conditions of any they had seen" (Akerren, Bakker and Habersang 1970: 47; Hanbury-Tenison 1973: 198-201). In these ten years, the Gavioes have worked hard to again establish their self-esteem, their economic self-sufficiency, and their demographic stability. The existence of a secure and reasonably productive land base of their own has certainly been an important part of this. It would undoubtedly be a serious blow to them to have all of this torn asunder as their reservation land, subsistence base, and source of community pride and self-esteem is cut up into four isolated slices, like the layers of a chocolate cake which looks substantial from the outside but contains no nourishment of substance.

5.4. The Guajajara/Tenetehara Indians of the State of Maranhao.

This project has also begun to affect other Indian groups besides the Parakanan and Gavioes. Further down the (transmission) line, the Guajajara Indians of the

State of Maranhao have proposed different terms for allowing the CHESF to build its section of this same line from Imperatriz, Maranhao, on to the Northeast. The Guajajara, as opposed to the Gavioes, have requested, for the loss of their forest in a 100-meter-wide corridor 22 kilometers long, not money, but the expulsion of 5,000 illegal squatters from one of their reservations and the construction by CHESF of a series of wells and reservoirs to help them through the dry season (which is severe in this area) as well as the construction of schools, clinics, and other infrastructural developments on their various reservation sites. Should these demands not be met, they, like the Gavioes, have threatened to physically block the contractors' access to their respective transmission line sites (Jornal de Santa Catarina, August 24, 1979, p. 6).

The Guajajara are the larger of the two sub-groups which together compose the Tupian-speaking Tenetchara, studied in the 1940's by Charles Wagley and Eduardo Galvao (e.g. Wagley and Galvao 1949). According to Kietzman (1967: 37), there were approximately 2,600 Guajajara in 1965. They were scattered in some 35 villages, served by three FUNAI posts, along the middle Pindare, Grajau, and upper Mearim Rivers, in the State of Maranhao. Ribeiro (1957) and Malcher (1964: 213) consider them integrated into the local economy, though

culturally differentiated from the national society. The other Tenetehara sub-group, the Tembe, in 1967 numbered no more than about 200 persons, living between the Gurupi and Acara Rivers in north-eastern Para. They were themselves fully integrated into the regional Brazilian economy and may have contained among them a few of the "lost" Turiwara, discussed below (e.g. Kietzman 1967: 37).

One of the very valuable points which Goodland (1978) made regarding the Gavioes is also applicable to the Guajajara. In contrast to the Parakanan, both the Gavioes and the Guajajara are sufficiently well organized and well-enough informed to press effectively for continued negotiations regarding their own indemnification. The Gavioes and Guajajara have been or have tried to be an integral part of the negotiation process themselves. In the case of the Parakanan, on the other hand, Indian rights have not been represented by the Indians themselves, but by the FUNAI; Indian people have not directly participated, but have merely been "represented" by the FUNAI. The results in each case attest fully to the dangers of leaving such things up to the FUNAI alone and to the necessity for such groups as the Parakanan to be allowed to reconstitute their social and political organization so as to be able to deal effectively with the outside world, once again.

5.5. The Amanaye and the Anambe Indians, Moju and Capim Rivers.

According to Goodland (1977: 14, 65, 78), the preliminary studies for the 500Kv Tucurui - Vila do Conde - Belem transmission line indicated that its most probable route would traverse the areas of two Tupian-speaking groups, the Amanaye and the Anambe, also in this area, however very little information is available about this possibility or about the current status of these people.

The Amanaye now number no more than about 50, at the very most. They are presently surrounded by, to some degree intermarried with, and largely economically integrated with the regional non-Indian population in the area of the headwaters of the Capim, Moju, and Cairari or Caiarare Rivers, to the northeast of the Tucurui Dam site. They originally came from the Pindare River area of Maranhao, where they were probably related to the Tembe/ Tenetehara. The best account of their history and culture is Nimuendaju's (1948a).

There is some confusion regarding whether the Turiwara are synonymous with the Amanaye, as some sources (e.g. Goodland 1977: 65 and Malcher 1964: 213) argue, or whether they are not, as others (e.g. Nimuendaju 1948a and 1948c) say. It appears that they were originally mutually-hostile fragments from a common source which

moved west into Para, to different parts of the Capim/Moju area and occasionally down to the Tocantins itself, at different times from 1750 through 1850, and were missionized by the same missionary in the 1870's but split when the Amanaye killed him. At that point most of the Turiwara proper moved back to live among the Tembe (who had themselves moved to the Acara River area by then) where they gradually intermingled and may have become extinct, while the Amanaye moved from place to place in the Capim/Moju area, where they at times assumed the Turiwara name to protect themselves from reprisals and where their remainder lives today. The available sources on these people (e.g. Kietzman 1967: 37; Malcher loc. cit.; and Ribeiro 1957) are therefore somewhat difficult to unscramble. Some still have both the Amanaye and the Turiwara living in this area, either together (as synonymous) or separately (the Amanaye upstream, the Turiwara downstream; but in either case numbering less than 50 each); others have the Amanaye living here and a few Turiwara still living among the Tembe; others have the Amanaye living here but say the Turiwara themselves are extinct.

The Anambe present a similar degree of confusion. They are not mentioned by either Kietzman, Malcher, or Ribeiro (op. cit.) Goodland (loc. cit.), though, reports them to number between 19 and 50 and to live on the

headwaters of the Caiari or Cairari River (a western tributary of the Moju), also to the north-northeast of the Tucurui Dam site. However, this is exactly where Nimuendaju (1948a: 200) reports that in 1943 he found a small group which he identified as being Amanaye but who called themselves Turiwa(ra)!

In 1948, Arnaud found this "Amanaye/Turiwara" group in the same spot where Nimuendaju had visited them five years earlier. At that time they numbered 32 and were practically indistinguishable from the regional population in their dress, housing, and economy. They retained their Tupian language, however, and lived in a village of their own, separated from the regional population which was some distance downstream.

In 1968, Arnaud revisited these people, in the company of Eduardo Galvao. They found them reduced to only 19, but living along the same stretch of the Caiari as before. The regional society had, however, pushed in to exploit the forest around them, ending their relative geographic isolation. Not surprisingly, their native language was being replaced by Portuguese outside of the home. However, this time they called themselves Anambe (saying the Turiwara were another, unspecified people). Arnaud had some reservations about this, since his informants were unable to clarify where they had come

from, but he decided they should officially be called by their (current) self-designation.

In 1968, some "traditional" baskets were still being made and the bow and arrow was still used in hunting when a shotgun was not available. However, many other aspects of their earlier culture (such as fermented manioc chicha, the couvade, domestic burials and other ceremonies, and shamanism) were reported as no longer made or practiced. Between 1948 and 1968, they had become attached to a particular local merchant for whom they hunted animal skins, meat, and forest vegetable products, and to whom they were usually in debt for merchandise advanced against their future production (Arnaud and Galvao 1969).

According to the early reports cited by Nimuendaju (1948b), Anambe was "a Tupian dialect very similar to the Tembe-Guajajara and Turiwara". They were first reported, in the mid-1850's, on the left bank of the Tocantins and on the headwaters of the Pacaja, a little above Alcobaça (today, the city of Tucuruí). In 1889, Nimuendaju (1948a: 200) reports, those Anambe and Amanajo (Amanaye) who had survived the 1880's epidemics had banded together by the last rapids on the Tocantins (Itaboca?). By 1896, the Anambe were apparently reduced to only half-a-dozen. By 1948, Nimuendaju (1948b) says, they were entirely extinct.

It would appear, then, that the terms for the Amanaye, Anambe, and Turiwara were not mutually exclusive in the historic past, but were used interchangeably for several subgroups of what was, during the 1800's, a broad band of occupation by a particular Tupian dialect group all the way from the upper Pindare across the headwaters of the Capim to and across the Tocantins, and thence to the lower Pacaja, of which the "Amanaye", "Turiwara", and "Anambe" remnants of the last forty years are among the last, essentially undifferentiated, survivors. Whatever they are called, there are certainly no more than 50 to 100 of these people, altogether, today. They have no specific reservation set aside for them nor any specific FUNAI support, as far as we can tell.

This area is reported to contain very large deposits of bauxite and several other important minerals. It is now being cut by the Belem to Maraba (PA-82) highway, now under construction (Almeida 1977: 47; ELETRONORTE 1980; Goodland 1977: map, p. 10). The Tucurui - Vila do Conde transmission line is therefore only one part of the overall development of this area, each aspect of which will affect these Indian people in many ways. The first thing that needs to be done is to ascertain more fully their present numbers and condition, most especially the present situation regarding their land tenure.

5.6. The Assurini Indians, Trocara Reservation.

In his overall environmental assessment of the Tucurui Hydroelectric Project, Goodland (1977: 65, 78) also mentions that the 55 to 60 Tupian-speaking Assurini of the Trocara Reservation are also close enough to the project area to deserve special attention and protection from the pressures which its construction workers, construction activities, and residual developments (e.g. later industrialization and urbanization) will bring upon their culture, land, and lives.

Goodland locates the Assurini-Trocara Reservation 15 kilometers south-southwest of "Tucurui" (he doesn't say whether this refers to the city or to the dam site of the same name). Were this to be the case, they would be extremely close to the construction site (which is itself less than 10 kilometers south of the city) and to the edge of the new reservoir; so that the effects of the Tucurui Project on them could only be predicted to be disastrous. Other sources (e.g. Arnaud 1971 and Kietzman 1967: 34), including Roque Laraia (Laraia and da Matta 1967: 62, 146), who spent three months there in 1962, locate this reservation on the Trocara River, a western tributary of the Tocantins, some 25 kilometers to the north of the city of Tucurui (where it would have been reached by now by the PA-44 state highway being built from Tucurui north to Cameta, along the western

bank of the Tocantins; Goodland 1977: map, p. 10). However, Goodland's general warning regarding them still holds true. Whether directly affected by the construction of the dam itself or not, these people will be severely affected by the development of the Tucuui region in general (by such things as improved and increased river navigation and transportation, intensified agriculture and extractive exploitation, and urban and industrial growth) which the dam's construction will stimulate, as well as by their proximity to the dam site with all of its problems, per se.

The best accounts of the history and recent situation (through 1970) of these Assurini are probably those of Arnaud (1971: 6f.) and Laraia (op. cit.). When they were first contacted by an SPI "pacification" team in 1953, at the site where the Trocara Reservation is now, they numbered some 190 people. By 1966, there were only 55 (twenty of whom had returned to their traditional homeland on the headwaters of the Pacaja River, to the west; also see Arnaud 1961). Those on the Trocara Post had been severely prostituted (both literally and figuratively) by their SPI "tutors" and local people alike, and were reported, in the late 1960's, to be working in the agricultural and extractive production activities of the SPI post, much of the results of which were sold locally by the SPI employees, supposedly on their behalf.

larala (op. cit.) reported that their self-designation really was Akuawa and that they only used the name "Assurini" because it was given them by the regional population. Unfortunately, no more recent information regarding these people is readily available.¹¹

Since Goodland (1977) first alerted ELETORNORTE (and presumably the FUNAI) that their planned transmission lines would pass through or near the Amanaye and Anambe areas, and that the Trocara-Assurini were close enough to warrant special protection from any adverse indirect effects of the construction of the dam itself, no further studies have been made regarding these three cases, as far as we know, nor have the Indian people (in the first two cases) probably been apprised yet of their legal rights in the matter. It should be obvious from the foregoing discussion of the situations of the Parakanan, Gavioes, and Surui, that these things should not be left to ELETORNORTE or to the FUNAI, either alone or together. By now, the Trocara-Assurini have probably already found out about the "indirect consequences" of such large-scale hydroelectric projects, themselves, the hard way.

6. The Waimiri-Atroari Indians and the Balbina (Uatuma River) Hydroelectric Project.

The Waimiri-Atroari Indians live to the north of the city of Manaus, around the headwaters of the Uatuma,

Alalau, and Jauaperi Rivers, on the border between the Territory of Roraima and the State of Amazonas. The Waimiri-Atroari Indian Reservation, which is under the jurisdiction of the 1st Regional Office of the FUNAI, headquartered in Manaus, is supplemented by several additional "Indian Attraction Posts" and an area interdicted for their "protection" during "pacification" efforts by the FUNAI.

The Cariban-speaking groups lumped together under the designation "Waimiri-Atroari" (also known as the Yawaperi and Krixana) are probably among the more famous of Brazil's still "unpacified" Indians, being responsible for paralyzing the construction of two major highways through their territory, the Manaus-Caracarai-Boa Vista Highway (BR-174) and the Northern Perimeter Highway (BR-210), and for the decimation of many FUNAI pacification teams, having killed some 62 SPI/FUNAI employees since 1946. Although the BR-174 highway was officially opened in 1977, drivers were forbidden to stop along the stretch through Waimiri-Atroari territory (Beltrao 1977: 255-298; Bourne 1978: 234f.; Davis 1977: 93-99; Revista de Atualidade Indigena, no. 11, July/August 1978, pp. 13-16; and Ribeiro 1957: 96).

The Waimiri-Atroari have also suffered extremely brutal attacks by Brazilians, in one guise or another, over an even longer period, since at least 1856 (Beltrao

1977: 261; Martins 1978: 15f. and 277-291; Revista de Atualidade Indigena, no. 17, July/August 1979, pp. 42-50). Between 1900 and 1957, large numbers of them were killed in conflicts with Brazilians seeking pau-rosa (rosewood) and other valuable forest products in this area (Ribeiro 1977: 247).

It is estimated that there are about 2,000 Waimiri-Atroari at present, living in a total of some 24 villages, divided into at least three political sub-units. The Waimiri-Atroari Reservation, excluding the temporarily interdicted areas, was established in 1971. At the time of its creation, it covered 1,527,700 hectares.

Traditionally, the Waimiri-Atroari occupied a vast area to the east of the Rio Branco and Rio Negro rivers, south to the junction of the Rio Negro with the Amazon (where Manaus now stands) and east through the Urubu, Uatuma, and Jatapu River basins (these are northern tributaries of the Amazon, just east of Manaus) to the Mapuera/Nhamunda River area (about 58°W). Their traditional area therefore clearly encompasses the proposed Balbina Dam site at 59°30'W, 1°55'S, at the Balbina Rapids on the Uatuma River.

The Balbina Dam will be located approximately 210 kilometers upstream from the confluence of the Uatuma with the Amazon. It will flood the upper Uatuma River and with it a large portion of the Waimiri-Atroari area,

to the west-northwest. It, together with the Tucuruí Dam, was supposed to be financed through a joint French-Brazilian investment program, the Balbina part of which has only now (in early 1981) been approved after several years of alterations and delays (Boletim Especial da Embaixada do Brasil em Washington, February 20, 1981, no. 3: 4; O Estado de Santa Catarina, January 14, 1979, p. 9; Jornal do Brasil, October 9, 1980, p. 18).

Many of the traditional Waimiri-Atroari locations reported historically in the river basins mentioned above were probably only specific-use sites, used for hunting, camping, raiding, or refuge, however the location of their actual "home" villages, where their agricultural activities were located, could probably be determined by tracing the accounts of the various slaving and punitive expeditions which have been sent against them during the last 300 years (see, for example, the references in the Revista de Atualidade Indígena, no. 17, July/August 1979, pp. 42-50, cited above). These raids were usually massacres; very few Waimiri-Atroari can have survived these episodes of mass extermination. Therefore, today, it is not surprising for their survivors to have located their home villages in the most remote and difficult to reach part of their traditional area, although they may still utilize the land and resources

of the greater area they once occupied for hunting, fishing, collecting, and communication, as necessary.

The villages thus far sighted are generally located in the area around 1°5'S, 60°40'W, between the headwaters of the Camananau or Camanau River (to the west), the Carinau River (to the south), the Santo Antonio River (itself a tributary of the Uatuma; to the east), and just over the Alalau River to the headwaters of one of its middle-course tributaries (unnamed; to the north).

At the present time, sixteen Waimiri villages (in the southwestern part of this area) and eight Atroari villages (in the northeastern part of it) have been counted, mostly from the air. Some of these actually may be abandoned, some of them still may be under construction and not yet permanently occupied, and some may be only temporary camps to begin with and not permanent villages at all. Still other Waimiri-Atroari villages may not have been seen yet, especially if they are rather small ones, because of the dense forest cover which makes it difficult to see their small clearings from the air unless the airplane chances to pass directly over them. Therefore, although the area supposedly has been the object of rather intense aerial surveys, at least in the region traversed by the BR-174 (where, interestingly enough, all of these villages have been

found), these should be taken as only provisional village counts and locations at the present time.

These villages are all in the northwestern part of the traditional Waimiri-Atroari area described earlier. The Balbina Dam site, however, is in the southeastern part of that traditional area. It is not known whether aerial surveys have been made from the BR-174 area to the Balbina region and thus whether or not there indeed may be other Waimiri-Atroari still in this southeastern part of their traditional range. It seems most likely that these intensive overflights have been restricted to the BR-174 corridor, in order to locate potentially troublesome villages during its turbulent construction. That no villages have been reported in the Balbina Reservoir area to the southeast of the Santo Antonio River headwaters should therefore not necessarily be taken as evidence that there are no such villages in that area, unless it can be demonstrated that that area has been surveyed from the air as intensively as the BR-174 corridor was.

Of the 24 Waimiri-Atroari villages thus far located, those closest to the Balbina Dam site would seem to be the six Waimiri villages reported on the headwaters of the Santo Antonio, mentioned above. From the maps available to us, these six villages appear to be as much as 130 kilometers above the Balbina Dam site (i.e.

to the northwest of it). It seems likely, however, that the Balbina Reservoir will flood even beyond these six villages, since (according to one preliminary plan) it was supposed to cover up to 2,000 km² and to reach all the way along the Santo Antonio to the BR-174 highway, to the west of them. Although it would be very shallow that far upstream, it would still flood as much as 20 kilometers of the highway at that point.

More importantly, as mentioned above, it is not yet clear that there are no Waimiri-Atroari villages between those of the Santo Antonio headwaters and the Balbina Dam site, nor has the range of effective utilization of any of those villages which have been sighted yet been determined. More detailed reconnaissance and mapping may indeed show that the Balbina Reservoir will directly flood other Waimiri-Atroari villages and farms. Whether it does or not, it will certainly flood a very large part of the traditional Waimiri-Atroari area and a large portion of the resources contained in it. It will bring to these Indian people, who have tried so hard to keep the regional or national society out of their homelands, exactly those people and those influences they have so long, and at such cost, fought to keep out. The access roads cut through their territory for the dam project will be but the beginning, as wealthy firms obtain fraudulent title to their lands and as poor squatters infringe on them after they become accessible to vehicular traffic. It

will be very hard to keep these people out, although the Waimiri-Atroari undoubtedly will still try. Legally, the Federal Government, through the FUNAI, should do so for them.

The Balbina Hydroelectric Project, approximately 140 kilometers straight north of Manaus, has been designed by ELETRONORTE to supply 250 MW to the industrial district of Manaus and to the middle Amazon area, where most of the electricity now available is thermally generated using diesel (petroleum) fuel. It has been under consideration for several years. Construction work on the access roads for the project actually began in late 1978 and early 1979, but has been stalled, for various essentially political and financial reasons (as mentioned above) for most of the time since. Initial contacts between the Waimiri-Atroari and the construction workers on the access road from the BR-174 east to the dam construction site were not very friendly, though no fatalities were reported thus far. FUNAI has, however, increased its "security" forces in the area. Construction work on the dam itself is now scheduled to begin in early 1981; this latest timetable calls for it to begin generating electricity by 1985 (Magalhaes 1980: 16).

Since many of the Waimiri-Atroari villages are at present known only from the air, and since more of their villages may yet be found, continued vigilance and a continuing research and lobbying effort on the part of

the FUNAI is necessary in order to adequately understand the culture and present situation of these people and to provide for their protection from the short and long-range effects of the Balbina Dam, as opposed to simply trying to locate them so as to protect the workers on the hydro-electric project from the Indians, which is the way FUNAI normally operates (the so-called "pacification" of the Indian peoples along the Transamazon Highway route is a primary example of this; e.g. Hanbury-Tension 1973: 205).

Just as in the case of its ill-fated "pacification" efforts among the Waimiri-Atroari during the building of the Manaus-Caracarai highway (BR-174), it appeared until recently that no preliminary studies were going to be undertaken by the FUNAI (or by any anthropologist under contract to the FUNAI) to actually ascertain the degree of effective Indian occupation and use of the area in question versus that of the other areas available to and used by them and to thereby provide a realistic estimate of the actual degree of loss which the project would represent for the Indians and some empirical basis for suggesting, or for deciding among, the reasonable alternatives that might be open to them. Rather, as in the case of the Parakanan at Tucurui, it appeared that a last-minute emergency effort would probably belatedly and hesitatingly be mounted under the pressure of a foreseeable timetable for the flooding of their lands,

with ultimately unsatisfactory results. The problem is, of course, made worse by the fact that the Waimiri-Atroari are not yet fully aware that they have been confined to a reservation in the first place, nor are they aware of their reservation's boundary in that area. They are, however, known to utilize the Uatuma basin far beyond their officially-decreed limit. Thus, not only a large part of their "official" area but also an even larger part of their actual area will be inundated.

In early 1979, contact was finally initiated between the FUNAI and ELETRONORTE regarding the necessity of arranging for an anthropologist, from or through the FUNAI, to study this problem (Jornal de Santa Catarina, January 21/22, 1979, p. 8). As a result, the FUNAI "anthropologist" Celio Horst briefly visited the area in early 1979. His account of the Waimiri-Atroari, published in the FUNAI magazine Revista de Atualidade Indigena (no. 17, July/August 1979, pp. 42-50), contains the best publicly-available information regarding Waimiri-Atroari village locations as well as a brief review of the history of their contact with the national or regional society. Since Horst's brief visit, however, it appears that nothing further has been done regarding the situation of the Waimiri-Atroari Indians in the area, beyond the designation of still another FUNAI "attraction" or "pacification" team to work there. A more critical

endeavor, it would seem, would be to arrange for an anthropologist to spend an annual cycle with one of the contacted and relatively accessible Waimiri or Atroari villages, to study exactly how they use the range of territory and resources open to them and how they define what territory actually belongs to them. With this information in hand, the FUNAI could then lay some relatively realistic and satisfactory plans, together with the Waimiri-Atroari themselves, as to exactly what would be in their best interests in terms of any relocation necessitated by the dam. Just as in the case of the relocation of the Parakanan, however, the FUNAI seems oblivious to the necessity of having adequate cultural information regarding the activities of the group which they intend first to contact and then to decide what to do about, afterwards.

Given the general topography of this area and the history of Waimiri-Atroari/non-Indian relations in general, the consequences of the Balbina Dam for these Indians would seem to be disastrous: because of its generally flat terrain, a huge part of their area will probably be flooded and, just as in the case of the Parakanan, the

Waimiri-Atroari will probably be the last to know about it. Action should be undertaken to investigate this situation and the Indian areas to be affected, as soon as possible.

7. The Xingu River Basin Hydroelectric Project.

An additional huge hydroelectric project, which would also severely affect a great many Indian people in Brazil, is now being considered by ELETRONORTE for the Xingu River Basin. Some nine or ten dams, to be chosen from some 30 possible sites, are being considered for construction by 1992 on the Xingu River and its major western tributary, the Iriri. These dams may flood as much as 6,000 square kilometers (or 600,000 hectares) of Indian and non-Indian lands together and may directly or indirectly affect many of the 4,000 Indian people living in the 42 different tribal or village groups in the Xingu River Basin, as well as many thousands of non-Indian people as well. Research to date has identified at least six Indian groups (the Arara, Arawete, Assurini, Kararao, Kokraimoro, and Jarina Post Mekrangnoti) that almost certainly will be directly affected by flooding from the Xingu River Basin Hydroelectric Project (XRBHP) reservoirs or by the construction of one or more of its dams in or near their tribal areas. As more details regarding this project become known, and as more of the Indian people in

the area are specifically located vis-a-vis the construction alternatives under consideration, more directly-affected groups are likely to be identified.

As was the case with the Uruguay River Basin Hydroelectric Project, many of the possible dam sites in the XRBHP would be mutually exclusive, since the reservoir of one would inundate the other. Thus, as for the URBHP, the various possible dam sites for the XRBHP have been grouped into several sets of internally compatible but mutually exclusive alternatives, each containing from seven to nine individual dams or dam complexes (when two or more separate dams are necessary in the same area to prevent spillover of the reservoir through another available depression). The two apparently being given the most serious consideration at present are known as "Alternative A" and "Alternative B". The first of these, "Alternative A", is the larger of the two, in terms of the size of its dams, reservoirs, and effects. It is the one which would flood over 6,000 km². It envisions a series of huge dams and reservoirs, starting just below Altamira, in the State of Para, which would flood much of the surrounding area, including that city itself. "Alternative B" is a huge project by any standards, but would not involve dams, reservoirs, costs, and political battles of the magnitude that "Alternative A" would engender ("Alternative

B" would not destroy Altamira, for example). Thus, although ELETRONORTE has apparently reached no firm decision on the matter, it appears more likely at present that "Alternative B" will be the one finally selected. On the other hand, "Alternative B" will not produce as much hydroelectric power as "Alternative A" would, and the decision might therefore go the other way. It is likewise possible that either of these two alternatives might be modified and that modified version adopted, or that an entirely different proposal might be accepted, conforming to neither of the alternatives presently thought most likely. Since at this time, however, "Alternative B" appears the most likely of all the known alternatives, we shall base our discussion of the probable effects of the XRBHP on the Indian peoples of the area on it, remembering that were a different set of dams with different locations or depths chosen, then some of the specific effects discussed here might well be altered, either increased or decreased, as the case might be.

"Alternative B" would divide the entire Xingu River up into a series of five huge reservoirs, totalling over 1,300 kilometers in length (as measured along the old river bed). It would start with two huge dam complexes (each composed of at least two separate dam structures), one directly east of Altamira (the "Kararao" and "Jurua"

Dams, located approximately where the Transamazon Highway now crosses the Xingu), and one just a few kilometers south of Altamira (composed of the "Babaquara IA and III" Dams). Proceeding up river, these would be followed by the "Carajas," "Kaiapo," and "Gorotire" Dams. The Gorotire Reservoir itself would back all the way up to the northern edge of the Xingu National Park (XNP), where the notorious BR-080 crosses the Xingu at that point.

In "Alternative B", the Babaquara IA and III dam complex would also flood an area far up the Iriri River, a major tributary of the Xingu, which enters the Xingu just below Altamira. Two additional very large dams on the Iriri itself would join in inundating a total of over 600 kilometers of the Iriri River. Thus, in the case of "Alternative B", there would be a total of nine dams on the Xingu and the Iriri, seven of which would generate hydroelectric power, the other two being ancillary retention structures used in the two dam "complexes" near Altamira, as mentioned above.

The overall consequences of the XRBHP for most of the Indian peoples of the Xingu River basin are going to be very severe. They have been essentially farming, hunting, fishing, and collecting peoples, with very rich and complex ceremonial lives and complex political histories, who have been able to maintain their strength

and their traditions through inhabiting areas which were either relatively inaccessible or which they fiercely defended with justly-earned reputations for military prowess. Today, that reputation is not going to protect them effectively. Although some of them have had some peaceful contact with the outside world, through some commercial activities such as gathering Brazil nuts, or hunting animals for their skins, or working as guides for explorers (or surveyors) in nearby areas, these contacts have usually been through the intermediary of the FUNAI and relatively small in volume (depending on the group in question). The onslaught of non-Indian people and their commercial economy which the development of the XRBHP will stimulate does not seem likely to allow them the isolation they have always fought for or found necessary for the maintenance of their way of life.

One of the primary threats to these Indians' future which is raised by the general "Plan for the Integrated Development of the Xingu River Valley" (PIDXRV), of which the XRBHP is but a crucial part, is that of mineral exploration. The area is apparently rich in mineral resources; two of the major factors necessary for their successful exploitation, namely inexpensive power and adequate (and therefore relatively inexpensive) land and water transportation, will be made available by the

XRBHP. It seems quite likely that, just as in the case of the "Plan for the Integrated Development of the Tocantins River Valley" (PIDTRV) in which the Tucuruí Hydroelectric Project figures so importantly, financing for the Xingu energy projects and financing for the Xingu mining and refining projects will probably be linked very closely together. Among the most dangerous potential mineral developments, from the point of view of protecting the rights and welfare of the Indians, are the coal deposits reported in the upper Xingu region (see below), in the Fresco River region (of the Kayapo), and in the "Carajas Project" (not to be confused with the Carajas Dam Project) area where huge deposits of iron ore have already been discovered in and near the areas of the Xikrin; many others could also be mentioned (e.g., Almeida 1977; Davis 1977).

The overall development of the Xingu River basin, as symbolized by the "Kaiapo" and "Gorotire" Dams, may cost their namesakes a lot, unless the FUNAI now begins to fight effectively in their stead, to ensure that adequate protective measures will be taken and that adequate compensation will be made. Unfortunately, FUNAI's record is not particularly good in this regard.

Although the FUNAI was informed as early as 1978 that ELETRONORTE was planning a series of very large dams

for the Xingu, FUNAI has not yet begun (as far as we know) to investigate on its own either the plan and scope of the project or the current status of all of the Indian peoples in the affected area, to enable effective plans to be developed to safeguard their interests. It would appear that, by law, that should be a major part of FUNAI's job, as legal guardian of the Indian people.

On the other hand, in 1980, an engineering firm working as consultants to ELETRONORTE asked a group of non-FUNAI anthropologists with direct experience in the areas in question to prepare an initial survey of the Indian peoples to be affected by the XRBHP. That group was under the direction of Dr. Lux Vidal of the University of Sao Paulo and Sr. Antonio Carlos Magalhaes of the Museu Paraense Emilio Goeldi in Belem. Although this group had less than two weeks to conduct their preliminary research, they found the potential situation very serious, indeed.

In their report (Vidal, Magalhaes, et al. 1980), they have presented a general overview of the various Indian peoples in the Xingu River Basin which would be in one way or another affected by the XRBHP. In the following sections of our analysis, we shall attempt to build upon their report by relating their general information to the specifics of the most likely alternative set of XRBHP

dams ("Alternative B"), insofar as possible. We will also amplify their information by the inclusion of relevant data from other sources, as well. In doing so, we hope to be able to go beyond their initial report by specifying the particular types and magnitudes of (the) effects of a specific dam or reservoir, or set of dams or reservoirs, for each particular Indian area. However, it must be kept in mind that some of the specific effects here discussed might well be altered should ELETRONORTE choose a different or modified alternative.

We shall proceed first up the Xingu River itself, and then up the Iriri, that is to say from north to south in each case, analyzing each potentially affected Indian group in turn.

Along the Xingu itself, at least four Indian areas (those of the Assurini, Arawete, Kokraimoro, and Jarina Post Mekrangnoti) will be directly affected by flooding, the loss of traditional (for those not on a reservation) or reservation land, or the construction of one of these huge dams on or near their land, according to "Alternative B." Proceeding from north to south, the first two of these are on the eastern side of the Xingu, the third straddles the Xingu on both sides, and the fourth is on the western bank, alone.

7.1. The Assurini Indians, Koatinemo Reservation.

The Assurini area, in the municipality of Altamira, Para, will be severely affected by flooding, by the proximity of construction sites, and by the overall development of the Altamira area which the XRBHP will stimulate. Exact measurement of the amount of land loss which "Alternative B" would entail for these Assurini was not possible from the information available to us, however it has been estimated by one source to be several thousand hectares (Muller in Vidal, Magalhaes, et al., 1980).

The Assurini and their neighbors to the south, the Arawete (discussed immediately below), are among the last Tupian-speaking groups to have remained uncontacted in the Amazon basin as a whole until the last decade. This group of Assurini was first contacted or "pacified" in 1971, when it contained approximately 100 individuals. Today, they number only 55, which number they had already reached by 1978. Prior to their contact, the construction and opening of the Transamazon Highway to their north had caused groups of their traditional enemies to themselves flee, forcing them into conflict with the Assurini and pushing the Assurini westwards towards the Xingu. This precontact conflict, plus an extremely high death rate due to new diseases and a lack of adequate compensatory modern health care following the contact time, have

decimated this group, which was once widely feared throughout the area.

Today, the contacted Assurini live in one village on the Koatinemo(a) Reservation, on the northern bank of the Ipiacava River, an eastern tributary of the Xingu, which enters the Xingu approximately 135 kilometers (as measured along a straight line) above Altamira. There is also at least one uncontacted Assurini village near the Ipiacava headwaters, probably containing another 50-some people, and there may be one or more other small Assurini groups yet undiscovered on the headwaters of some of the other (smaller) tributaries of the Xingu in this general area, too.

As a result of their severe depopulation, the economy, politics, and religious and social life of the contacted group were essentially paralyzed, yet they had been, until that time, a very productive people, with huge plantations of foodstuffs witnessed by the explorers who visited them then (e.g. Arnaud 1971: 19f.) A community redevelopment effort, begun with the aid of the anthropologist Regina Muller, who had been studying them since 1977, has had positive results. The XRBHP will, however, seriously threaten this redevelopment effort.

According to "Alternative B", the Babaquara IA and III Reservoir will flood the Ipiacava and surrounding

Xingu shoreline, depriving the Assurini of the Koatinemo Reservation and the uncontacted Assurini of a very large amount of their land. The two dams themselves will be less than 80 kilometers (apiece) from the Koatinemo Reservation, so that the indirect effects of their construction on these Assurini could also be very grave, in terms of unwanted visitors, disease, culture shock, land speculation, immigration of squatters, and the eventual urban and industrial development of Altamira (already a major point on the Transamazon Highway) itself, only 90-some kilometers away.

Another dangerous threat to these people will come from the construction of the next major dam (proceeding upriver) on the Xingu, tentatively called "Carajas," for which the construction access roads from Altamira may very likely pass through the area of the Assurini. (If not, they will probably have to go through the area of the Arawete, discussed below.)

Additionally, according to Regina Muller (op. cit.), the Babaquara Reservoir will flood the present Assurini village (and possibly the FUNAI post as well) and necessitate its removal; flood and destroy the farm plots only now being re-established after a ten-year hiatus; severely reduce hunting and fishing sources of protein; increase the sense of powerlessness and fatalism

which the past ten years have brought these people; and confirm their own origin and destruction myths which say that the world will end in a huge flood, from which no one will be saved. In short, it will threaten their lives and their culture with more shocks on top of those they have already and only recently experienced, and possibly with extinction itself.

7.2. The Arawete Indians, Arawete Occupation Area.

The Arawete Area, also in the municipality of Altamira (Brazil's largest), is just to the south of that of the Assurini. Proceeding up the Xingu, it is the second Indian area which would be affected by "Alternative B" of the XRBHP. It would be affected specifically by the Babaguara complex, as well. The consequences of this for the Arawete will be much the same as for the Assurini discussed above, though perhaps even worse, since the Tupian-speaking Arawete were only contacted in 1976.

According to "Alternative B", they will also be severely affected by the construction of the Carajas Dam, which in their case will be less than 20 kilometers upstream from where their area intersects the Xingu River. The Carajas Dam will be located approximately 230 kilometers south of Altamira, or 59 kilometers south of the town of Porto Alegre (measuring in a straight line in each case), at an approximate latitude of 4°52'S.

The danger of the Altamira-Carajas Dam construction road also penetrating their area is therefore especially great. Whether it does or not, the presence of the thousands of workers necessary to build a dam of this size, for the extended amount of time it will take to build it, considering the attitude of most such laborers towards the Indian people and the extremely recent contact history and small size of the Indian group in question, will make the construction of the Carajas Dam itself a crushing weight potentially obliterating these people's bodies and lives, unless extremely strong protective measures are taken by ELETRONORTE, as well as by the FUNAI. Recent history shows that this cannot be left up to the FUNAI alone.

There are at present a total of about 136 contacted Arawete, living in two villages near the FUNAI Post on the Ipixuna River (an eastern tributary of the Xingu) which was set up there earlier to attract them. They live there largely for protection from those still-uncontacted Parakanan who attacked them in this area in 1976 and 1977, and who are said still to inhabit the headwaters of the Ipixuna, or at least to be at large between there and the Tocantins. This area has not yet been officially reserved for the Arawete, although an area bordering the lower Ipixuna has been declared the

"Arawete Occupation Area" (which has less anticipation of permanence in the eyes of the FUNAI than does a reservation). There may also be one or more still uncontacted Arawete groups in this area (Arnaud n.d.)

The contacted Arawete are still disoriented from their very recent conflicts with the Parakanan and from their equally recent contact experience with the regional/national society and are thus, not surprisingly, very dependent on the FUNAI post. The XRBHP will flood both of their villages and cause very severe consequences for both the contacted and any as yet uncontacted Arawete, much the same as for the Parakanan and Assurini previously discussed.

7.3. The Kokraimoro Kayapo, Kayapo Indian Park.

The Kokraimoro are a sub-group of the Ge-speaking Kayapo Indians. At present, they inhabit the westernmost portion of the so-called "Kayapo Indian Park" (KIP) or reservation in the municipality of Sao Felix do Xingu in the State of Para, on the eastern bank of the Xingu. They inhabit the portion of this reservation where it adjoins the Xingu from the east and continues over it onto the other (western) side. Two other contacted Kayapo groups also live in the KIP, which contains more than half of the Kayapo people today. These others are

the Kretire and Gorotire branches of the Gorotire Kayapo and the Kubenkrankegn Kayapo (who also have two villages). There is also one still-uncontacted Kayapo group reported within the KIP, or nearby, called the Pituiaro, with about 60 people, living somewhere near the Kubenkrankegn. The total known population of the KIP is at present 1,192. It contains 26,570 km² and is still in the process of being demarcated.

Of the several Kayapo groups in this area, only the Kokraimoro will have to move their village because of flooding from the XRBHP, although both the direct and indirect consequences of it for many of the others will also be severe. (The others will be discussed below.)

According to the Kayapo themselves, there was originally one single Kayapo group, living in the region of the Pau d'Arco River along the Araguaia. This group split into three parts, one of which stayed where it was and became extinct by 1960. A second group went north to the headwaters of the Bacaja and Itacaiunas Rivers, where they became the so-called Xikrin of today. A third group moved west, to the headwaters of the Fresco and Riosinho Rivers, where by 1900 they constituted a single large village called Pykatoti, near the southern edge of what is now the KIP (Posey 1979). This village also suffered

several divisions before it was finally abandoned about 1936. Over the last 80 years, there have been many re-divisions and re-unions, and some extinctions, of the various Kayapo groups which originally came from Pykatoti, resulting in the present distribution of their twelve villages. (We rely here on the excellent summary of these movements provided by Verswijver, 1978; on the summary of the contact history of these various groups provided by Arnaud, 1971; on the thorough descriptions of Kayapo culture and ecology provided by Bamberger, 1971, and by Turner, 1971; and on the contemporary population data and preliminary XRBHP analysis provided by Vidal, Magalhaes, et al., 1980. Additional sources used are cited where necessary.)

The Kokraimoro split away, in about 1940, from the Kubenkrankegn group (which was itself the closest lineal descendant of the original Pykatoti group, since it had remained in its original area and laid claim to most of its original territory). The Kokraimoro moved west, across the Xingu, between it and the middle Iriri, where they split into two groups (a northern and a southern one) and became involved in hostile encounters with rubber-tappers until their "pacification" in 1957, when there were a total of about 160 of them. The two groups were reunited and moved to the banks of the Xingu. At

that time, they were located on a swampy island along the western edge of the Xingu, which kept them in an unfavorable contact situation with the local rubber-tappers and where there was little to hunt, only poor fishing, and where their crops would not grow. SPI (the predecessor of the FUNAI) accounts for this period indicate a 50% mortality rate in the next two years. They were then moved to a higher, more remote area, on the eastern banks of the Xingu, where they re-established themselves economically and demographically, with a population of approximately 181. There is now a FUNAI post at this location, known as the Kokraimoro Post (Malcher 1964: 170).

According to "Alternative B", the Kokraimoro Post will be extensively flooded by the "Kaiapo Dam", which is planned for the Xingu River about 16 kilometers south of the city of Sao Felix do Xingu, just where the river bends northwards again, at a latitude of about 6°47'S. The Kaiapo Dam site is approximately 515 kilometers upstream from Altamira (as measured along the old river bed) and just over 100 km. (measured in a straight line) downstream from the Kokraimoro village which it will flood. The dam will flood a very large portion of the KIP, specifically its northwestern and western parts.

The 260 kilometer-long lake which it will form will be over 20 kilometers wide at the point where it floods the Kokraimoro village and their farmland, the FUNAI post headquarters, and separates the eastern and western portions of the Kokraimoro territory by a barrier which, to these Kayapo, will be impassable. In addition to flooding a very very large part of these Indians' lands (for which we again have no numerical estimate) on both sides of the Xingu, the Kaiapo Reservoir will make it physically impossible for the Kayapo to regularly utilize that portion of their reservation on the western side and will thereby make it a dangerously exposed target for those who would like to take "unused" lands away from the Indians.

7.4. The Kriketum Kayapo Post, Kayapo Indian Park.

According to some sources, the Kaiapo Dam will be built on or extremely near the KIP itself, at its extreme northwestern corner. Even if it should not be located directly on the KIP, it will certainly be close enough to cause severe indirect effects for the people of the KIP, specifically those at the Kriketum Post (located near the old Brazilian settlement of Nova Olinda). This post is located just northeast of where the Riosinho joins the Fresco River, near the northern edge of the KIP, approxi-

mately 41 kilometers (measured in a straight line) southeast of the Kaiapo Dam site. This village at the Kriketum Post is rather recent; its approximately 100 people only moved there in 1977 from Kubenkraneqn, to which they had moved, from Gorotire, in 1976. However, this area forms a part of the traditional lands of the Gorotire Kayapo, from the past. Contact with workers from the dam site and pressures on their lands as some of those workers, and others attracted to the area by the project, attempt to settle down and stay on, will be but two of the primary indirect effects of the construction of the Kaiapo Dam on the Kriketum Kayapo. Additionally, some sources show the KIP to extend continuously from the Kaiapo Dam site south along the eastern bank of the Xingu to, and far south of, the Kokraimoro Post (discussed previously). If this is the case, then the Kaiapo Reservoir will also flood a very large amount of the Kriketum Kayapo lands in that area.

7.5. The Kubenkraneqn Kayapo, Kayapo Indian Park.

At the southern edge of the KIP, the Kubenkraneqn Kayapo group, which is made up of two villages containing a total of 384 people, located around the Kubenkraneqn Post on the upper Riosinho River, will also be directly affected by the flooding of the Kaiapo Reservoir. They

will lose a large amount of land (for which we have no numerical estimate) along the Xingu. Additionally, they will suffer indirect consequences of the construction of the so-called "Gorotire Dam", also on the Xingu, near where their reservation border intersects it. The Gorotire Dam will be built just below the confluence of the Pereira River with the Xingu, approximately 775 kilometers upstream from Altamira (measured along the old river bed), at a latitude of about 8°32'S. It will be approximately 60 kilometers (measured in a straight line) southwest of the Kubenkrankegn Post. Although the Kubenkrankegn were "pacified" in 1952, the Gorotire Dam construction site is still geographically too close for the successful maintenance of their cultural traditions and way of life, which have heretofore remained relatively intact due, in large part, to the considerable geographic distance separating them from their closest regional neighbors.

7.6. The Pituiaro Kayapo, Kayapo Indian Park.

There is also one still-uncontacted Kayapo group reported in the KIP. These people, known as the Pituiaro, are estimated to number about 60. They split off from the Kubenkrankegn in about 1941, supposedly moving southeast to the headwaters of the Rio Fresco. The continued isolation of these people is their only protection from

the physical and cultural decimation which the Kokraimoro and others have suffered upon contact and "pacification" by the regional or national society, since FUNAI has clearly shown itself unable to provide any such protection. To the degree that the construction of the Gorotire Dam reduces that isolation, their continued existence becomes very much threatened. For this reason, the construction of the dam and the town to house its workers and the access roads to supply it and them will constitute a threat, a priori, to the Pituiaro, whose exact location is unknown. They may actually be on the Riozinho headwaters, above the site of Pykatoti which Posey (1979) visited. They may be over the KIP boundary, outside the reservation. Wherever they are, the utmost care must be taken that the Gorotire Dam project does not disturb them. The routing of access roads along the southern edge of the KIP directly to the dam site, in particular, is an especially dangerous possibility.

7.7. The Gorotire Kayapo, Kayapo Indian Park.

These access roads might also affect the longest-contacted Kayapo group in the KIP, the Gorotire, who number some 627. The Gorotire Post is located east of the middle Fresco River, near the eastern or southeastern edge of the KIP. It split from the Kubenkrankegn group

when the two still constituted the original Pykatoti village, about 1935. It was first contacted or "pacified" in 1937. Only if access roads are injudiciously routed through or very near this edge of the KIP will the Gorotire Dam's effects be other than indirect for the Gorotire.

7.8. The Xikrin Kayapo, Bacaja and Caetete Reservations.

The Xikrin Kayapo people of the Caetete Post (numbering about 200), on the middle Caetete River, a tributary of the Itacaiunas River, in the municipality of Maraba, to the northeast of the KIP; and those of the 1,816 km² Bacaja Reservation on the middle Bacaja River in the municipality of Senador Jose Porfirio, in the State of Para (numbering 183, including 30 Kararao supposedly there only temporarily, as discussed below) to the east of the Arawete and to the north of the KIP, should suffer no more than indirect effects from the XRBHP, although, again, the routing of the construction access roads will be critical in determining this. Especially in the case of the Xikrin Bacaja Reservation, care must be exercised that access roads from Altamira to the Carajas Dam (discussed previously) do not disturb it, for those roads might then be continued on to the Kaiapo and Gorotire Dam sites, as well, turning them into rather permanent and heavily-travelled highways and opening the Xikrin area up

to disease, immigration, land pressures, and the like. Otherwise, these Xikrin areas are located sufficiently far from any of the mentioned dam sites as to be above any direct flooding and rather difficult of access for the workers, as well. These groups were "pacified" in 1952 and 1961, respectively.

7.9. The Mekrangnoti Kayapo, Jarina Post.

The first of the western Kayapo groups to split off from the old village of Pykatoti (discussed above) were the people now known as the Mekrangnoti, who moved west across the Xingu about 1905, to an area between the Jarina River and the middle reaches of the Iriri. They have also experienced many re-divisions and re-combinations from that time until the present. They now inhabit four separate areas: the Mekrangnoti Post on the Iriri; the Bau Post on the Curua, a western tributary of the Iriri; the Kretire Post in the northern part of the Xingu National Park (XNP); and the Jarina Post on the western bank of the Xingu River, just north of the BR-080 boundary of the XNP. The latter two groups of the Mekrangnoti, especially, have at times been known as the Txukaharamae or Txukahamae. (We will discuss the effects of the XRBHP on the Iriri and Curua River groups below.)

Both the Jarina and Kretire Mekrangnoti will be affected by the southernmost of the hydroelectric dams presently planned for the Xingu in "Alternative B". This is the Gorotire Dam, the location of which has been described above while discussing the Kubenkrankegn. Although the Gorotire Dam is located in the State of Para, its reservoir will stretch nearly 450 kilometers upstream (measured along the old river bed) into the State of Mato Grosso, to just below where the notorious BR-080 (Xavantina-Cachimbo) highway cut through, and then was made to form the new northern boundary of, the (thereby considerably altered) XNP (e.g. Davis 1977: 58ff.) Prior to this change in the XNP boundary due to the construction of the BR-080, the Jarina Post was essentially inside that larger park's old northern boundary.

On the western bank of the Xingu at this point in the State of Mato Grosso, is the Jarina Reservation, only recently (since 1972) set aside for one group of the Mekrangnoti. (This should not be confused with the Juruna Post, which largely serves the Juruna Indians, also located to the west of the Xingu, but further south, where the Manitsaua-Missu River enters the Xingu from the west, inside the present boundaries of the XNP itself. Some sources mistakenly call the Post at this (Juruna) location the Jarina Post. This however, is incorrect.)

The Jarina (Mekrangnoti) Reservation, which stretches some 70 kilometers along the Xingu at that point, will lose about 10% of its lands, and certainly its agriculturally most useful ones, to the Gorotire Reservoir, which, even that far upstream, will at some points reach nearly seven kilometers into it. Additionally, the fishing in the Xingu and its tributaries at that point will be considerably altered, as the watercourses are alternately filled, then stagnant, then flushed, as the reservoir level is raised and lowered. The immense mud flats which will be caused by reservoir drawdown in those periods when peak demand and minimum rainfall coincide is also a factor of danger, since it will make getting to the remaining water much more difficult (and very unpleasant) in addition to providing a huge potential breeding ground for malarial and yellow fever mosquitos, diseases already prevalent and very lethal in this area. Very likely, the trees in these immense reservoirs will not all be harvested before they are filled, thus likewise exposing the Indians to tangled, matted thoroughfares, impeding and endangering their movement as all the flotsam and jetsam collects, caught among the dead and dying trees, and is periodically exposed, covering the area between the water and the new high-water line. (This will also, although to a lesser degree, occur in the case of the Kokraimoro, discussed above).

The Mekrangnoti were first "contacted" or "pacified" by the Villas Boas brothers in 1953, when they constituted two villages. The large single village which they had formed between the Xingu and the middle Iriri about 1905 had split and recombined at least five times, in different combinations. After one of those splits, in 1972, one of the resultant groups, under the leaders Kremoro and Krumare, moved to the lower Jarina River (which some sources label the "Jarina or Juruna River"), which enters the Xingu from the west just above the famous "Falls of Von Martius", where the Jarina Post is today. They had been reported in this area periodically since at least 1962 (Kietzman 1967: 28). At present, this particular group numbers about 140, living in one village near the Xingu, in the area where the worst flooding will occur. Their village, their farmlands, and probably the attendant FUNAI post headquarters will all be destroyed and their fishing and hunting lands will be severely affected as well. Schistosomiasis, in addition to malaria and yellow fever, will be a severe threat. Indian/outsider contact probably will not be made much worse by the Gorotire Reservoir than it already has been made by the proximity of the BR-080 highway, since this upstream portion of the reservoir will be the most unstable, unsightly, and least attractive to tourists, fishermen, or boaters.

As of latest report, the Jarina Post had not yet been fully demarcated. There had been several conflicts between the Indians (the Mekrangnoti of this area having long been noted for their aggressiveness and their bravery in defending their territory) and the large agro-business ranches established near, and always trying to infringe more on, the Indian area, including one in 1977 in which the Indians burned one of the ranches and killed two workers. As a result, "FUNAI accelerated its efforts to define the boundaries for the Jarina Reservation . . .," Serra (1979: 67) reports, but "... errors were made and the problem persists".

7.10. The Mekrangnoti Kayapo, Kretire Post
(Xingu National Park).

In 1972, another Mekrangnoti group also moved slightly east and south, closer to the Xingu and into the Xingu National Park (XNP) where they became established at what is now the Kretire Post of the XNP. They number approximately 200 people at present (Verswijver 1978). The Kretire Post is located on the western bank of the Xingu, just south of the northern border of the XNP (the BR-080). It has already been severely affected by the construction of the BR-080 highway and by traffic along it, particularly during the long tie-ups at the Xingu

crossing nearby. Disease, culture shock, and the other difficulties of contact are already known to them. They will also, however, suffer indirect effects from the XRBHP development as a whole. The most immediate of these will probably be in the alteration of the river chemically, physically, and ichthyologically (as discussed above) due to the Gorotire Reservoir downstream.

7.11. The Tribes of the Xingu National Park.

The internationally-known upper Xingu River tribes, of whom (excluding the Kretire Mekrangnoti) there are presently 14 living in the XNP (some of whom are relative newcomers to the Park itself), will also be affected by these same indirect effects. At present there are some 1,570 individuals in the XNP (excluding the Kretire people). Almost all the major South American Indian language stocks are represented: four speak Tupi-Guarani (the Aweti, Kamayura, Kayabi, and Yuruna); four speak Karib (the Kalapalo, Kuikuro, Nahukwa-Matipuhy, and Txikao); three speak Arawak (the Mehinaku, Yawalapiti, and Waura); there are two other Ge-speakers (the Krenakoro and the Suyá); and there is one isolated language (Trumai). Their cultures, however, have tended to assimilate much from each other, resulting in several common traits, one of which now seems, unfortunately, potentially dangerous:

a reliance on river fishing for their primary source of protein (e.g. Agostinho 1972; Schaden 1965). Many of them, for example, taboo the eating of most game. Their main garden crops are several varieties of manioc, all of which are protein-deficient and, as a matter of fact, require additional meat proteins for their successful assimilation (e.g. Gross 1975). Thus, any threat to their fishing is a very grave threat indeed, particularly since the XNP is now completely surrounded by agrobusiness ranches, so its peoples can no longer go outside it to hunt (for the game that is hunted) or to fish, as they once did (Bastos in Vidal, Magalhaes, et al. 1980).

The other major indirect effect of the XRBHP in this area will be from the general development of the river basin, as a whole, through the "Plan for the Integrated Development of the Xingu River Valley" (PIDXRV), discussed above, of which the XRBHP is only a major (but necessary and facilitating) part. The general onslaught of mining, ranching, and colonization activities which the XRBHP foreshadows for the Xingu River basin as a whole will be immense. Pressures on the Indian peoples of the whole area will be intense, extending all the way to the two Bakairi and three Xavante areas further south.

Most certainly, the PIDXRV spells yet another major step towards ending the protective isolation of the five

small tribal groups which are reported to remain yet uncontacted in the upper Xingu region (Villas Boas 1979), as well as that of the three or more uncontacted Assurini and Arawete groups (discussed above) in the lower Xingu region, and the three uncontacted Kayapo groups reported between the KIP and the XNP (one of which, the Pituiaro, we mentioned above, near the Kubenkrankegn; Verswijver 1978; Vidal, Magalhaes, et al. 1980). One or two of these groups may be rather close to the areas actually to be flooded by the Gorotire Dam, however their locations are known (or reported) so vaguely as to make it impossible to say. Of these, the most likely to be affected is probably the so-called Ngra-Mrari, an offshoot (in 1940) from the Gorotire Kayapo, now reported somewhere to the south of the KIP, near the Xingu River, in the extreme southern part of the State of Para. They supposedly number about 40.

It should be remembered at this point that our analysis of the consequences of the XRBHP for these Indian peoples is based on "Alternative B" as apparently the most likely of the possibilities known to date. Were another alternative set of dams for the Xingu to bring reservoir waters further up the river than the Gorotire Dam would in "Alternative B", then the above-mentioned consequences for the tribes of the upper Xingu would be

much different and much worse. The worst possibility would be for another dam to be built at or near the BR-080 crossing, at the tip of the Gorotire Reservoir, to utilize the river flow in the basin above that point and to regulate the river flow below it. Interestingly enough (although we have seen no proposal to this effect and neither "Alternatives A nor B" show any inundation in the XNP), that is exactly what one would expect on the basis of the integrated hydroelectric development plans proposed by the same Brazilian governmental agencies for other major Brazilian river systems with which we are familiar (e.g. the Iguacu, Parana, Tocantins/Araguaia, and Uruguay River basins). The electric output of the Gorotire plant would be much more stable were its input artificially controlled by such a dam or dams upstream and the power output of such a "Kretire" Dam would itself certainly not be negligible, since it would potentially flood a very large area, involving the very many tributaries feeding into the Xingu above this point. Presumably, such a dam has not been indicated in either "Alternative A" or "Alternative B" because it would mean the grave disruption, indeed the extinction, of the XNP. However, the existence of "National Parks" has not stopped the development of massive hydroelectric reservoirs leading to their extinction in other parts of

Brazil, before (e.g. the Paulo Afonso and Guaira or Seven Falls Parks on the Sao Francisco and Parana Rivers, respectively; Goodland 1972: 30 and 1977: 92f.) Therefore, technical or engineering reasons aside, it seems quite likely that it is primarily because of the presence of these upper Xingu Indian tribes in the XNP that a further massive dam complex has not been indicated for this site. It would certainly mean the end of the Indians' way of life, as they at present wish to live it. This situation should therefore be watched with the utmost care.

7.12. The Kararao Kayapo, Kararao Reservation, Xingu and Iriri Rivers.

"Alternative B" of the XRBHP calls for the flooding of both the Xingu and a large portion of its major western tributary, the Iriri. The Iriri River joins the Xingu 80 kilometers upstream (measured in a straight line) from Altamira. It is a very large river, which begins as two major branches, the Iriri itself, with its headwaters near the BR-080 in northern Mato Grosso, and the Curua, with part of its headwaters near the town of Cachimbo, at the southern edge of the State of Para. These two branches flow north, paralleling the Xingu, for over 500 kilometers until they join, whereupon they flow north together as the Iriri for another 70 kilometers before turning

east-northeast and flowing another 260 kilometers to meet the Xingu (all these distances are measured along straight lines; if measured along the course of the river, the distances would of course be much greater than this).

The Kararao Kayapo have lived in the lower Iriri River area since they split away from the original Kayapo village of Pykatoti about 1933, and moved west across the Xingu, and then north. At that time they numbered some 150-200 individuals. Soon afterwards, they split into three smaller villages, the first of which was "contacted" in 1940, when it contained some 80 people. These Kararao had crossed the Iriri, going north, and were some 100 kilometers northwest of Altamira, on a tributary of the Jarauçu, which flows into the Xingu opposite Porto de Moz, near the mouth of the Xingu (at the Amazon). On their own, they went to visit Porto de Moz, got sick, and most died. Most of the survivors were lured to Altamira where they were shotgunned one night as they slept. One survivor fled to Gorotire.

The second group, containing some 40 people, was "contacted" in 1957, when its population was taken to the SPI Bau Post, half-way up the Curua. This post is reported to have lost 80% of its population in 1959-60, when it was moved from one location to another, while its inhabitants had the flu.

In 1972, the third Kararao group was "contacted," still along the lower Iriri. There were 30 of them. They have apparently managed to preserve their population rather well since then, since there are 30 of them now (although, ideally, it should have grown). A reservation (the Kararao Indian Reservation) was established for them and was in the process of being demarcated when they were summarily and very illegally removed in 1979 by the 2nd Regional Office of the FUNAI (headquartered in Belem) to the Xikrin Kayapo Bacaja Reservation. Under Brazilian law, such a move can only be done with the express authorization of the President of the Republic and only when there is no other alternative available. The Kararao want to return to their own reservation and the FUNAI has said it will return them, however this does not appear to have happened yet.

The Kararao Reservation, in the municipality of Altamira, is located at the junction of the Iriri, which is the reservation's northern border, and the Xingu, which forms its border to the east. It is roughly rectangular in shape and contains approximately 2,490 km². On the Xingu, it extends from the Xingu/Iriri junction, south to the town of Porto Alegre. The Kararao village itself is located on the northern edge of the reservation, halfway from the Xingu to its western boundary.

According to "Alternative B", the huge Babaquara IA and III Dam Complex, to be built on the Xingu itself just south of Altamira (as discussed above, regarding the Assurini), will flood far up both the Xingu and the Iriri, inundating two sides (the northern/Iriri and the eastern/Xingu ones) of the Kararao Reservation, including the Kararao village and their best farmlands, flooding a total of about 10% of the reservation, altogether.

The consequences of this for the Kararao are very grave, in all the ways discussed for the other areas analyzed above: loss of land, crops, homes, game, fish, gathered foods, and new and increased incidence of water-borne diseases and drawdown hazards along the shoreline. All of these will be compounded by their only recent contact, by the trauma of having already been moved twice (once away and once back) since then, and by affecting two sides of their reservation simultaneously. Yet, for the Kararao, having been forcibly removed from their lands and at present awaiting the opportunity to return there, there is another subtle but very real danger - that it may be decided (by the FUNAI or those influencing it) most expedient simply not to return the Kararao to their reservation at all, since, after all, it is going to be severely affected by the Babaquara Reservoir and they might just have to be moved again. Such a twisted

argument has in the past been used to justify similar land fraud schemes involving Indian lands. Were this to be the case, the Kararao would simply be deprived of their reservation forever and would have to live with another group on the land originally belong to those others, with no proportionate increase in the size of the joint reservation (the Xikrin Bacaja Reservation was not increased proportionately when the Kararao were moved there). At present, there is no legal reason the Kararao should have been removed nor that they should not be returned to their own reservation. In fact, it was and is explicitly illegal to have removed them and not to return them. When they are returned to their reservation and if the XRBHP is implemented to any degree as "Alternative B" would have it, then the FUNAI will have to help them face the consequences of the Babaquara Complex mentioned in the paragraph above.

Two other dams in "Alternative B" may also affect the Kararao Reservation, though perhaps less directly. Fifty kilometers up the Xingu from the Kararao Reservation is the proposed Carajas Dam. Fifty kilometers up the Iriri from the Kararao Reservation is the proposed Carajari Dam. Both will be very large projects and both therefore may come to affect the Kararao, through contact with the workers and so forth. The greater danger will probably

again come from access roads, specifically for the Carajas Dam, for it seems likely that the access road from Altamira might cross the Iriri, then proceed down the west bank of the Xingu to the site, thus penetrating the entire Kararao Reservation from north to south, probably right through the middle of it. Were the Altamira/Carajas Dam access roads constructed down the eastern bank of the Xingu, on the other hand, then they would bring equal trouble to the Assurini and Arawete (discussed above). Of course, it is possible that an access road may be cut from the Transamazon Highway south to the Carajari site and then southeast to the Carajas site, thus avoiding all the swamps and valleys which it would have to traverse along either the Kararao or Assurini/Arawete sides of the Xingu, although this would then hem the Kararao in between the Carajari/Carajas road to their south and west and the rising reservoir to their north and east. Either way, the routing of access roads is certain to be one of the major problems of the XRBHP for the Kararao Reservation (either in terms of land actually lost to the roads themselves or in terms of the pressures on their remaining land from the colonists and squatters who will move in along them) and for its people (in terms of the problems of contact with those travelling these roads and their affects on the game of the area, etc.; Arnaud 1971: 16; Verswijver 1978; and Vidal, Magalhaes, et al. 1980).

7.13. The "Arara", Arara Attraction Area, Iriri River.

Just across the Iriri, to the north of the Kararao Reservation, is a roughly rectangular piece of land set aside for the "attraction" of the uncontacted group of Indians known regionally as the "Arara". According to Brazilian law, this piece of land, under temporary interdiction for their "attraction", may then be used as the basis for a reservation, depending on the number, culture, and circumstances of the Indians found and what territory it turns out they actually inhabited.

The Arara Attraction Area appears (depending on the source consulted) to contain between 1,000 km² and 2,000 km². It roughly parallels the Kararao Reservation from east to west but is shorter from north to south. The northern edge of the Arara Area, on some maps, appears to be the Transamazon Highway, going west from Altamira; on other maps, that road bisects it. The center of the Arara Area is just about 100 kilometers southwest of Altamira; it is located in the municipality of the same (Altamira) name.

Notices of Indians called "Araras" in this area, generally but not always matching the same overall description, date back to the middle of the 1800's, when they were reported from the lower Xingu to the middle Tocantins.

These are usually accounts of hostilities involving rubber tappers. Conflicts have also been reported between them and the various other Indian groups of the lower Xingu/Tocantins area (Parakanan, Kayapo, Juruna) since this time, as well. Alternately, friendly but temporary relations have been reported between the Arara and rubber tappers, the latter utilizing them in a raid against the Assurini in 1910, for example. Little was heard of them for some time afterwards, so by 1957 Ribeiro (1957) decided they must have become extinct, but not everyone agreed (e.g. Kietzman 1967: 33f.) In 1962, as a matter of fact, Malcher (1964: 145) reported the Arara to be very close to the area where they are thought to be today.

While surveying for the route of the Transamazon Highway west of Altamira, in 1970, however, new signs of the Arara were found. One of the survey teams found a village abandoned only hours before, with its attendant gardens intact. The Arara Attraction Area was therefore established in that region to allow them some protection while FUNAI tried vainly to contact them (Arnaud 1971: 20).

In 1971, the final route of that highway went right through this same village. Some sources say this bisected the Arara into two (a northern and a southern) groups.

It could also be that there were more than one village to begin with, or that the single original group has recombined but crosses the highway at night to alternately utilize both sides.

As of late 1980, the Arara had still not been "contacted", however an examination of their cultural inventory (pottery, bows and arrows, the pattern of their woven hammocks, etc.) has indicated that they probably belong to the Karib cultural and linguistic stock. While the FUNAI has activated a new Arara "attraction" team, operating out of Altamira, the Arara Area has recently been illegally invaded by a large agrobusiness firm, the "Cooperativa Triticola de Ijui" (of Rio Grand do Sul), and the Arara are apparently becoming increasingly desperate or upset, as they are pressed right now on at least three fronts: by the Transamazon Highway; by the agrobusiness' expansion; and by FUNAI's efforts to find them. Recently, for example, they reacted violently by attacking one of the FUNAI "pacification" teams (Vidal, Magalhaes, et al. 1980).

Were construction of "Alternative B's" Babaquara IA and III complex (the same which would flood the Kararao Reservation) to occur in the near future, the pressures on the Arara would be even greater. Between the Transamazon Highway, the agricultural firm, and the Babaquara

Reservoir, they would have no place to flee. Hostilities might result in deaths on both sides, as fear became panic. Karib groups (such as the Waimiri-Atroari discussed above) usually do not give up their territory peacefully.

But, although serious, that will be only for a moment. The long term consequences for the Arara of the PIDXRV, in which the Babaquara Reservoir of the XRBHP would flood perhaps 10% of their Attraction Area, may eventually prove even more serious than the initial loss of some of their land to the reservoir or the initial loss of lives in any hostile encounter during this period, as the presence of the "Cooperativa Triticola de Ijui" already shows. Located so close to Altamira, on the edge of the Transamazon Highway, between it and a large body of water, the pressures on the remaining Arara lands will be tremendous. Those who physically survive the hostilities and epidemics of the "contact" period may soon find they have nowhere left to live, unless the FUNAI acts now to evict those who have illegally usurped the Arara's lands and to secure those lands immediately by turning them into a regular reservation, demarcated and with a registered title, and complete with a permanent FUNAI administrative and health post to demonstrate the possession of the area in the name of the Indians. Normal

FUNAI procedure is to do this only after the Indians are "contacted" (witnessed by the fact that the present FUNAI "Arara" operation is based in Altamira, 100 kilometers away). In this case, as in so many "normal" FUNAI cases, the FUNAI will probably be too late.

The Babaquara IA Dam (the closest of the Babaquara Complex to the Arara Area) will itself be only 60 kilometers away (downstream). According to "Alternative B", only 70 kilometers upstream from the Arara Area is the proposed site for the first dam on the Iriri River itself, the "Carajari Dam". The Carajas Dam on the Xingu, likewise, is only 120 kilometers from the Arara Area, and the center of ELETRONORTE's operations for the entire XRBHP, at Altamira, is only 100 kilometers away. The Tucuruí and Itaipu projects each brought over 25,000 workers plus at least that many additional dependents or other people to their respective construction sites. The XRBHP dams will also be very big ones, requiring lots of laborers, dependents, and other people, too. The uncontacted, or the (possibly by then) newly contacted Arara will then be surrounded by these projects, by their construction access roads, employee housing and recreation activities, and their sanitation problems. Noise, dirt, disease, and contact with those very people they have so long tried to avoid will become unavoidable.

As discussed above for the Kararao, the possibility that the Altamira/Carajas Dam access road might be routed from the Transamazon Highway just west of Altamira, south through the Arara Area, across the Iriri, and then through the Kararao Reservation would be especially calamitous. It would seem unlikely that access roads for any of the other dams mentioned would specifically impinge on the Arara Area, although the volume of traffic passing through or next to their area on the Transamazon Highway, from Altamira west to the Carajari and Iriri Dam construction sites (the latter of which is discussed in the Mekrangnoti section, below) on the Iriri River, and possibly from the Carajari site southeast to the Carajas site (thus encircling but not once again cutting the Arara Area) will certainly increase dramatically. FUNAI has proven unable to protect its charges well in areas bordered by major roads. If a large portion of this traffic is under contract to ELETRONORTE, then ELETRONORTE should also assume that task, as part of its overall management responsibilities. ELETROSUL has done this with some success, for example, during the construction of the Salto Santiago Dam on the Iguacu River, regarding the Guarani Indian area of the Mangueirinha Reservation in Parana. This understanding can be made a condition of the contractual agreement which the contractors and construction workers sign.

7.14. The Mekrangnoti Kayapo, Mekrangnoti and Bau Posts, Iriri and Curua Rivers.

"Alternative B" calls for two very large dams and reservoirs on the Iriri River. The first of these, the Carajari Dam, has already been discussed in the sections regarding the Kararao and Arara, above. The second one, that is the one furthest upstream, will be called the "Iriri Dam". It will be located just below where the Riozinho do Anfrísio River joins the Iriri, 250 kilometers upstream from the Iriri/Xingu junction. (The Anfrísio River joins the Iriri just where the Iriri turns east-northeast, from its previously generally northerly course.) The Iriri Reservoir will flood the next 70 kilometers of the Iriri, to the junction of the Iriri with the Curua (which enters it from the west), and then will flood both the Iriri and the Curua from that point for another 120 kilometers each (all distances measured along straight lines).

At this point, the reservoir will be over 100 kilometers (measured in a straight line) from the nearest of the two Mekrangnoti Kayapo Posts, the Bau Post, which is located on the Curua River at the Bau River junction; and over 240 kilometers (also measured in a straight line) from the other, the Mekrangnoti Post, which is located on a tributary of the upper Iriri River; further upstream.

The Bau Post is located at the northwestern, and the Mekrangnoti Post at the southeastern, extremities of the 15,000 km² Mekrangnotire Indian Reservation, located between the upper Curua and the upper Iriri Rivers in the municipality of Altamira (Vidal, Magalhaes, et al. 1980).

The Mekrangnoti at these two posts are descendants of those who left Pykatoçi in 1905 and moved west across the Xingu to an area between the upper Iriri and Jarina Rivers. They have divided and recombined several times in a complex pattern since then, however the Mekrangnoti Post people have inhabited the area where that post now is since about 1964 and the Bau Post people have lived at the Bau Post since about 1957. Most of the Mekrangnoti groups at these two posts were first "contacted" by the Villas Boas brothers in 1957, as were those now living to the southeast at the Jarina and Kretire Posts on the Xingu, to whom they are closely related.

As discussed above in the section on the Kararao, the immediate post-contact death rate for the Mekrangnoti and Kararao transferred to the Bau Post in 1957, due to newly-contacted diseases, malnutrition, and inadequate SPI attention, was 80 to 90 percent. One of the primary reasons for this was the SPI's extremely unwise choice of the initial location for the post (Arnaud 1971: 14f.;

Malcher 1964: 169f.) At present, the total population of the Mekrangnoti Post is about 313; that of the Bau Post (formed largely of splinter groups from the other three Mekrangnoti factions) now numbers about 60 (Verswijver 1978).

The people of the Mekrangnotire Reservation are among the most isolated of the contacted Kayapo groups today. Their economy, for example, remains essentially subsistence oriented. It is therefore felicitous that, according to "Alternative B", the Iriri Dam and the rest of the XRBHP as a whole would have only distant and indirect consequences for this reservation in the immediate future. The most serious of these indirect consequences would again probably be the possibility of an access road being constructed through the Mekrangnotire Reservation from a point on the BR-163 (Cuiaba-Santarem) highway 40 to 50 kilometers west of the reservation, to the Gorotire Dam construction site, on the Xingu, 150 kilometers immediately to the east of the Mekrangnoti Post. Less serious, but still of grave concern, is a more likely route, leaving the BR-163 from the town of Cachimbo, further south, and skirting the headwaters of the Iriri, to the south of, but within 50 kilometers of the reservation's southern border. The consequences of such access roads in or near a relatively isolated people's territory,

such as disease, culture shock, and land speculation and usurpation, have been discussed for other such groups above. They would be equally grave here.

In the long run, of course, the PIDXRV, of which the Iriri and Gorotire Dams are but parts, will bring ever greater pressures on the land, lives, and culture of the Mekrangnoti, as we have also discussed in detail for the other Xingu River basin groups above. The lands of all such groups should be demarcated, legally titled and registered, and occupied by an effective presence on the part of the Brazilian Federal Government in the form of the FUNAI, to guarantee the Indians' rights to their lands, as provided by law.

7.15. The Puro Kayapo, Iriri River.

There is one still-uncontacted Kayapo group reported in the Iriri River area, the Puro, with supposedly about 60 people. According to Verswijver (1978), they broke off from the main Mekrangnoti village near the upper Iriri in about 1940 and went downstream. It is possible that they may be living in an area to be flooded by the Iriri Dam. It is much more likely that they may be located in an area to be traversed by one of the access roads to the Gorotire Dam construction site, as discussed above. To date, their location has been only vaguely indicated by the other Mekrangnoti.

Whether they are directly affected by flooding or directly contacted by one of the access roads or not, the implementation of the PIDXRV, through the development of the XRBHP, will certainly only more and more threaten their continued existence as a free, isolated, and self-sufficient culture with each and every passing year, as we have discussed above for the other uncontacted groups reported to remain elsewhere in the Xingu River Basin today.

As of last notice, ELETRONORTE had not yet followed up the initial survey work done by Vidal and Magalhaes' group with any further, more detailed research. The specific dam and reservoir area studies which they recommended have not yet been done. It appears that there is indeed some interest on the part of ELETRONORTE in arranging for these more detailed studies of the probable impact of the various dams and reservoirs of the XRBHP on the specific Indian groups now identified as potentially to be affected, however there has been little positive support from the FUNAI in this regard. If it might be that ELETRONORTE has learned from its own past omissions, so that it now might include the Indian situation as one of the variables to be dealt with from early on, and to thus not repeat the tragic and senseless situation in

which they and the Parakanan are involved at Tukurui, then might it not be too much to hope that the FUNAI might also improve upon its own miserable past record of (non-) intervention on behalf of Indian people such as these?

It would seem unnecessary, unwise, and unjust to all concerned for ELETRONORTE to finalize construction plans for such an expensive and nationally important project, one which would at the same time be so potentially damaging to the lands, subsistence, health, and relative cultural integrity of such a large number of Indian people, without considering as fully as possible the past and present situation of all of them, without guaranteeing adequate protection of their legal rights, and without a provision for just compensation for any losses which they might therefore come to suffer because of it.

It is likewise to be hoped that the FUNAI might improve its poor record of intervention on behalf of the Indian people from that shameful neglect, mismanagement, and apathy which it has shown in the cases of the Xokleng at Ibirama, the Guarani at Mangueirinha, the Tuxa, Truka, and Pankararu at Itaparica, the Parakanan at Tukurui, and the Waimiri-Atroari at Balbina. Without the foresight of the various possible consequences which can be developed from a study of the proposed alternatives being considered

for such mammoth projects as the XRBHP or the PIDTRV, FUNAI will always be in the position of being able to do no more than react, too late and with too few beneficial results, when the project decision is finally announced. Were it to be involved in the initial study of these plans, it might be able to affect the course of decision-making regarding them, by offering constructive, knowledgeable, and detailed opinions of the probable consequences of one or another of the possible decision alternatives. When FUNAI does not do this, it betrays the trust of its charges (what little, if any, there is left).

Given their past histories in this regard, there is probably more hope to be had that ELETRONORTE may change its ways than that the FUNAI may change theirs. For this reason, although the engineering feasibility studies for the XRBHP are only in an initial stage, it is certainly not too early for non-FUNAI anthropologists such as Vidal, Magalhaes, and ourselves to begin to investigate this proposed project and its possible effects on the Indian (and non-Indian) population of the area to be involved, and to try to inform public opinion, and the FUNAI itself, regarding it. The overall effects of the XRBHP on the many Indian peoples of the Xingu River basin will be so vast as to be hard to fully imagine (Magalhaes 1980: 4, 16; Pinto and Secchi 1979; Vidal, Magalhaes, et al. 1980).

8. The Ava-Chiripa and Mbya Guarani Indians of Paraguay and the Itaipu Binacional (Parana River) Hydroelectric Project.

The huge Itaipu Hydroelectric Project, now under construction on the Parana River, 14 kilometers above the Foz do Iguacu, Brazil - Puerto Stroessner, Paraguay bridge, is designed to generate 12,600 MW. It is now estimated that it will cost a total of 10.3 billion U.S. dollars (in 1979 dollars), up from the original estimate only five short years ago, in late 1975 and early 1976 when construction began, of 5.8 billion U.S. dollars. (Of these figures, about 33%, in either case, is for the interest charges on the massive international and national loans required for its construction.) The project is being built as a joint effort by a bi-national Brazilian and Paraguayan organization called "Itaipu Binacional". When completed, the energy generated at Itaipu will be sent to fuel the urban and industrial needs of the Sao Paulo/southeastern Brazilian industrial heartland, since Paraguay has pledged or sold its share of the Itaipu energy to Brazil for the next twenty years, largely to pay for its share of the project costs. Itaipu will also interconnect to the Salto Santiago/Salto Osorio (etc.) Iguacu River power grid (discussed in section 3, above) to supply the southern states (or to withdraw energy from them) as the need arises.

The Itaipu Reservoir will flood over 1,400 km² (140,000 hectares), of which 800 km² will be from the Brazilian side and 600 km² will be from the Paraguayan side. Its 200 kilometer-long lake will flood the world's largest (in volume) waterfalls, the Salto Grande de Sete Quedas or Guaira Falls, and obliterate the Sete Quedas National Park which was created years ago to protect them. It will also displace an estimated 40,000 to 50,000 people (or 8,000 families) including several hundred Guarani Indians on the Paraguayan side.

Relatively little information is publicly available regarding the social effects of the Itaipu Project, however. Most public reports deal with its engineering or political aspects (e.g. Boletim Especial da Embaixada do Brasil em Washington, December 22, 1980, no. 100: 3; Dirigente Construtor, October 1978, XIV, 9: 19-28; Gamon 1975; Veja, February 28, 1979, pp. 12-14). An exception is Goodland's (1972) "ecological impact reconnaissance", which deals with the human populations involved as well as with the effects of the project on the physical environment. (However, for a while, even this report was only available on a restricted basis.) On the basis of the information available to him at that time, Goodland (p. 4) said that there were no Indian people in the project area. More recent information shows, however, that there were.

It appears that most of the Indian people involved are located on the Paraguayan side of the border. That, however, could also be due to some degree to the fact that the organization contracted by Itaipu Binacional for these more recent studies was Paraguayan (the Paraguayan Indigenist Association) and had greater familiarity with (or access to) the Paraguayan side (e.g. Bejarano, Melia, and Vargas 1975; Bejarano and Vargas 1977). Some members of the Indian groups involved probably reside on the Brazilian side of the border and many probably migrate back and forth. However, exactly how many, if any, are involved on the Brazilian side has not been specified and as far as we know there has been no Brazilian document made public on this question.

A total of some 5,500 Indian people lived within the area which the Paraguayan anthropologists originally said would be "immediately influenced" by the Itaipu project. In this area, comprising the northern half of the Department of Alto Parana (which will suffer the greatest flooding) and the eastern half of the Department of Canendiyu, live a total of approximately 3,000 Mbya Guarani, 2,250 Chiripa Guarani, and 250 Ache-Guayaki (Bejarano and Vargas 1977: 65).

Specifically, at least 250 families of the only superficially acculturated Guarani-speaking Chiripa (or

Nandeva) were reported to live within the area actually to be flooded or otherwise expropriated (for security or other reasons) by the Itaipu project. These families represent probably one-quarter to one-third of the total Chiripa population, one of the more numerous of the Indian peoples of Paraguay (O Estado de Sao Paulo, November 8, 1978, p. 15; Maybury-Lewis and Howe 1980: 18, 32-35). Reports issued from 1975 through 1978 by the Paraguayan anthropologists contracted by Itaipu Binacional to study the situation (as cited above) called for the establishment of a reservation for these families, outside of the area threatened with flooding yet within their traditional ecological habitat. According to these reports, however, no steps were taken in this direction during that time and the Indians had become very concerned about what would happen to them when the area begins to flood in 1982.

Although these Indian people have farmed, hunted and gathered, and otherwise lived in and utilized this area for generations, most of them have no "legal" title to it yet. The policy of Itaipu Binacional was that it would only effectively reimburse those private landowners who could show "legal" title to the lands they claimed. Hence, most of the Indians would have received nothing, outside of the establishment of a museum for the "archae-

ological and cultural preservation" of the flooded area. (Such a museum was originally provided for in the Itaipu Binacional plans.) The survival of their living culture, however, was another thing altogether.

The most recent information available regarding these 250 families indicates that approximately half of them have been relocated with apparent success. There were five Guarani Indian communities in this directly-affected part of Paraguay.

Three of these communities, each containing between 35 to 50 families of Ava-Chiripa each, were located in 1978-1979 on a single privately-owned "latifundio". As mentioned above, there was therefore no legal possibility under current Paraguayan law of replacing, or compensating them for, their lost lands, since they were not the "legal" owners of the areas they occupied. Rather, the non-Indian "landowner" was the only one reimbursed for that lost land. However, by law, the Indian families were reimbursed in cash for any improvements which they lost, for such things as houses, crops, and the like. These communities have now moved to another part of the same "latifundio", away from the area specifically expropriated by the Itaipu Binacional Corporation.

The other two Indian communities were located on lands within the public domain and thus, under the Para-

guayan Agrarian Law, were entitled to replacement of their lost lands by equivalent land in another similar area. One of these was comprised of approximately 35 Mbya Guarani families. It received slightly less land than it had before, however the land is of much better quality. The other was comprised of some 35 Chiripa Guarani families; this group received a parcel of land the same size as that which they lost. Both of these communities are now located just south of the area of the dam site and its surrounding security perimeter.

Indirectly, all of the Indian peoples of this area have been very seriously affected in the last few years by a much greater volume and frequency of contact with non-Indian people and by much greater pressures on their remaining land base, as the surrounding area has been penetrated by roads and opened up for development and colonization, largely for thousands of Brazilian colonists (Maybury-Lewis and Howe (1980: 26, 104). Tuberculosis has greatly increased among them and prostitution is a growing problem among the Chiripa, especially. Little Indian labor has been employed in the massive Itaipu construction effort, however, since the Guarani seem (culturally) not very interested in such things.

Conclusions.

As may be seen from this survey of the Indian areas threatened by flood-control or hydroelectric projects either underway or being planned in Brazil at the present time, a total of at least 100,000 hectares of the Indians' land is presently scheduled to be flooded by or otherwise lost due to these various projects:

<u>Area/Project</u>	<u>Hectares</u>
Kaingang/Uruguay Basin Dams	1,556
Xokleng/DNOS Northern Itajai Dam ...	714
Guarani/Salto Santiago Dam	1,000
Tuxa/Itaparica Dam	240 (?)
Truka/Itaparica Dam	500 (?)
Parakanan/Tucurui Dam	86,500
Gavioes/Tucurui Dam (power line & railroad).....	330
Guajajara/Tucurui Dam (power line) .	220
Waimiri-Atroari/Balbina Dam	(unknown/large)
Xingu River Basin Dams.....	(unknown/very large)

MINIMUM TOTAL (excluding Waimiri-Atroari and Xingu)	91,060

When the Waimiri-Atroari/Balbina Dam and Xingu River Basin Hydroelectric Project Indian land losses are included, this is certain to at least double, resulting

in a total loss of between 100,000 and 200,000 hectares (or 1,000 and 2,000 km²) of Indian land.¹²

Considering the relatively little land which the relatively few Indian people left in Brazil (probably no more than 150,000) still have available to them, a loss of these proportions would represent a grave threat both to their survival as individual groups and as distinct cultural entities, as well as to any possible policy of cultural pluralism which the nation might develop. Without allowing them adequate land, any such policy would be no more than a worthless piece of paper.

Furthermore, the Indian people should not have to support, once again, the costs of the development of that national society which has done little for them in return except rape, massacre, steal, and belittle. These projects would cost the Brazilian Indians approximately one hectare of land per Indian person, in addition to other physical, cultural, and psychological damages. If, in spite of this, decisions are made such that hydroelectric projects will indeed flood or otherwise damage Indian areas and Indian peoples' welfare, then they should, for perhaps the first time, receive a just indemnification in kind, and the physical, legal, and social protection from these consequences which all human beings should equally obtain. The past negligence or compliance of the FUNAI

in similar matters, essentially involving the illegal usurpation or alteration of Indian lands (such as occurred in the cases of the Kreen-Akarore, e.g. Beltrao 1977: 97-126 and Bourne 1978: 230-234; the Nambicuara, e.g. ARC Bulletin no. 4, January 5, 1980, pp. 11f., Aspelin 1975: 21-26, and Bourne 1978: 247-249; the Xavante, e.g. Beltrao 1977: 169-191, Bourne 1978: 249f., Correio do Povo, January 24, 1979, p. 9, and Folha de Sao Paulo, January 25, 1979, p. 6; and the Xingu National Park/Txukahamae, e.g. Beltrao 1977: 307-317 and Davis 1977: 58-60), must be guarded against (and is also worthy of anthropological study, in its own right).

A multidisciplinary comparative research program is thus urgently needed to investigate the details and variations of each of these cases and to develop a coherent and viable set of guidelines to be utilized in future similar situations, on the basis of the generalizations which this research would provide.

POSTSCRIPT: DAM CONSTRUCTION AND THE RIGHTS
OF INDIGENOUS PEOPLES

It was clear when we first began this research in 1978, and it has only become more clear since, that FUNAI is not doing its job, as legally prescribed, in serving as the guardian of the interests of the Indians. Too often, it clearly caters to interests directly opposed to those of its wards. Yet, the Indians have little legal recourse. Since it is the State which appoints their guardian, and since the State has appointed itself, there is nowhere but to the State and to the Brazilian people that the Indians can turn for redress. In this regard, the continued interest and support of both Brazilian and non-Brazilian people for the welfare of the Indians in Brazil is most necessary.

For this reason, a recent meeting of nearly forty Brazilian and non-Brazilian anthropologists and lawyers interested in the legal situation of the Indian in Brazil, held at the Universidade Federal de Santa Catarina in Florianopolis, Santa Catarina, Brazil, in October of 1980, under the sponsorship of that University and of Cultural Survival, Inc., of Cambridge, Massachusetts, adopted the following resolution (which we have translated in toto here):

(DOCUMENT)

"The anthropologists and jurists, meeting from October 9th through 12th, 1980, in Florianopolis, Santa Catarina, during the conference on "The Brazilian Indian in the Face of the Law", publicly manifest their concern with the decision-making process by which indigenous peoples are affected, directly or indirectly, by the construction of dams, which has shown a persistent violation of the (Brazilian) Federal Constitution (Article 198, Paragraphs 1 and 2), of (Brazilian) Law (Article 20, Paragraphs 1, 2, and 3, of the Indian Act, Federal Act 6001/73) and of International Covenant (No. 107, of the International Labor Organization), which guarantee to all indigenous peoples rights to the permanent possession of their traditional lands and to the exclusive utilization of any natural resources which they may contain."

"For this reason, we demand:

- A) The consultation and participation of the Indian people, the scientific community, and lawyers, in the decision-making process regarding these projects, and the guaranteed access of Indians, anthropologists, lawyers, and other scientists to all of the information necessary

for systematically keeping up-to-date on any projects which may have interfered, or which may come to interfere, with the integrity of any indigenous territories or with the social, political, or economic organization of their peoples;

B) That it always be remembered that so-called public works may, by Brazilian law, be constructed on Indian lands only in exceptional circumstances, as expressly decreed in Article 20 of the Indian Act mentioned above, of unavoidable application.

C) That all other possibilities for the production of energy (such as solar energy, or the construction of several smaller-scale dams rather than a single large one, etc.) which might not affect Indian areas as gravely, and which might also not entail any greater costs for the national society as a whole, be analyzed in each case.

For this, the technical expertise of specialists in such engineering works as well as major anthropological and ecological studies are necessary.

D) That, in accordance with the Indian Act (Articles 1, 2, and 3, as mentioned above), studies be carried out to determine the environmental impact already caused, or to be caused, by all such 'development' projects."

"We thus find, in conclusion:

- that the lands belonging to the Indian communities should not by any means be considered alienable for the continued expansion of the national society, which has already nearly exterminated the lives and cultures of the country's first inhabitants. Today, reduced to a fraction of their original areas, these Indian groups should not once again have to pay for the development of a society which only saw in them something to freely exploit along the way;

- that if, once again, under exceptional circumstances and in the proven absence of any other alternative, the national society once more comes to exploit that little which still remains for the Indians, then their indemnification should be, for the first time, just and fair. They should be compensated in land for their land, with equal ecological conditions and with their original improvements duplicated thereon, and they should be reimbursed for lost belongings and any monetary and social costs by a monetary compensation, in such a manner that these reimbursements actually reach their hands, as a group, rather than being retained to the benefit of some department of the FUNAI;

- that all of the international experience regarding the consequences which can be foreseen for tribal popula-

tions as a result of dam construction should be taken into account, with the goal of thus avoiding disasters which have already occurred elsewhere; and

- that, after all, all people, of whatever sociocultural background and in whatever sociocultural circumstances, should be seen as the beneficiaries of economic change, rather than as its victims."

"For this reason, we have established the following working group of anthropologists (shown with one asterisk) and lawyers (shown with two asterisks), to undertake studies, gather facts, produce documents, and facilitate interchange among the students of this subject:

Cecilia Maria Viera Helm, Federal University of Parana*

Caio Lustosa, ANAI, Rio Grande do Sul**

Rafael de Menezes Bastos, University of Sao Paulo*

Antonio Carlos Magalhaes, Goeldi Museum, Belem, Para*

Maria do Rosario Carvalho, Federal University of Bahia*

Consultants:

Lux Vidal, University of Sao Paulo and University of Texas, Austin*

Paul Leslie Aspelin, Cleveland State University, Cleveland, Ohio, U.S.A.*

Orlando Sampaio Silva, Federal University of Para*

Silvio Coelho dos Santos, Federal University of Santa Catarina*

Pedro Agostinho da Silva, Federal University of Bahia*

Olimpio Serra, Pro-Memoria Foundation, Brasilia*

Alain Moreau, Sao Paulo**"

(The complete proceedings of this conference have been published by Cultural Survival, Inc., of Cambridge, Massachusetts, as its Occasional Paper Number 3, under the title "The Brazilian Indian in the Face of the Law".)

FOOTNOTES

1 Much of the research on which this report was based was financed by the Centrais Eletricas do Sul do Brasil S/A (ELETROSUL), under contract no. AS 2780004/78 to the Master's Program in the Social Sciences of the Federal University of Santa Catarina. That part was carried out by Drs. Paul L. Aspelin and Silvio Coelho dos Santos, and graduate students Aneliese Nacke and Regina W. Schmitz da Silva, with the cooperation of the Fundacao Nacional do Indio, between August and December of 1978. Our special thanks to Ms. Eileen Hoge for the use of her photographs of the Uruguay River basin areas and to Sr. Osmar Coelho for the preparation of the two maps. The resultant article is, however, exclusively the responsibility of the present authors.

An earlier version of this document was originally presented by Paul Aspelin as a paper at the XLIII International Congress of Americanists in Vancouver, Canada, in August of 1979, and by Silvio Coelho dos Santos at the Third Annual Meeting of the Brazilian National Association for Post-Graduate and Research Studies in the Social Sciences, in Belo Horizonte, Brazil. That version is also to be published in Portuguese in the Anais do Museu de Antropologia of the Universidade Federal de Santa Catarina, Florianopolis, Santa Catarina, Brazil.

2 The situation has not changed very much since Thayer Scudder, who has worked on such problems for over twenty years, said seven years ago that:

A major problem with relocation in connection with major dams is the lack of published research dealing with both the execution and the evaluation of specific resettlement programs. I am aware, for example, of no published material dealing with Latin America (aside from Mexico) ... (1973: 707).

3 Goodland's 1977 environmental impact assessment of the massive Tucuruí Hydroelectric Project (Goodland 1977, 1978), which included an analysis of the project's probable impact on the Parakanan and other Indian groups of the area, for example, was only commissioned by ELETRONORTE after the decision as to where to locate the dam had been made (in 1973) and after major construction work on the project had already begun (in 1976)! Therefore, by the time a detailed in situ anthropological study of the Parakanan situation vis-a-vis the Tucuruí Project was commissioned by ELETRONORTE through the FUNAI in 1977, it could be no more than an ex post facto emergency salvage operation (e.g. Folha de Sao Paulo, October 15, 1978, p. 22; this is discussed more fully in the text, below). Even so, we strongly agree with the

general recommendations which Goodland proposed in his 1978 report:

- 1) "It is, therefore, strongly recommended that a proportion of the project's total budget be specifically allocated to the continuous protection, social development and medical attention of any indigenous society affected in any way at all by the project . . . It is recommended, therefore, that the developer of any project underwrite FUNAI's costs or contract the services of FUNAI in each case.
- 2) Any indigenous society which will be affected by a project should be carefully studied by competent anthropologists well in advance of the project's effects.
- 3) Denial of usufruct, such as by flooding or deforestation, should be restituted by ceding an equivalent contiguous tract . . . Indemnification solely for dwellings and agricultural improvements is tailored to exogenous sedentary agriculturalists . . . If ELETORNORTE desires the indemnification to reflect reality, then such considerations as detriment to game, loss of soil fertility, access and maintenance entry fees, for example, should be added to the present minimal Brazil-nut and timber tree indemnification (p. 14)."

4 Brief reports of this work have previously appeared in Aspelin and Santos (1979) and also, though with some errors or additions as the case might be, in the Coojornal of Porto Alegre, February 1979, p. 12; the Luta Indigena, April 1979, no. 8: 23-26, published by the Conselho Indigenista Missionario, CIMI-SUL, in Xanxere, Santa Catarina; the Diario do Congresso, Brasilia, April 20, 1979 (speech of the Hon. Deputy Sr. Modesto da Silveira); Pinto and Secchi 1979 (which also carried the first published report of the proposed Xingu River Basin Hydroelectric Project); and the Jornal de Santa Catarina, October 21, 1979, pp. 2f.

5 For example, although it was originally estimated that approximately 12,500 workers would be employed at the Tucuruí Dam site (which will flood the Parakanan Indian area), 22,000 to 25,000 are already there, and the turnover rate has been estimated to be as high as 40% per month. The maximum total population, including the workers' families and others, to be attracted to the Tucuruí area by the construction project at any one time was estimated in 1978 to be about 35,000, yet ELETRONORTE has already had to build housing for 45,000 (including a permanent new city for 16,000) while thousands of others are still living in makeshift housing, not supplied by

ELETRONORTE, elsewhere in the vicinity (Veja, September 13, 1978, p. 119; Isto E, March 7, 1979, pp. 24-27; ELETRONORTE 1980). Likewise, in early 1978, the total number of workers at the Itaipu project was already estimated at 21,000, and was expected to climb even higher as work progressed (O Estado de Sao Paulo, April 20, 1978, p. 23). The individual dams planned for the Uruguay River basin will be smaller, but may altogether require just as much total labor, even though more spread-out in space and time.

6 The estimates of land loss and subsequent population relocation which we have presented here for the Indian areas of Chapeco and Ligeiro in the Uruguay River basin should be regarded as minimum figures. They were kindly provided by ELETROSUL in March, 1979, on the basis of their latest aerophotogrammetric analysis. They represent the probable configuration of the dams' maximum water levels. They do not take into account, however, any additional areas which may have to be expropriated, or families or constructions which may have to be moved, to provide a necessary margin of operational security (families living within a very few meters of the water's edge, or of the dam itself, for example).

7 Much of the earlier research on these peoples (the Kaingang and Guarani), such as that of Baldus (1937), Becker (1976), Metraux (1946, 1948), and Schaden (1962), does not speak to their contemporary cultures or to the issues involved in hydroelectric projects and their consequences. Some of the recent studies regarding them, such as those of Helm (1977), Melatti (1976), and Pires (1975), are more useful in this regard, but much remains to be done.

8 Goodland's (1974/75: 26, 28) statement that no Indian Posts "will be inundated by the Salto Santiago Reservoir, although Mangueirinha will be close to one shore . . ./so that/ . . . the reservoir will not, therefore, directly affect the Amerindians", was made before the transmission line routes and borrow areas (for sand, clay, or gravel for the construction) had been defined; both of these later severely and directly affected the Mangueirinha Post. He likewise doesn't mention the relocation of a bridge and federal highway from the reservoir area nor the local bars set up to service the workers on the bridge and road projects, which also severely affected the Guarani here; presumably their relocation sites had also not been defined at that time. Regarding the Mangueirinha Indian situation, Goodland (p. 112) appears to have had only the advice of a regional

Catholic missionary from Curitiba; for this reason, his information regarding the specific location and condition of the Indian people in the area may have been incomplete or inaccurate. He did recommend, however, that those Indians on the margin of the reservoir should be protected by ELETROSUL, that FUNAI should be financially stimulated to further assist them there, and that they should be considered for central participation in the development of forestry and fishery projects in the area (p. 28). We suspect that the culture of the Guarani would make them rather unlikely to so participate.

9 There are conflicting reports of the size of each of these Parakanan areas and of the percentage of each which will be flooded or otherwise expropriated by the Tucuruí Project. The essential points to be made are, first, that the Parakanan are going to lose a very large portion of their reserved lands and, second, that up until now they do not appear scheduled to receive anything in return except death, disease, squalor, rape, and poverty, both physically and culturally.

The most accurate estimates of the size of the Parakanan Reservation and the Pucuruí Post appear to be 160,000 and 14,500 hectares, respectively. These are the figures which most of our recent sources have mentioned.

Some earlier sources (e.g. Magalhaes 1975 and Sampaio Silva 1974; as cited in Goodland 1977: 63), as well as one official and very recent FUNAI (1980: 3) source, have reported as little as 7,200 hectares for the Parakanan Reservation alone. Other sources (e.g. ELETRONORTE as cited in Goodland 1977; and Goodland 1978, himself), as well as a different page of the same official and very recent FUNAI source cited earlier, have reported 189,000 or 189,682 hectares, respectively, for the same reservation. FUNAI is obviously the source of all of these figures (directly to Magalhaes, Sampaio, and ELETRONORTE, and via ELETRONORTE to Goodland).

Goodland also reports (1977: 67 and 1978) the Pucurui Post to contain 28,200 hectares. It had been cut in half by the construction of the Repartimento - Tucurui federal highway through its midst and may subsequently have lost one of its halves, on one side of the road. The "189,000 hectare" figure sometimes used for the "Parakanan Reservation" might erroneously include both the 160,000 hectares of the Parakanan Reservation and these 28,200 hectares of the Pucurui Post. The 7,200 hectare figure is completely unfounded, however. By law, of course, FUNAI should have accurately surveyed all of the Indian areas in Brazil by now and thus straightened this out, but they have not yet done so.

The problem of estimating to what point the waters will rise in each case, however, is due less to FUNAI's tardiness in surveying the overall boundaries of the Indians' lands than it is to the practical difficulties of accurately surveying the thousands of kilometers of land contours, in a relatively flat area, along every little jungle inlet and creek up which the water might go. These estimates of land loss thus vary considerably in absolute terms (i.e., in terms of the actual number of hectares to be flooded).

When these varying land loss figures are mathematically divided by the equally varied estimates available for the size of each respective Parakanan area, the result is a set of even more greatly varying estimates of the relative percentage or proportion of each area thus to be lost. For example, Sampaio Silva (1980: 10), based on his consulting work on the Tucurui Project in 1976, has estimated a total loss to the Parakanan and Pucurui areas together of only 22% (or 43,000 hectares). Goodland (loc. cit.), who also served as a consultant on the same project in 1977, has estimated that only 5% to 10% of the Parakanan Reservation and "more than half of the 28,200 hectare Pucurui" Post will be flooded, for a total of between 23,600 and 33,100 hectares from both areas, together. We consider both of these estimates outdated and far too low.

In our text, therefore, we have provided what we feel to be the most reasonable of these estimates, based on areas of 160,000 and 14,500 hectares, respectively (as discussed earlier), and relying on the latest and hopefully therefore the most technically sophisticated contour estimates (which ultimately will be done by side-looking radar).

Further adding to the confusion, Magalhaes (1980: 13) now indicates that the Cajazeiras River Area was only interdicted in 1973 and that it originally contained 220,000 hectares, embracing the area around all three of the Cajazeiras' major tributaries, but from which FUNAI later accepted a huge reduction to only 20,000 hectares, located only along its Do Meio (or "Central") branch. Since we have not been able to confirm this, we have continued to use his earlier information, as have most other sources as well, regarding an area of 180,000 hectares being interdicted on the Cajazeiras in 1971.

On the location of the "Bacaja River" Xikrin, please see section 7.8 of the text and footnote number 11, below.

10 In 1977, FUNAI had estimated a total of about 600 Parakanan, of which only 94 had been contacted (as reported in Goodland 1977: 63). At that time, Goodland

estimated that there were between 250 and 400 altogether (1977: 65), although he later estimated a total of as many as 632, of which 500 were still uncontacted (Goodland 1978).

Data for "uncontacted" groups are generally later found to have been grossly inflated in number. They often report the same group to be in several places at once, thus counting them twice (or more). In this case, data regarding the uncontacted Parakanan were obtained from the contacted ones, who speak almost no Portuguese (nor do any FUNAI personnel speak much Parakanan) and from FUNAI and other explorers who had come across their campsites. The latest such information should therefore be considered the most reliable, other things being equal, as the contacted Indians become better able to communicate with non-native speakers and as the area is more thoroughly explored as time goes by. The attrition rate for uncontacted groups is likewise often very high, thus further reducing their numbers year by year. We therefore estimate that there are probably somewhere between 150 and 250 Parakanan, altogether, today. It is probably closer to the lower end of this range than to the higher.

It should also be noted that some sources (e.g. the Folha de Sao Paulo, October 15, 1978, p. 22) appear to

have attributed all the contacted Parakañan to "the Parakanan Reservation", thereby possibly leading the reader to double-count the Purucuri Post group by mistakenly adding them to that number, again. (A similar problem occurs regarding the size of "the Parakanan area", as discussed in Footnote nine.)

11 There are two river systems in this area which are often confused with each other in various accounts: the "Pacaja or Bacaja" which parallels the Tocantins, just to the west of it, flowing northwards into the Para River near the town of Portella; and the "Bacaja or Pacaja" which flows from its headwaters near those of the Cajazeiras and Itacaiunas (both tributaries of the middle Tocantins) northwesterly into the Xingu River just east of Altamira. The Assurini have been reliably reported on both. However, the home base of the Trocara group referred to here is on the Pacaja which flows into the Para near Portella. The Xikrin who attacked the Cajazeiras Parakanan in 1977, on the other hand, live at present on the middle reaches of the Bacaja which flows into the Xingu, however the lower reaches of that same river were previously utilized if not occupied by (other) Assurini (e.g. Arnaud 1971: 19f.)

12 Plans have also recently been reported (Alain Moreau, personal communication) for the construction of one or more hydroelectric projects on the middle and upper portions of the Paraguay River, perhaps jointly with Paraguay or Bolivia. The generally unfavorable topography of most of this part of the Paraguay River basin, flat, extensive, and swampy, makes it very likely that any substantial investment in its hydroelectric development would produce very large reservoirs, some of them flooding very large areas, similar perhaps to the James Bay Project in Canada. Depending on their size and location, these hydroelectric projects might very seriously threaten several of the Indian peoples of southwestern Mato Grosso. Topographic and political considerations make the Kadiweu and the few remaining Guato the most likely candidates, although it is possible that the Terena and (though less likely) even the Bororo might also be affected (not to mention the Indian people on the other side of the border, in Paraguay or Bolivia; e.g. Kietzman 1967: 38-40; Maybury-Lewis and Howe 1980: e.g. 15; and Riestler 1975). One of these may well be the so-called "Corumba" Hydroelectric Project, for which (together with the Balbina Project) financing has just been obtained from France (Boletim Especial da Embaixada do Brasil em Washington, February 20, 1981, no. 3: 4).

Unfortunately, we have no further information regarding these projects at present. They should, however, be investigated immediately.

ACRONYMS AND ABBREVIATIONS USED

CHESF	Companhia Hidroeletrica do Vale do Sao Francisco (Sao Francisco River Valley Hydroelectric Company)
DNOS	Departamento Nacional de Obras de Saneamento (National Department of Sanitation Works)
ELETOBRAS	Centrais Eletricas do Brasil, SA (National Brazilian Electric Power Agency, Inc.)
ELETRONORTE	Centrais Eletricas do Norte do Brasil, SA (Northern Brazilian Electric Power Agency, Inc.)
ELETROSUL	Centrais Eletricas do Sul do Brasil, SA (Southern Brazilian Electric Power Agency, Inc.)
ENERAM	Comite Coordenador de Recursos Energeticos da Amazonia (Amazonian Energy Resources Coordinating Committee)
ENERSUL	Comite Coordenador de Recursos Energeticos da Regiao Sul (Southern Brazilian Energy Resources Coordinating Committee)
FUNAI	Fundacao Nacional do Indio (National Indian Foundation)
KIP	Parque Indigena Kayapo (Kayapo Indian Park/Reservation)
PIDTRV	Plano de Desenvolvimento Integrado do Vale do Rio Tocantins (Plan for the Integrated Development of the Tocantins River Valley)
PIDXRV	Plano de Desenvolvimento Integrado do Vale do Rio Xingu (Plan for the Integrated Development of the Xingu River Valley)
SPI	Servico de Protecao aos Indios (depois, FUNAI) (Indian Protection Service; later, FUNAI)

TRBHP	Tocantins River Basin Hydroelectric Project
URBHP	Uruguay River Basin Hydroelectric Project
XNP	Parque Nacional do Xingu (Xingu National Park)
XRHP	Xingu River Basin Hydroelectric Project

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ABSTRACT

In Brazil, as elsewhere, high priority is being given to developing domestic energy sources due to the spectacular increase in the cost of imported petroleum in recent years.

This paper discusses the present situation of the thirty-two to thirty-four various Indian areas presently known to be threatened by seven major hydro-electric projects and one flood-control project, either planned or underway, in or directly involving Brazil:

The first of these is the proposed Uruguay River Basin Hydroelectric Project in the States of Rio Grande do Sul and Santa Catarina. It will threaten (1) the KAINGANG and GUARANI Indians of the Chapeco Post; (2) the KAINGANG Indians of the Toldo of Irai; and (3) the KAINGANG Indians of the Ligeiro Post.

The second is the Northern Itajai River Flood Control Dam, now being built in the State of Santa Catarina, which will threaten the XOKLENG Indians of the Ibirama Reservation.

The third is the Salto Santiago Hydroelectric Project now being finished on the Iguacu River in the State of Parana, which will threaten the GUARANI Indians of the Mangueirinha Reservation.

The fourth is the Itaparica Hydroelectric Project soon to begin on the Sao Francisco River in the States of Bahia and Pernambuco. It will threaten (1) the TUXA Indians of the Rodelas Reservation; (2) the TRUKA Indians of Assuncao Island; (3) the PANKARARU Indians of the Pankararu Post; and possibly (4) the ATIKUM Indians of the Atikum Post.

The fifth is the Tocantins River Basin Hydroelectric Project, particularly its first installation, the Tucuruí Hydroelectric Dam nearing completion on the Tocantins River in the State of Para. It will threaten (1) the PARAKANAN Indians of the Pucuruí and the Parakanan Posts; (2) the SURUI Indians on the Sororozinho River (by the proposed Santa Isabel Dam on the Araguaia River); (3) the GAVIOES Indians of the Mae Maria Reservation; (4) the GUAJAJARA/TENETEHARA Indians of the State of Maranhao; (5) possibly the AMANAYE and the ANAMBE Indians on the Moju and Capim Rivers; and (6) the ASSURINI Indians of the Trocara Reservation.

The sixth is the Balbina Hydroelectric Project proposed for the Uatuma River in the State of Amazonas, which will threaten the WAIMIRI-ATROARI Indians of the Waimiri-Atroari Reservation and contiguous areas.

The seventh is the massive Xingu River Basin Hydroelectric Project proposed for the Xingu and Iriri Rivers

in the States of Para and Mato Grosso. It will threaten (1) the ASSURINI Indians of the Koatinemo Reservation; (2) the ARAWETE Indians of the Arawete Occupation Area; (3) the KOKRAIMORO Kayapo of the Kayapo Indigenous Park (KIP); (4) the KRIKETUM Kayapo Post of the KIP; (5) the KUBENKRANKEGN Kayapo of the KIP; (6) the uncontacted PITUIARO Kayapo, presumed in the KIP; (7) possibly the GOROTIRE Kayapo of the KIP; (8) possibly the XIKRIN Kayapo of the Bacaja and Caetete Reservations; (9) the MEKRANGNOTI Kayapo of the Jarina Post; (10) the MEKRANGNOTI Kayapo of the Kretire Post in the Xingu National Park; (11) possibly the fourteen other tribal groups also in the XINGU NATIONAL PARK and several as yet uncontacted groups in the area; (12) the KARARAO Kayapo of the Kararao Indian Reservation on the Xingu and Iriri Rivers; (13) the so-called "ARARA" Indians, an uncontacted group in the Arara Attraction Area also on the Iriri River; (14) possibly the MEKRANGNOTI Kayapo of the Mekrangnoti and Bau Posts on the Iriri and Curua Rivers; and (15) the uncontacted PURO Kayapo, also presumed to be in that area.

Last, and eighth, is the Itaipu Binacional Hydroelectric Project presently under construction on the Parana River between the State of Parana and Paraguay, which has threatened the AVA-CHIRIPA and MBYA GUARANI groups on the Paraguayan side of that river.

A total of at least 100,000 hectares of Indian land (or nearly one hectare for each remaining Brazilian Indian) will be flooded or otherwise expropriated by these projects. Past efforts by the Brazilian National Indian Foundation (FUNAI) to protect the Indians from the pressures of "national development" have not been sufficient. Research, planning, publicity, and political pressure are necessary to ensure that their efforts regarding these hydroelectric projects are more successful.