EVALUATION OF THE SÃO PAULO MEDICAL SCHOOL'S UNIFIED HEALTH CARE PROGRAM IN THE XINGÚ INDIGENOUS PARK, BRAZIL

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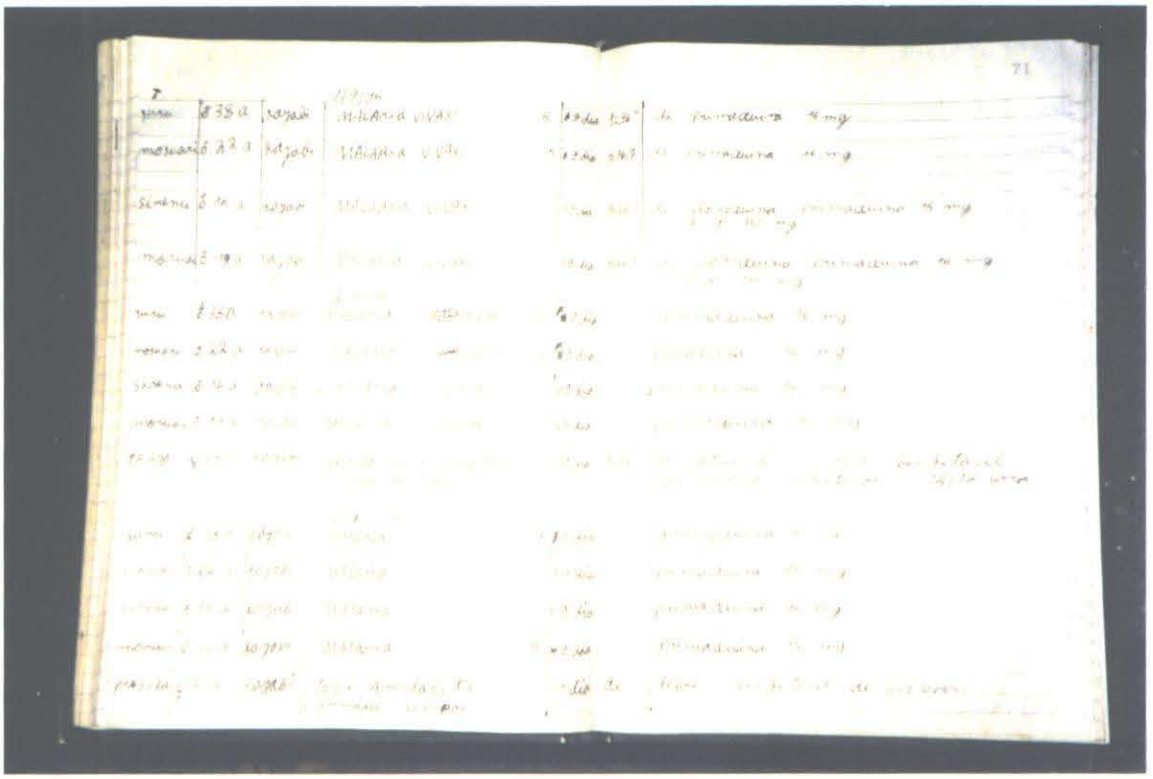

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A. INTRODUCTION

A.1. THE EVALUATION

A.1.1. Introduction

1. This is an evaluation of the Unified Health Care Program in Xingú Indian Park (UHCP[1]), a project of the São Paulo Medical School's Social and Environmental Unit (EPM/USMA[2]) to deliver improved health care to the Indian peoples of the Xingú Indian Park (PIX) in the central Brazilian state of Mato Grosso. The evaluation covers the period from September 1991 to March 1995 during which the Program was financed by the Rain Forest Foundation International (RFFI). However, it is important to note that this project was a continuation, albeit in a changed and innovative form, of the EPM's ongoing work in the PIX, work which began thirty year's ago and which continues to this day.

2. Evaluating a small and recent part of an on-going long-term project is necessarily rather different from evaluating a project of finite length which begins and ends with the funding period. Much that we saw was the result of long-term activity and cumulative experience and many results will only become apparent in the years to come. Our position is like that of guests who arrive towards the end of a long party; without full knowledge of what has been going on before, such people often find it hard to make sense of what people are saying and doing.

3. Our report is divided into four sections:
Section A, we begin by summarising the aims of the Program (UHCP) and the evaluation terms of reference. We outline the materials and methods used, describe how we allocated our time and briefly introduce ourselves. After a sketch of our impressions of Brazil, we then introduce the Xingú Indian Park (PIX) and its peoples. Finally, we describe the involvement, firstly of EPM/USMA and then of the RFFI, in the region.

4. **Section B** provides a detailed description and analysis of the UHCP covering human resources, infrastructure, the treatment and prevention of disease and the impact of the Program on Amerindian society. We deal with the training of Indian Health Agents (IHAs)[3]; the EPM's professional staff; buildings, equipment and communications; the treatment and prevention of disease and the interactions between traditional and Western medicine.

5. **Section C** examines the EPM's relations with other institutions and how these have affected the Program's outcome. On the one hand, the Program has involved co-operation with other agencies concerned with Indian health care; on the other hand, it has been largely dependent on external funding from RFFI.

6. **Section D** concludes by summarising our conclusions and findings and making recommendations concerning future work of this kind.

7. In our report, we divide between 'Upper' PIX - southern border to Pavurú, 'Middle' PIX - Pavurú to BR-080, and 'Lower' PIX - BR-080 to northern border. There is no unequivocal way of dividing the PIX into regions. While the BR-080

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[1] See appendix 1 for glossary and list of acronyms.
[2] We use EPM as an abbreviation for EPM-USMA.
[3] Where relevant, we distinguish between Indian Health Agents (IHAs) and Indian Dental Health Agents (IDHAs).

provides a significant ethnic and geographical divide between Lower and Middle, the Pavurú (Ipeng) population and their upstream neighbours in Morená and Terra Preta (off-shoots of main Kamayurá population) are 'floating voters'. Our division into three regions facilitates the presentation of this report but does not necessarily coincide with other authors' classifications.

A.1.2. Aims of Project

8. The aims of the project are set out in Fundação Mata Virgem (FMV): Unified Health Care Program in Xingú Indian Park, São Paulo, September 1990 (doc. 1) and in doc. 2.[4] The initiative from meetings with local indigenous leaders and representatives of the different agencies involved in health care in the PIX. Its principle aims were to maximise efficient use of resources by co-ordinating the activities of these agencies, to respond to threats to Indian health posed by the increasing presence and activities of non-Indians in region and to involve the Indian population more fully in taking responsibility for their own health care. This last objective was to be achieved by training Indian health Agents (IHAs) in Western medical practices, by disseminating information about disease prevention to the wider population and by reinforcing traditional practices related to health.

9. Health care delivery would be organised in a 3-tier model: at village level with IHAs working in simple pharmacies; at Indian Post (PI) level with more sophisticated Health Units staffed by a rotating team of doctors, dentists and nurses dealing with more serious cases, visiting the villages and supervising the IHAs; at city level with health professionals based at university-linked hospitals and referral centres specialising in the treatment of Indian patients and providing training in medical anthropology and related issues.

10. Beyond the general aim of improving health care, the Program aimed to intensify the control of common diseases and to set up a health information system to monitor health conditions, detect changes and enhance prevention or intervention. At the same time, working conditions would be improved by building village pharmacies and up-grading the facilities at the PIs with re-organised systems of internal and external transport to improve access.

11. Co-ordination and integration of the different health-care agencies would be achieved through setting up a Co-ordinating Council which would also ensure continuous internal and external evaluation of the Program. The Program would be financed by the RFFI with contributions, in cash and/or kind, from EPM, the National Indian Foundation (FUNAI), Superintendency of the Campaign for Health (SUCAM) and the Oswaldo Cruz Foundation (FIOCRUZ).

12. On the basis of this Program, a contract (doc. 44) was drawn up between the São Paulo Society for the Development of Medicine (SPDM; representing the EPM) and FMV, (the Brazilian Branch of the RFFI) and the Program began officially in September 1991.

A.1.3. Evaluation Terms of Reference

13. The available documentation suggests that discussions between EPM and Norwegian Rainforest Foundation (NRFF) concerning an external evaluation began in

[4] References to documents appear as' doc. 1', 'doc. 2', etc., the numbers corresponding to the list in appendix 2.

early to mid-1994 (see doc. 5). We were invited to make the evaluation later that year but were not free until September 1995.

14. Our terms of reference (appendix 4) asked us to consider whether the structure of the Program was appropriate for its objectives and whether the Program was successfully implemented. We were asked to pay particular attention to:

- the Program's appropriateness for the PIX health situation
- how the Program's effects on health could be measured
- the workings of the IHA system
- the success in attaining Indian self-administration
- the balance between Western medicine and traditional health practices
- the socio-political impact of the Program
- the cost effectiveness of the Program
- the administration of the Program
- the co-ordination of the different institutions involved
- whether this NGO initiative stimulated and/or complemented state responsibilities or whether merely substituted for them.

15. Sections B. and C. deal with the operation of the Program with these terms of reference in mind. We consider what the Program set out to achieve, then use our interviews, field experience and reading of documents to weigh up what has actually been achieved and include comments, conclusions and recommendations.

16. The lack of previous external evaluations has not made our task any easier. In addition, concern about the Program's cost effectiveness cannot be divorced from the apparent absence of clear, higher-level budgeting or yearly accounts. Finally, although the terms of reference imply anxiety about the extent of inter-institutional co-ordination, no other institutions were signatories to the original contract between FMV and SPDM/EPM. Considerations of this kind have persuaded us to go beyond our terms of reference to consider not only the administration of the Program by the EPM but also the RFFI's higher-level administration.

A. 2. METHODS

A.2.1. Materials Used

17. Materials consulted in preparing this evaluation are listed in appendix 2. These include:

- initial proposals for the UHCP and comments from the NRFF
- correspondence between EPM and NRFF/RFFI
- field reports, progress reports and internal evaluations of the UHCP by EPM personnel
- manuals for IHAs stemming from training courses
- a video of an IHA training course on sexually-transmitted diseases (STDs)
- newsletters produced by IHAs
- reports on national conferences on Indian health
- contracts between EPM and other agencies
- sundry EPM accounts sent to RFFI and AVA.

We have also made use of anthropological accounts of the Xingú and surrounding regions and of literature on indigenist policy and Indian rights in Brazil.

A.2.2. The Evaluation Team

18. The evaluation team was made up of:

- **Dr. Christine Hugh-Jones** (UK; practising medical doctor with PhD in social anthropology; research experience amongst Amerindian populations in Colombian Northwest Amazonia)
- **Dr. Stephen Hugh-Jones** (UK; PhD and lecturer in social anthropology at the University of Cambridge; research experience amongst Amerindian populations in Colombian Northwest Amazonia.).
- **Prof. Rinaldo Poncio Mendes** (Brazil; specialist in tropical medicine at the Universidade Estadual Paulista, Botucatú)

19. As Prof. Poncio Mendes failed to produce any written contribution, this evaluation has been written entirely by C. and S. Hugh-Jones. We regret this as we consider it of paramount importance that evaluations of guest NGO work should involve specialists from the host country involved.

20. Recommendation
- Where possible, the RFFI (and other NGOs) should ensure that evaluations of their work involve citizens of the benefiting countries.

A.2.3. Methods, Diary and Itinerary

21. Before leaving for Brazil, S. Hugh-Jones met with Lars Løvold (NRFF) in Oslo; he and C. Hugh-Jones then read the documentation Løvold supplied. Time in

São Paulo was spent interviewing EPM personnel, visiting the EPM/USMA facilities, observing day-to-day activities and interviewing others involved in Indian affairs.

22. In the PIX, we interviewed EPM personnel and IHAs and watched them at work. In Indian villages, we had formal meetings, usually in the men's house, with village leaders, shamans and IHAs; we also made a point of talking to individuals in private and of talking with women. As much as possible, we took part in daily Indian life. We met several individuals prominent in the political life of the PIX but were unfortunately not able to meet Ianaculá, the current Director. We also talked with FUNAI auxiliary nurses. We were accompanied throughout by Fernando Bittencourt, an excellent informant, translator, guide, organiser and companion to whom we offer our thanks.

23. In Brasilia, we visited the AVA offices and interviewed individuals involved in FMV/AVA and the FUNAI Health Co-ordinator for the PIX. In Goiania we visited the Indian House (Casa do Indio).

24. The members of the team arrived in São Paulo on 3.9.95. Prof. Poncio Mendes returned to Botucatú on 23.9.95. Christine and Stephen Hugh-Jones returned to the UK on 25.9.95 having spent nine days in São Paulo, one in Brasilia, one in Goiania and one in Rio. During the nine days spent in the PIX, members of the team visited thirteen Indian communities, six in the Middle PIX and seven in the Upper PIX. Limited time meant that we were unable to visit the Metuktire communities of the Lower PIX.

25. Diary of the team's activities (4.9.95 to 25.9.95)

4.9. São Paulo - Department of Preventative Medicine, EPM. Interviews with:
- Prof. Roberto Baruzzi (Director, Dept. of Preventative Medicine, EPM)
- Dr. Douglas Rodrigues (Co-ordinator of PIX Health Program)
- Dr. Sofía Mendonça (responsible for training IHAs and medical personnel)

See video on IHA training course on STDs.

5.9. São Paulo - Department of Preventative Medicine, EPM. Interviews with:
- Marina Machado (Nurse with extensive experience in PIX)
- Selma Ferreira (Nurse with extensive experience in PIX)

6.9. São Paulo - Department of Preventative Medicine, EPM. Interviews with:
- Prof. Carmen Junqueira (anthropologist: research in PIX; adviser to EPM)
- Dr. María Bittencourt (physician; responsible for Indian patients EPM)
- Prof. Roberto Baruzzi
- Alex Shankland (Director, Saúde sem Limites SP) - H-Js only.

9.9. São Paulo (public holiday). Interview with:
- Dr. Vanessa Lea (Anthropologist; research on Kayapó, Kapoto PIX) - H-Js only.

10.9. via Brasilia to Diauarum, PIX. Interviews with
- Douglas Rodrigues
- Selma Ferreira
- Fernando Bittencourt (AVA Project Director)
- Helcio de Souza (AVA Project Co-ordinator).

Visit pharmacy; discussions w. EPM team and observation of health work including care of infant critically ill with pneumonia.

11.9. Diauarum. Interviews with:
- Mari Corrêa Rimaud (film maker: video on IHA STD course; film on Western / traditional medicine in PIX)
- Mairawë Kayabí (Regional Indian leader, PI Diauarum)

Visit pharmacy; observation of EPM intervention in problematic birth.

Ricô (Suvá Village). Interviews with:
- Village leaders: Cuiçi, Vetague, Nhocombere
- IHAs: Coioro, Poinko
- IDHA: Veteme
- Women of village

Visit pharmacy and school.

12. 9. Diauarum. Interview:
- IHA: Tamariko

Observation of work of EPM health team.

Capivara (Kayabí Village). Interviews with:
- Village leaders: Canizo, Auatat, Javarí
- IHA: Yawot
- Women of village

Visit pharmacy and school.

13.9. Tuiararé (Kayabí Village). Interviews with:
- Village leaders: Moatari, Tuiati, Maiaratá, Preporí (shaman);
- IHAs: Moiawe, Peniñha
- Women of village

Visit pharmacy.

14.9. PI Pavurú. Interviews with:
- Head of Post: Cocotí
- Ipeng (Txicão) village leaders: Melobô, Ataqui
- IHAs: Aicuré, Sanpô (IHAs)
- IDHA: Managú

Visit pharmacy and school.

15.9. PI Pavurú.
Visit to Ipeng village.

Terra Preta (Kamayurá village). Interviews with:
- Leader artist: Amatí
- IHA: Sandra

Morená (Kamayurá village). Interviews with:
- Village leader: Sucurí
- IHA teacher: Marcelinho

Visit pharmacy and school.

Jacaré (deserted Brazilian Airforce Base).
Visit buildings

Arrive PI Leonardo

16.9. PI Leonardo. Interviews with:
- Regional Indian leader: Aritana Yawalapiti (Director of Kuarup Foundation)
- Kamayurá leader / shaman : Tacuma
- Head of Post
- IDHA: Ibene Kuikuru
- FUNAI Auxiliary nurses: Ceni and Sileni

Visits to Kamayurá and Yawalapiti villages.

17.9. Kuikuru village. Interviews with:
- Village leaders: Afukaka, Tanata, Jakalo
- IHAs: Taliko, Joy

Observation of EPM vaccination team: vaccination, census - record keeping, medical round of village houses.

18.9. Kuikuru village. Interview with:
- Taliko (IHA)

Observation of Taliko (IHA) on health visits round of village.

Arrive Brasilia.

19.9. Brasilia. Interviews with:
- Laura Valero (AVA Director)
- Helcio de Souza (AVA Project Co-ordinator)
- Dr. Armando Piva de Albuquerque (FUNAI Co-ordinator of Health for PIX)
- Luis Carlos Pinagé (ex-director of FMV).

Unsuccessful attempts to contact Dr. Romulo (FUNAI Director of Health) and Dr. Flavio (FNS Co-ordinator of Health).

20.9. Goiania. Interviews with:
- Dr. João Carlos (part-time FUNAI physician at Indian House)
- Rosa (Nurse at Indian House)
- Indians from PIX staying in Indian House.

Inspection of Indian House facilities.

21.9. Goiania to São Paulo.
São Paulo- Department of Preventative Medicine, EPM.
Planning of report.

22.9. São Paulo - Department of Preventative Medicine, EPM. Interviews with:
- Prof. R. Baruzzi
- Dr. Sofía Mendonça.

Visit Indian out-patient clinic; evening meeting with Orlando Villas-Boâs.

23.9. São Paulo - Department of Preventative Medicine, EPM.
Planning of report, collation of documents, preliminary discussion of findings w. Prof. R. Baruzzi.

24.9. Rio de Janeiro (H-Js only). Interview with:
- Prof. E. Viveiros de Castro (Anthropologist; research on Yawalapiti).

Attempt to contact Prof. Bruna Francetta.

25.9. São Paulo. (H-Js only). Telephone interviews with:
- Prof. Bruna Francetta (Linguist; extensive research in PIX)
- Prof. Betty Mindlin (Director of IAMA)

A.3. THE PROJECT CONTEXT

A.3.1. Contemporary Impressions

26. A project evaluation such as this is necessarily crammed with information, organised to address the terms of reference. It is sometimes difficult for the reader to get the overall flavour of the project and its context and so we are including some of our general reactions and impressions.

27. Brazil is now a very expensive country. Well-travelled Brazilians find the cost of living higher than in Europe, particularly for consumer goods and airfares, but also for food. We were disappointed to find Brazilian mangoes (admittedly out of season) on street markets more expensive than Brazilian mangoes in our local Cambridge supermarket and dismayed to find that our hosts could not accompany us from SP to Rio because the day return airfare was over $300.

28. Politically, under the government of Fernando Henrique Cardoso, there seems to be a general trend for the federal government to divest itself of functions with a policy of decentralisation which may well jeopardise the position of Indians yet further. The fate of the Yanomamö, Brazil's largest group of traditional Indians, whose land has been invaded by miners, has received such internal and external publicity that the dwindling national resources dedicated to Indian welfare have been diverted *en masse* to this area. While the Yanomamö desperately need this help, it has been to the detriment of other groups. FUNAI is generally recognised to be impoverished and in crisis (a familiar state of affairs) with no new appointments allowed except in the Yanomamö area. Indigenists respected the new President, Marcio Santilli, who was active in promoting Indian rights in the drafting of the new constitution but realise that his hands will be tied financially.

29. São Paulo is a vast, sprawling, amorphous giant of a city: heavily polluted and constantly traffic-jammed in which a good proportion of most people's day is spent grappling with changes of public transport or stuck in a barely moving car. It is generally regarded as the commercial hub of Brazil and many people dream of moving away but feel themselves addicted to the fast pace of cosmopolitan life.

30. The Department of Preventative Medicine building, from which the EPM/USMA Xingú Program is run, has a friendly, hard-working, slightly ramshackle feel: office equipment and furniture are minimal. The present Xingú project team is small, with doctors and nurses helping with national liaison and political lobbying, administration and shopping for supplies and any other tasks that arise as well as the ongoing medical work and data recording. The comings and goings to the PIX are present in the cardboard boxes of supplies and the names of Indian in-patients in the hospital, with their diagnoses written up on a board.

31. The Indian out-patient department is in a nearby building and contains a small room with medical couch and basic instruments and diagnostic materials. In another nearby hospital annexe is an impressive exhibition of photographs and artefacts celebrating the 30th anniversary of the EPM work in the PIX which is also a graphic demonstration of the extent of cultural change in the Xingú – a celebration with a tinge of 'tristes tropiques'. The leadership, dedication and determination of Prof. Roberto Baruzzi, now a late middle-aged man regretting that his hip-replacement has prevented him from visiting the PIX for over one year, is evident throughout. It is clear that health in the Xingú has been and continues to be a 'life's work', justified, he says, by the sight of a growing population of healthy Indian children.

32. The Xingú Park itself is small, especially compared with its reputation: for most of the world, the Xinguanos are the image of the Indians of Brazil. This supposedly isolated, protected area stretches for only 40 kilometres on each side of the Xingú river. It is crossed by a major road, the BR-080 and the contemporary map (see appendix 7) is speckled with surrounding settlements and growing towns. Seen from the air, roads, tracks and clearances stop abruptly at the park boundary, giving the Park the air of a besieged island, which indeed it is.

33. Inside the Park, in September, the atmosphere was hazy with the smoke of forest clearance (mostly beyond the boundaries), so that the clarity of river views by day and stars by night was lost. The Upper Xingú, in particular, was strikingly beautiful. Caymans bask on huge sand banks amongst jabirus, rosy spoonbills and other exotic birds; where the rivers become shallower, rays and other fish streak from under the boat.

34. The contrast of tradition and high-tech Western culture is everywhere but more marked in the Upper Xingú. The villages with their immense shaggy houses surrounding a vast central plaza are populated with people who might either appear in paint and traditional decorations or fully clothed. Elsewhere in Amazonia, Indians don clothes to receive non-Indian visitors; here they remove them and put on paint. The stunning houses have solar panels and bicycles leaning against the walls; inside, expensive gifts from benevolent outsiders – a variable-frequency radio-transmitter or a powerful pair of binoculars from New York – share space with the messy paraphernalia of a manioc-based diet. Indian leaders may ask for your telephone number in England in case they arrive on an international fund-raising jaunt. They are certainly familiar with the media: we were told that 60 journalists / film makers were present at a recent Kuarup ceremony. On the other hand, day-to-day life of most people is dominated by the subsistence round and there is precious little opportunity for making enough money to buy the bare necessities they have come to need.

35. Different again are the disintegrating white-mans' buildings and installations of the abandoned FAB air base and Posto Leonardo, monuments to bygone administrative bounty. Like the motor oil cans lodged in the vegetation of Xingú river banks, these are definitely non-biodegradable and they do not decay gracefully.

A.3.2. Xingú Indian Park: History, Peoples and Current Situation[5]

36. The FMV/RFFI's commitment was to a health care program 'corresponding to the new PIX health reality concerning changes that have been taking place in the region which are responsible for a new picture of contact and contagion.' Although a full treatment is beyond the scope of this report, a brief account of the history and current situation of the PIX and its inhabitants will help in understanding these changes and in evaluating the EPM's response.

37. The Parque Indigena do Xingú[6], in northern Mato Grosso was founded in 1961 though the initiative of the Villas Boâs brothers in a political, economic and ideological climate quite different from that of today. Under their enlightened but firmly paternalistic protection policy, in the true spirit of Rondon's Indian Protection Service, the Park rapidly gained an international reputation as the showcase for Brazil's treatment of its Indian peoples, providing an idyllic media image of painted Indians living in a protected wilderness in stark contrast to the conditions of most Brazilian Indians. The aim of the Park, until after 1973 the only major area of Brazil totally and exclusively set aside for Indians, was to ensure the physical and cultural survival of then still relatively isolated groups. Guarantee to land, provision of medical care, limited movement of goods and people and a policy of cushioned and guided social change would allow the Indians to adapt to the encroaching national society at their own pace and in their own way. The doubling of the PIX population to more than 3600 (see table 1) is at once measure of its success and a potential problem for its future.

38. The Park lies between the headwaters of the Xingú in the south and the Cachoeira von Martius to the north, a zone of ecological transition from Central Brazil's more open cerrado scrub land to the denser forest lands of Amazonia (see map). Its original area of 22.000 sq. km. was carved out of land still well beyond the agricultural frontier and hence of no economic significance; today it is hemmed in by fazendas and rapidly expanding urban nuclei. The initial focus was on a cluster of linguistically diverse but culturally similar village communities (Aweti, Kamayurá, Kalapalo, Kuikuru, Matipú /Nahukwá, Mehináku, Trumai, Waurá, Yawalapiti - see appendix 3) with a long history of continuous occupation and already present in the area at the time of von den Steinen's 1884 exploration[7], living close to the headwaters of the Xingú in what was then the Park's extreme South. This southern area forms one of the Park's two main administrative divisions, each with its own Posto Indigena (PI) – Posto Leonardo on the southerly Rio Tuatuarí and Diauarum on the main Xingú river to the North – equipped with radio communications, airstrip, pharmacy and outboard motor-boats for access to outlying communities.

39. Though often referred to as 'tribes', the Upper Xingú groups form part of a wider social and moral unit, an Upper Xingú society bound together by ties of marriage, ceremonial trade in group-specific artefacts, reciprocal attendance at each other's feasts, a tradition of common origin and adherence to a common code of values which define a moral contrast (adopted and thus reinforced by non-Indians) between themselves and their 'savage' Gê and Carib-speaking neighbours. Upper Xingú society is characterised by endemic factionalism - between rival groups within the same village, between related villages speaking the same language, between

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[5] In preparing this section, we have drawn on Carmen Junqueira: C. Junqueira 'The Brazilian indigenous problem and policy: the example of the Xingu National Park', AMZIND IWGIA Document no. 13, 1973 and on the section on 'Parque do Xingú' in Povos Indígenas no Brasil 1987 / 88 / 89 / 90, Aconteceu Especial no. 18, 1991: 465–476.

[6] Originally named the Parque Nacional do Xingu.

[7] See B. Francetta's 'O aparecimento dos caraíba', in M. Carneiro da Cunha org., História dos Índios no Brasil 1992.

neighbouring villages speaking different languages and between different language groups acting in unison. Political unity is contextual with competition relating both to indigenous avenues to prestige – access to traditional valuables, ritual prerogatives, and leadership positions – and to their modern extensions - access to consumer goods, opportunities for travel, welfare services, salaried and unsalaried bureaucratic positions and patronage by state officials, politicians and NGOs. Alliances with non-Indians can strengthen particular factions or groups and thus form an important component of local politics.

40. The North of the Park was inhabited by the Juruna, Suyá and a Kayapó sub-group, the Metuktire or Txucarramãe, who had been contacted by the Villas Boâs brothers prior to the Park's creation. Between 1953 and 1970, the Villas Boâs also brought in several groups of Kayabí whose previous experience of work for rubber gatherers made them well suited as helpers and natural allies in efforts to contact still isolated groups living nearby. Invasion of the surrounding lands by prospectors and settlers made this contact necessary and also made the Park itself an ideal refuge for recently contacted groups. Contact with the Ipeng (Txicão) in 1967, the Tapayuna (new Suyá) in 1970 and the Panará (Kreen Akrore) in 1975 was followed by the re-settlement of these groups within the PIX. Like the other northern groups, these newcomers were culturally distinct from the Upper Xinguanos and were also their traditional enemies.

41. In 1971, despite local and international outcry, the BR-080 (Xavantina - Cachimbo) road was driven across the Park, cutting off an area of traditional Metuktire territory to the North . The road and the associated rise of São José do Xingú ('BangBang'), a town just outside the PIX's eastern boundary, effectively subverted the Villas Boâs efforts to limit the Indians' contact with outsiders and to restrict the unregulated influx of consumer goods, efforts hitherto compromised only to a limited extent by the presence of the FAB base at Jacaré (closed down in 1993). Aside from providing a ready market for Indian products and fuelling a spiralling demand for imported goods, the road traffic and nearby town have become important sources of contagion, most notably of malaria but also (potentially) of STDs

42. The BR-080 was declared the Park's new northern boundary; in compensation, a new area was added towards the South incorporating more of the Upper Xinguanos' ancestral lands but leaving the ecologically-crucial headwater region (and a section of ancestral Waurá territory) still outside the PIX. The Metuktire never accepted the loss of their lands. In alliance with their kinsmen in Pará, they began a campaign to get back all of the Kayapó traditional territory By 1984 their increasing militancy, including the killing of several invading fazendeiros and seizure of the BR-080 ferry, eventually persuaded FUNAI not only to restore the excised area[8] but also to add on a section further north, the AI Kapoto, thus increasing the PIX to its present 32,000 sq. km.. After a dispute and an outbreak of malaria, the Metuktire fissioned, Raoni's group remaining at Cachoeira and the other group moving north to Kapoto to distance themselves from the unhealthy conditions near the river and road, to keep an eye on garimpeiros coming in from Peixoto de Azevedo and to link up with the Kubenkokre in the Sierra Cachimbo. A road from Cachoeira to Kapoto, built with RFFI assistance, has since grown over.

43. Similar centrifugal tendencies are evident elsewhere in the park. The Mehináku and Waurá have moved South, the former to get closer to the town of Gaucho del Norte, the latter to maintain a presence on their alienated their lands. The Ipeng have moved away from their Upper Xingú 'minders' to their present location at Pavurú, a smaller PI midway between Leonardo and Diauarum; the Kayabí are now concentrated between there and Diauarum but maintain links with kin living near

[8] as the RI Jarina and AI Jarina Margem Direita

their traditional lands outside the Park.[9], and the Panará and Tapayuna have moved away from their previous Suyá 'minders' to become geographically and politically closer – but not too close – to their linguistic cousins the Gê-speaking Metuktire. More recently the Panará have moved away from the Metuktire to the Manitsaua-Missu where the food is better and from where they can better attempt the recuperation of their traditional lands near Peixoto de Azevedo, another RFFI-supported project. These population movements, already an integral feature of traditional Indian life, have been given a new direction and impetus by contact with outsiders.

44. The Villas Boâs paternalistic regime, continued after their 1975 departure by their FUNAI successors, lent a fragile unity to what was and is an ecologically, ethnically and administratively hybrid entity. It had also effectively shielded the Park's inhabitants from the acute problems faced by other Brazilian Indians and from a growing indigenous mobilisation. Increasing Kayapó militancy – their fight for their land and mineral rights, their 1984 seizure of the BR-080 ferry, their role in the 1989 protest against the Altamira dam, their alliance with anthropologists, NGOs, business and media personalities and the appointment of Megarón (a Kayapó leader) as the Park's first Indian director – changed the dominant media image of the PIX Indian from painted Upper Xingú dancer to fighting Kayapó warrior. More importantly, it lead to a shift in the Park's political and administrative centre of gravity from south to north, away from the Upper Xinguanos and a now rapidly decaying Posto Leonardo towards the Kayapó and Diauarum.

45. With the Kayapó's extreme northerly location and orientation towards their kin in Pará, this shift also provided an opening for the Kayabí, a group acutely aware of their outsider status. In alliance with the Suyá, Tapayuna, Juruna and Trumai and with a base at Diauarum, Mairawë Kayabí has exploited the political space between the Kayapó and the Alto Xinguanos, loosing the election for Megarón's successor to the Directorship of the PIX to Ianaculá Rodarte (Yawalapiti) only after the Alto Xinguanos had demanded a re-staged election.

46. Political and administrative fragmentation has been further exacerbated by the decline of FUNAI's role as provider of health and welfare services, the withdrawal of its resident non-Indigenous administration, and the rise of new municipalities – Luciara, Canaraná, Paranatinga, Sidop and Colider – each covering a different section of the PIX. With their own shops, hospitals, schools and churches (and new FUNAI delegation at Colider) these towns act as localised poles of interest and attraction so that each regional and tribal grouping now deals with different local circumstances and pursues its own interests in different ways.

47. By the early 1980s FUNAI had begun selling Indian artefacts to pay for the consumer goods once provided free of charge, but in strictly controlled amounts, by the PIX administration; simultaneously Indians began to exploit their newly-acquired right of free movement, travelling to the cities to sell their wares. With the decline of FUNAI as a market outlet and means of transport, Indians have turned to the local towns as a source of goods and entertainment, changing their diet, exposing themselves to the risk of infection and accelerating a process of cultural change. This break in economic dependency also implies a shift in the balance of power between the old and young. The last of the great pre-contact leaders has died[10]; their successors, no longer backed by an administration hostile to rapid social change and often reliant upon their more worldly-wise sons in dealings with the outside world, now complain of their lack of control over an increasingly acculturated younger generation. However, there is as yet virtually no permanent out-migration.

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[9] In Tatuí in the Mato Grosso municipality of Jauara near Peixoto de Azevedo.

[10] Malakuiwá Waurá died in 1987.

48. If the Indians have economic interests in the outside world, that world also has interests in the Park. As an ecologically rich island in a sea of accelerating deforestation ringed round with fazendas, homesteads, garimpos and logging concessions, more and more outsiders enter the Park to poach fish and game, to prospect for gold and to cut timber To keep them out, the Indians must now spend time patrolling the Park's boundaries, again exposing themselves to malaria and other infections. They complain not only of the smoke in the air but more seriously of water pollution (by silt and mercury) and a decline in fish stocks, the result of deforestation and mining in the headwater areas beyond the boundaries of the PIX.

49. A final factor in this process of internal differentiation and change has been the proliferation of different individuals and institutions involved in Indian welfare. Whereas the PIX administration once acted as a gatekeeper, restricting access to all but a relatively select group of anthropologists, linguists, EPM doctors and the odd politician or journalist, the transfer of power to an indigenous administration, the decline of FUNAI and increasing reliance on external funding have all made the PIX more open to a much wider range of visitors – doctors, dentists, nurses and teachers from NGOs and religious missions; journalists, film makers and media personalities; diplomats and wealthy do-gooders; and a few tourists who pay high rates to witness the Upper Xinguanos' Kuarup festivals. If the Indians compete with each other for the aid and patronage of these outsiders, so also do the outsiders use their wealth and expertise to compete for Indian affection and loyalty in order to expand their influence over them. The result is political fragmentation, escalating expectations and the inefficient use of scarce resources

50. In sum, alongside changes with a direct bearing on Indian health – population increase, changes in settlement pattern, pollution, changes in diet and increased exposure to infection – there have been changes affecting not only who delivers health care but also how and where that care is delivered. These changes are also symptomatic of a series of wider economic, political and ideological changes leading to tensions and contradictions which are inseparable from the topic of health care and of key importance for an understanding of what follows in this report.

A.3.3. History of The São Paulo Medical School Program

51. Prof. Roberto Baruzzi first visited the Xingú area by chance when the FAB plane taking him back from medical work with Indians on the Araguaia, landed in the park and he resolved to meet the Villas Boâs brothers. In 1965, Orlando Villas Boâs invited the EPM to assess the health situation of PIX Indians; the following year an agreement was signed between EPM, who were to make periodic visits for immunisation and health-care delivery, and the PIX administration who were to facilitate contact and communication with Indians and arrange internal support and transport, with FAB providing flights between SP and PIX.

52. In 1968, a similar replacement agreement was drawn up between the newly-created FUNAI and the EPM, with FUNAI responsible for providing the health-care personnel, equipment and drugs needed for a primary health-care system within the park. EPM continued the regular immunisation / health-review visits with back-up from two other types of itinerant health-teams targeting remote Indian areas: 'Special Treatment Units' set up by Dr Noel Nutels, principally to control TB, operated by air from 1956 to 1986 and FUNAI travelling health teams made occasional visits until they were phased out in 1981. FUNAI took over the obligation to provide for the EPM's transport between SP and PIX in 1976.

53. There was patchy support from FUNAI health workers posted within the PIX until the late '80s. In the early '80s, a FUNAI nurse had begun to train Indian health

auxiliaries and to realise their potential in supplementing declining numbers of FUNAI health personnel. An EPM doctor participated in the first formal training course for eight Indians in 1984. After the complete withdrawal of FUNAI health workers in 1987 (or 1989 according to source), these minimally-trained auxiliaries were only helped out during the EPM vaccination trips or when short visits by FUNAI employees from Brasilia or Goiania were arranged in response to Indian pressure. Over the past five years, FUNAI's role in the PIX has been increasingly handicapped by lack of resources and diversion of those which exist to the Yanomamö area in response to international outcry over the fate of these Indians. This inadequate provision forms the background to EPMs search for outside funding to augment their own activities in the PIX.

54. Formal State responsibility towards Brazilian Indians has been outlined in the following:

- 1973 Indian statute, article 54: 'Indians have the right to means of health protection provided by the national community... Indians must be assured special assistance by the public authorities in establishments destined for this purpose'.

- 1991 (Feb.) decree 23: Ministry of Health assumed responsibility for Indian health but was to work in collaboration with FUNAI (who previously had *de facto* responsibility).

- 1994 (May) decree 1141: responsibility for Indian health returned to FUNAI.

55. In 1986 and 1993, two National Conferences on the Protection of Indian Health were held. At each of these, the right of Indians to health-care, the deleterious effect of contact and territorial invasion on Indian health and the need for a special agency to take charge were recognised. At the second (Luziânia) conference, a proposal for the creation of Special Indian Health Districts (Distrito Sanitário Especial Indígena - DSEIs) as administrative units for the proposed agency was endorsed.

56. Official decisions and statutory obligations are one thing; the institutional will to implement them and the marshalling of the necessary financial and human resources are another. The legal changes do not appear to have made much difference to the ill-defined allocation of responsibility between FUNAI and the Ministry of Health and, the Yanomamö apart, no DSEIs have been established. Essentially, the EPM contract with RFFI was intended to fill a vacuum. It was to do so in such a way that health-care would be provided within the PIX and the human and material infrastructure for a continuing system would be put in place and with EPM taking a key co-ordinating and implementing role but without assuming state obligations. There are obvious difficulties with this position which will be explored below (see D.1.).

57. The EPM Unified Health Care Program for the PIX was proposed in 1990 and FMV funding started in September 1991. However, this funding was to a Program already reduced in scope: the notion of a unified health Program with the EPM in a co-ordinating role was never actually accepted, leaving EPM to go it alone with contractual but very variable co-operation from FUNAI but with no commitment from the other institutions involved.

58. The Program itself seems to have started in June 1991 with a three-week expedition, with SUCAM support called in, to a malaria outbreak in Cachoeira and the first of a series of IHA training courses in July of the same year. Prior to mid 1991, the extent to which EPM work went beyond the regular immunisation / health-

review trips is difficult to document except by reference to the academic publications of Prof. Baruzzi and his colleagues. Our impression is that there was a radical expansion of commitment from June 1991

A.3.4. Involvement of the Rain Forest Foundation International

59. The RFFI was founded in 1989 when Raoni asked Sting for help in defending the forest and the pair toured the world to raise support and funding for the demarcation of Mekrãgnoti land. The stated purpose of RFFI is 'to channel world-wide concern and resources into long-term programs and projects to help the Indians win the fight for the forest' and amongst the objectives are 'to support health education and other programs which contribute to the autonomy and welfare of the indigenous peoples of the forest'.

60. To facilitate work in Brazil, a Brazilian-registered affiliated charity, the Fundação Mata Virgem (FMV) was founded on 6.6.89 with a list of objectives including:

' e) support programs and social assistance projects in regions inhabited by Indians and Indian communities, especially those in the area of health';

' f) support projects and actions in the Xingú Indian Park aimed at assuring autonomous life for the Indians who live there, according to their own habits, customs and traditions'.

Among the intended 'lines of action' approved by the RFFI International Board was:

' d) Health: This includes preventative measures and development of Western medical practices as complements to the traditional medical practices of Indian peoples'.

61. The FMV had a Board of Directors and a Board of Advisors. We list their names because, as inevitably happens with indigenous rights / environmental issues, many of them will crop up later in other contexts.

FMV Board of Directors (1990):

- **Olympio Serra**: President of Board; Director of Brazilian Anthropological Association; FUNAI, ex-director of PIX.
- **Megarón**: Kayapó Indian leader; FUNAI, Director of PIX until 1995.
- **María Eunice Paiva**: Indigenous rights lawyer.
- **Paiakan**: Kayapó Indian leader.
- **Andre Villas Boâs**: Indian land-rights expert; CEDI.
- **Carmen Junqueira**: anthropologist with field experience in PIX; adviser to IAMA.
- **Dr Roberto Baruzzi**: EPM, co-ordinator of Health Program in PIX. Replaced Olympio Serra as president of Board of Directors: 1992-94.
- **Raoni:** Kayapó Indian leader; Honorary Member.

FMV Board of Advisors:

- **Dr Roberto Baruzzi**: President of Board

The ten others representing relevant interests include:

- **Betty Mindlin**: anthropologist; current President of IAMA; also on RFFI Board of Trustees.

- **Marcio Santilli**: Indian rights lawyer; currently president of FUNAI (from 9.95).

62. In the RFFI's early days, a large sum of money had been raised but President Sarney would not sign the decree for delimitation and demarcation of the Mekrãgnoti area. As many sources agreed, the long-established EPM's desperate need for financial resources to implement its expanded health Program and the new and inexperienced RFFI's need for a large, coherent project coincided to make a happy match - a timely rescue for each party.

63. The EPM produced two key documents: 'Unified Health Care Program in Xingú National Park' (doc. 1) and 'Health Care Program Proposal' (doc. 2) on which the Norwegian RFF made written critical comments (doc. 3). We have no precise information on the division of labour between the NRFF, RFFI and FMV in the handling of this project nor do we have a complete set of written agreements between EPM and FMV/RFFI. There is an agreement, dated 1991 (doc. 44), with addendum, dated 17.7.91 (doc. 45), which gave the EPM/ USMA the tasks of implementing the UHCP and of co-ordinating the 'Unified Health Program for the PIX....in which various institutions involved in PIX health work participate'. FMV was to accompany and evaluate the execution of the Program in all stages, 'seek(ing), jointly with EPM/USMA, co-ordination with other institutions working in the same field to maximise available resources,' to give administrative help and to hand over the specified funding. The agreement was to last five years with either party having the right to terminate if the other did not fulfil the terms.

64. The funding for virtually all FMV's health activities seems to have come directly from RFFI with the exception of a sum from Indianerhilfswerk Rudolf Passain, a Swiss foundation. According to an agreement signed with FMV in 1993, this body was to finance the building of a health-post at Kapoto, complete with installation of a water supply and solar electricity generator and to part cover a doctor's salary and medicines for two years.

65. In 1994, FMV was dissolved and replaced by AVA. Reasons given by AVA staff were that FMV's history linked it too narrowly with the Kayapó – a point underlined by Megarón's position as vice-president – that it had a large, unwieldy Advisory Board and that a wider geographical spread of projects and more diverse funding were needed. AVA is regarded as a transitory organisation which is now being encouraged to explore a merger with ISA (formerly CEDI) hitherto primarily an information-gathering and lobbying organisation but increasingly involved in project work. We are unable to comment on the possible character of the resultant institution but a merger would certainly put a question mark over the continuity of AVA's current Xingú projects, which are in education, territorial boundary maintenance, communal river transport, simple production (of dried bananas, soaps, oils, etc.) for sale and outboard motor maintenance.

B. THE SÃO PAULO MEDICAL SCHOOL PROJECT: DESCRIPTION AND ANALYSIS

B.1. HUMAN RESOURCES

B.1.1. Indian Health Agents

(Note: In the original proposal these were referred to as Health Monitors (Monitores de Saúde); they and the EPM now use Health Agent (Agente de Saúde).

B.1.1.1. Introduction

66. The training of IHAs was not a new idea (see #53) – some IHAs already existed by 1990 – but it was a key element in the UHCP. IHAs were to be locally trained, to work at village level and to be responsible for 'less complex health activities, always with supervision'. With time, two per village were projected. Training would take two forms: supervision by trained professionals from outside making extended stays in the PIX and training courses to be held at PIs. EPM would invariably take part in these courses and FIOCRUZ would participate by prior arrangement. For specialised techniques such as malaria and TB microscopy, selected individuals would be trained in urban hospitals.

67. In the more lengthy UHCP proposal (doc. 2), it was stated that the IHAs were to act as 'watchmen' alerting the professionals to emergencies. The number was to depend on the capacity of the community and FUNAI to maintain them and on the vague notion of 'population need' .

68. In their response the UHCP (doc. 3) NRFF commented that the emphasis on IHAs in the UHCP was not reflected in budgetary allocation to training, the participant group, content, frequency and duration of training courses were not described. If monitors were to be paid they might become a privileged class with respect to others, in particular to the shamans; if they were not paid, the diversion of their time from subsistence activities would make them a less-privileged class economically – they would go short of food. There were 5 IHA salaries in the EPM budget totalling $22.436 which was difficult to reconcile with the statements about IHA numbers in the proposal.

69. Douglas Rodrigues replied to these comments, although he did not specifically answer these clearly posed questions: he emphasised that the creation of IHAs was not a mechanical exercise with an output, measurable in units, but rather an ongoing process which must be taken step by step. He thought that, by the end of the second year, 10–15 IHAs of variable competence would be a satisfactory achievement.

B.1.1.2. Where do Health Agents come from ?

70. We attempted to look at the number, location, and education of IHAs by reviewing lists of attendance of the annual training courses (table 2) at PID. We cannot be certain that our comprehensive list of IHAs/IDHAs is faultless because there are confusing differences in orthography of Indian names The fact that an agent can work as IHA and either IDHA or IEA simultaneously or consecutively makes job description difficult in some cases. The figures for different types of agent attending each course, together with the content of each course, are given in table 3.

71. Using the population figures collected by Roberto Baruzzi for 1994 (table 1), the figures for course attendance are given for each ethnic group, with the groups arranged into the three regions of the PIX (table 4). This table is the best quantitative evidence for the uneven coverage of the Program. It shows that the Middle PIX groups form 36% of the population but supply between 58 and 75% of the course-attenders, while the Upper PIX groups form 48% of the population and supply only 7–18% of the course-attenders. The Lower PIX population comes in the middle with 15% of the population and 10–17% of the course-attenders. The table also suggests that the coverage was best during the middle of the funding period (third training course) with the percentage of course attenders from the Upper PIX reaching an all time high. This fits with EPM's own account of the increasing tension in relations with Upper PIX groups in the past two years and the problems they had in trying to establish a doctor/nurse team at PIL in 1994.

B.1.1.3. Recruitment of Indian Health Agents

72. There were already a number of IHAs in existence at the beginning of the Program. Their experience came mainly from FUNAI, from Médecins du Monde (MDM- see #293) and from accompanying EPM visits and vaccination trips but also from individuals occasionally attending courses in urban centres. The general theory is that this stock was added to by communities choosing members to undergo training as a result of a series of meetings and village visits by EPM teams. We were frequently told by leaders that the IHAs/IDHAs are chosen by the village community, work for their community and are divested of their status if the community is not satisfied by their service. In practice, there is an interplay between personal motivation, talent, persistence and job-satisfaction of individual IHAs and the community role in maintaining their status. EPM told us there was initial resistance to the IHA system and many early trainees were fired at leaders' meetings. Later, IHAs began to appoint assistants to share the work load.

73. We were not in a position to judge what political factors might be involved in recruitment but we did hear of IHAs lapsing and of a community supporting a new IHA in preference to an established one. We were interested to hear a Kuikuru leader (Nahukwá) explain his vision of the longest established Kuikuru IHA becoming a 'leader of IHAs'. This IHA was ambivalent in his relation to EPM and his recent work was described critically in an EPM field report. He did not participate in the vaccination session although, when we accompanied him on his tour of the village the following day, he had a good knowledge of the ongoing health problems. Significantly, he had organised some training for himself in the hospital in Canaraná during the EPM training course.

74. There was evidence of wide differences in experience and of ability. Some EPM reports contain brief assessments of individual monitors with descriptions such as 'full of initiative', 'apathetic', 'highly competent', 'irresponsible', 'struggling with Portuguese', 'keen to learn more x, y, z', perhaps reflecting the inevitable turnover in any loosely structured group such as this.

75. Although we were told that there were no female monitors, the unmarried daughter of Amatí in Terra Preta (Kamayurá village) had attended two EPM training courses (but does not appear on our lists of attenders) and was considered to be the village IHA – her role being to communicate with more experienced IHAs in Pavurú by radio. A few women expressed an interest in IHA training but the general response from both sexes to our questions about recruiting women was that women would not be able to do the work as well as coping with domestic tasks and children.

B.1.1.4. Training

76. All five annual training courses (table3) were held at PID and each lasted two weeks. Morning sessions were filled by teaching with visual aids, models and plenty of student participation and afternoon sessions for groups of IHAs with similar levels of experience. Group theatre pieces and discussions of the politics of Indian health, Indian land rights and Indian self-determination were included in the courses. We saw a video of the third course[11] and written materials resulting from various courses but, otherwise, relied on EPM and Indian accounts.

77. Throughout the PIX, participants universally acknowledged the courses to have been a resounding success. The content was carefully tailored to realistic local needs and the practical impact which IHAs might make on the most prevalent health problems. Course organisers were sensitive to the potential conflict between Western and Xinguano theories of physiology, pathology and treatment of disease (see B.4.3.). Interestingly, when we asked IHAs what they would most like to learn in subsequent courses, they invariably mentioned a repeat of a subject included in previous courses. The threat of TB, malaria and STDs was taken seriously and many IHAs regretted not knowing more about their diagnosis.

78. We got the flavour of supervision of day-to-day health care in the villages from watching the EPM at work in the Middle PIX but it was more difficult to assess its impact in terms of time spent and coverage of monitors in different regions. EPM workers, particularly the nurses who were responsible for supervision, emphasised the difficulty of caring for those with prolonged illnesses, responding to crises and, at the same time, making scheduled supervision journeys covering a series of villages. These conflicting demands could only be met by expanded health teams of doctor, dentist and 2 or 3 nurses per Xingú region (Upper, Middle, Lower). With a shortfall of professionals, it is obviously the routine supervision that suffers.

79. The quality of supervision, requiring warmth, patience and diplomacy, can be estimated from the general rapport we observed between EPM and IHAs during the morning consultation sessions and house visits. We were impressed by the acceptance of simple, effective measures such as rehydration for diarrhoea and by the clear understanding that uncomplicated coughs and colds required observation rather than intervention. These are notoriously difficult messages to get across to Amerindian populations and cannot have been learnt from structured training courses alone.

B.1.1.5. Skills and Competence of Indian Health Agents

80. We were able to talk to many IHAs /IDHAs and see their medical and dental record books and sometimes to watch them at work – although our presence must have influenced their behaviour to some extent. Lack of literacy and numeracy skills was a problem for some. In general, the Kayabí are held to be the best educated in these and the Panará the worst. In the Middle PIX we saw examples of carefully kept record books with appropriate treatments demonstrating, for instance, the compliance of malaria patients with courses of medication and the change in symptoms from day to day. In Capivara we saw an IHA struggling with a chart devised by Douglas Rodrigues which required a monthly entry of numbers of cases of given diseases divided by age range and sex: columns of figures were added to give totals for broader disease categories (such as 'respiratory diseases') and transferred to a summary chart. While the educational value of the task was high – categories of

[11] "Curso de Monitores de Saúde Parque Indigena do Xingu: Doenças Sexualmente Transmissiveis".

disease, mathematics, data about incidence of disease in different populations – it was too difficult due to lack of non-Indian education.

81. We met some IHAs with astonishingly long track records - 18 years for an IHA in Tuiararé and 11 for an IDHA in Pavurú - but most were much newer. FIOCRUZ had sent four IHAs on training courses in Rio; EPM had provided training courses in TB diagnosis (slide preparation) and SUCAM provided malaria microscopy training, both in SP. 3 IHAs are able to read malaria slides and, according to EPM, are technically excellent. We found correct use of stethoscopes and thermometers and a high demand for further equipment including sphygmomanometers and auroscope/opthalmoscopes (see #158).

82. Considering the cultural and educational gap to be bridged, the competence of IHAs was high. We suspect that it was higher still amongst IDHAs but had little opportunity to see these at work and are less competent ourselves to evaluate their skills. Record-keeping is one of the factors indicating commitment and skill: it requires a decision about diagnosis and treatment which is subject to scrutiny by others and, therefore, a certain level of professional confidence. Records, in standard record books, were simple but of high standard in all places visited in the Middle PIX. In Morená, the IHA kept similar records in a different type of exercise book and in Kuikuru (Upper PIX) the IHA told us that although he did not keep records in his home village, he did when visiting other villages (but he did not produce these).

83. All IHAs complained about lack of drugs. These are supposed to be supplied by FUNAI, are partially supplemented by EPM and, in some places, the bulk was made up by gifts of free samples of aspirin and antacids from the Kuarup Foundation. There were better supplies of drugs at the PIs but, in many places, even basic antibiotics were missing. At the same time there was often an abundance of inappropriate and out-dated drugs. EPM like to use a limited list of drugs so that IHAs can become familiar with standard indications and doses. IHAs were able to describe the uses of drugs for asthma, vomiting, pneumonia, post-partum haemorrhage amongst other conditions.

84. We saw very little evidence of use of written training materials. There were two battered copies of the Portuguese version of D. Werner's Where There is no Doctor in the Upper Xingú. At PID there was a SUCAM malaria manual dating from 1991, a national drug formulary and a malaria microscopy manual. There may have been more but the excellent booklets and journal-style publications produced by EPM in collaboration with IHAs and the Health Promotion textbook mentioned in doc. 2 by were notable by their absence.

B.1.1.6. Payment of Indian Health Agents and Indian Dental Health Agents

85. Seven IHAs receive salaries from FUNAI. Apparently these individuals were contracted as part of the bargaining following the capture and holding-to-ransom of a raft on the BR-080 Xingú crossing by Kayapó in 1984 (see #42). Three Kayapó, two Juruna and two Kayabí were chosen by a female FUNAI doctor. Today they receive R400 monthly. There is much resentment about the lack of payment for other IHAs and IDHAs. Most Indians thought that both paid and unpaid workers did an equally conscientious job, but we also heard the view that, when there was no EPM backup in the Xingú, the salaried agent should shoulder the bulk of the responsibility in PID.

86. Community leaders, agents and ordinary community members all thought that salaries ought to be provided. Leaders often stated that community members helped IHAs and IDHAs with agricultural and other tasks. The IHAs themselves usually denied this and emphasised the difficulty of providing for themselves and their

families when so much of their time was taken up holding consultation sessions, dealing with medical emergencies and travelling to treat patients in other villages. In Capivara we were told that a party of men were returning from burning the IHA's roça: this was the only mention of a specific service rendered. The Indian view of IHAs and their diligence contrasted strongly with the statement of a FUNAI auxiliary nurse at PIL (see C.1.2.) who thought that the IHAs 'spend all their time in the roça and don't work much'.

B.1.1.7. Relations Between IHAs

87. Common participation in EPM training courses together with the intercommunication by radio (see B.2.4) had obviously established a useful and supportive network amongst IHAs and IDHAs. Advice and visits by more experienced IHAs were regularly sought by radio. The mutual support was definitely subject to the regional factionalism of Xingú socio-political life but it was difficult to distinguish between ideology and practice. In a group meeting in Pavurú, we were told that IHAs did not seek help from PID but we later learned that they did. It was clear that most people from the Upper PIX were worried about visiting PID, except in the context of training courses. Mutual support among IHAs was most evident around PID but we cannot comment on the Lower PIX Overall, our impression was that the IHA scheme is producing a new form of solidarity amongst a group of assertive and self-selected younger men that both cross-cuts older factional divisions and is increasingly challenging an older form of leadership based on outsider patronage (see B.4.4.).

B.1.1.8. Comments and Conclusion

88. The IHA/IDHA system, elaborated and systematised during the project, is working and working well. The training courses have had far-reaching consequences. They have delivered health education, concentrating on basic techniques and local epidemiology and emphasising a sound process of elementary skills in diagnosis and continuing care, with drug treatment and referral only if appropriate. They have created a community of IHAs within which skills and the fruits of experience can be transmitted. They have used communal learning to open up a forum for discussion of the political situation of Xingú Indians vis-a-vis Brazilian and international society. It is difficult to make a critical evaluation of the content without having witnessed the courses, but the teaching methods are certainly imaginative, the content is well-adapted to the local context and the two extant booklets stemming from these courses – on Diarrhoea (doc. 34) and Respiratory Diseases (doc. 35) – are excellent.

89. We understand why it was decided to hold all five training courses at PID, especially considering the success of the first course. When so much organisation and so many trainers and Indians are involved, returning to a familiar location with a more reliable political structure and tried infrastructure has self-evident advantages. But, did this repeated decision not to vary the location play a critical part in the EPM's loss of influence and the (relative) loss of goodwill of Upper Xingú people? These communities are ready to praise the vaccination Program but are less ready to see the IHA/IDHA system as belonging to a broader overall EPM Program.

90. While EPM have consistently held that the Program fills a gap and is in no way designed to control health care in the Xingú, there is an obvious advantage in dissemination of an internally consistent health service, with standard expectations of IHAs and maximum co-operation between them. Besides this, the simple, practical level of EPM training is well-adapted to the region and contrasts with some of the Indian and other non-Indian health agents' more impractical pleas for higher-tech,

elaborate resources which would be expensive and possibly dangerous. The Indian suggestion that a particular Upper PIX IHA might become a 'leader-IHA' (see #73) was a hint at the undesirable type of fragmentation and politicisation of the role of IHA which might well occur.

91. We were concerned that the Program did little to enhance the status of women among an emerging class of newly educated Indians. We discussed the possibility of training women in certain specialised aspects of health-care, such as taking cervical cytology specimens, but EPM staff did not think this was culturally viable at present. EPM have found traditional birth attendants (TBAs) reluctant to become involved in ante- natal care or in the broader field of women's health.

92. Supervision has been less intensive than anticipated and we agree with the frank recognition by EPM professionals that this has been an increasing weakness of their Program. There was an explicit decision to invite fewer Upper PIX IHAs to the fifth training session because of the difficulties of subsequent supervision. The main reasons for sub-optimal supervision are difficulties in EPM staffing and Xingú regionalism: these two leitmotifs of this evaluation are not completely independent. They are related to a third and perhaps even more fundamental problem – the division of responsibility between FUNAI and EPM.

93. Given the remarkable dedication of the monitors we met and the large sums of money involved in running the Program, it seemed a pity that some lacked very simple equipment such as an otoscope, or dental instruments. Although sphygmomanometers and opthalmoscopes are powerful symbols of Western medicine, we agreed with Douglas Rodrigues that they are a low priority.

94. Both EPM and the Indians stressed the value of constant reminders and revision of skills and knowledge. We are not sure why it took so long to produce the booklets from the courses; they seem to have been printed very recently. We wonder whether it would have been worth sacrificing the very high quality of these publications in order to distribute less 'finished' materials soon after the courses, to give maximum reinforcement.

95. We understood the EPM position on IHA salaries – that EPM should encourage FUNAI to provide these as the IHA system 'settled down' to yield a core of established agents. Like EPM staff, we were concerned that there was not more organised community economic support for agents but did not find this surprising given the long history of paternalism and uneven distribution of goods and salaries in the area. We did not think EPM could reasonably have done more to foster communal responsibility for health.

96. Our brief experience in the area confirmed our original impression that Douglas Rodrigues was correct in refusing to accept a 'productivity target' for IHAs. We note the uneven distribution of IHAs and IDHAs (see tables 2, 3, 4) but think that, overall, the number of functioning agents and the degree of respect they engender is a remarkable tribute to the Program. The agents are certainly not mere 'watchmen'. We think that the strengths of individual Indians and of the Program itself and the difficulty in keeping the projected EPM staff-levels in the Xingú have resulted in a much more independent and effective type of IHA/IDHA than originally envisaged.

97. Although we did not have much opportunity to observe them, we thought that this independence and self-confidence was more marked in IDHAs which led us to reflect on the different nature of the tasks involved. People whose traditional education enhances powers of observation and dexterity may have a special aptitude for practical/technical activities like dental work, the use of a stethoscope or the reading of pathology slides. The majority of dental work is technical while a large

part of general medical work depends on a vast body of learning resting on natural science theory (physiology, transmission of disease, etc.) which is very different from traditional Xingú ideas (see also section B.4.2.4.). Put crudely, an IDHA could easily become better at doing fillings than his trainer. An IHA may become better at reading malaria slides but could not become as effective a medical clinician as a trainer without many years of intensive 'Western' education.

98. At present, a low level of formal education can hamper the IHA's progress - as many of them told us. EPM are trying to negotiate with the Mato Grosso health and education authorities to start a scheme for training Indian auxiliary nurses which does not have 4 years of first grade schooling as a prerequisite. Instead of the usual year's course, the scheme would involve a condensed schedule to minimise time away from home.

B.1.2. DOCTORS and NURSES

B.1.2.1. Project staff

99. At present the Program staff is much reduced with three full-time doctors (excluding Roberto Baruzzi) and two full-time nurses:

- Dr Douglas Rodrigues: Co-ordinator of Program: trained in EPM; many years experience in PIX and with Indian Health/Indian rights campaigning; writing Masters thesis on mercury poisoning in PIX.

- Dr Sofía Mendonça: Co-ordinator of human resources (Indian and non-Indian) for Program: trained in EPM; 14 years experience in PIX; consultant with UNDP/PRODEAGRO on IHA Program in Mato Grosso state; writing social anthropology Masters thesis on social aspects of Xingú health agent program.

- Dr María Bittencourt: Out-patient services for Indians at EPM, SP; trained in Bahia ; experience in PIX, Acre, South Amazonas and Yanomamö area

- Marina Machado: Nurse trained in EPM; 5 years experience in PIX.

- Selma Ferreira: Nurse trained in University of SP.; 8 years experience in PIX; originally employed by FUNAI.

100. This group represents a long-term, stable core of staff: an invaluable human resource of superb quality. Five staff members had recently left the project: Dr Andrea Pellegrini, Agda Detogni (dentist), Rosana Borges (nurse), Sonia Lofredo (nurse), for a mixture of reasons including pregnancy, further training and personal factors.

101. A large number of other professionals and medical/nursing students have been involved in the project, either for a continuous period or sporadically. From the accounts and reports of the past 5 years, we identified about 50 such people who had visited the PIX. Of these, perhaps 4 doctors (Renato Spindel, Joel Cuten, Betina Gracjer, Marcello Dratiu) had been core staff and many other doctors and medical students had participated in training courses, provided local medical cover during training courses or assisted on vaccination programs. Some were specialists (paediatrics, radiology, etc.). The rest of the number is made up of dentists and nurses, some of whom have an ongoing interest in the Xingú: e.g. the married couple, Eduardo Biral (dentist) and Estella Würker (nurse/education specialist). The greatest concentration of professionals in the field seems to have been in 1993. These often

brief visits have played an important role in disseminating information about the Program and, in some cases, in recruiting new personnel.

102. The information on resident staffing in the Xingú is scant, the only systematic account available to us being for 6.94 – 3.95 (appendix 5). The obvious difficulty with this table is illustrated by example: an individual visiting from 28 July to 11 August might be interpreted as 2 months-worth of professional visit instead of 2 weeks-worth. We cannot go further than saying that there has been a team of some combination of doctor and 2 nurses at PID for much of the project period, that doctor residence at PIL has been less but that there was reasonably good nurse cover at PIL until 1994. A doctor and nurse were resident at PIL for an extended period in 1994 as part of an attempt to redress the Upper/Middle PIX inequalities (see #71). This attempt was not successful due to problems in personal relationships between staff and Indian communities.

103. Vaccination Programs were regularly scheduled and invariably completed in April and September (Upper PIX) and January and July (Middle and Lower PIX). EPM emphasised the near impossibility of providing field staff over the month of Christmas. Upper PIX communities become totally absorbed in Kuarup rituals in the weeks around September. Land-transport is more difficult in the wet season and large boats cannot negotiate the Upper Xingú in the dry season. These assorted factors impose limitations upon the EPM field Program.

104. The quality of health work we saw in the Xingú was excellent (section B.3). Douglas Rodrigues, Selma Ferreira and Marina Machado were all resourceful, effective and well-known and liked by Xingú communities. Their easy acquaintance with Xingú people contrasted with the slightly more formal and authoritarian approach of the visiting doctors on the vaccination Program we witnessed. We were impressed by the handling of the two major emergencies during our stay; a difficult delivery and the management of acute pneumonia in a baby. The vaccination Program was well organised and the record-keeping of pregnancies, births and deaths and the list of cases identified for referral outside the area was thorough. The smooth-running of this part of the Program was evidently the fruit of many years' experience.

B.1.2.2 The São Paulo Medical School as a Training Facility.

105. Roberto Baruzzi explained that the EPM effectively operates as a national centre for the training of health personnel for work with Amerindians. The EPM admits Indian patients from all over Brazil for in-patient hospital treatment and runs an out-patient clinic. The vaccination/health review visits provide a type of 'work-shop' experience for students and specialists who often maintain a long-term affiliation with the project, offering their services from time to time – free except for expenses.

106 It is certainly true that many doctors and nurses working with Indians in other parts of Brazil have early connections with the EPM. A weekly meeting is run at the EPM by students interested in the project. In this way a loose association of health professionals with Xingú experience provides a rolling source of extra manpower. This association is much like an extended family which, in spite of inevitable internal problems, and the different fortunes of its members, continues to gather around its founder, Roberto Baruzzi. This ongoing recruitment and training depends on the context of a university teaching hospital for its success, a relevant consideration in relation to the relative merits of São Paulo over referral centres closer to the PIX (see D.1.).

B.1.2.3. Problems in Finding Staff

107. In a national environment of poor salaries for public service health workers and dwindling national health Programs, employment for doctors and nurses is precarious. Most doctors and dentists and some nurses have a number of different jobs which are juggled to provide a living. Most Programs with Indian communities have short-term funding. Most health workers eventually have families of their own and find it increasingly difficult to spend protracted periods in remote areas. Besides these hard facts, there is another clear trend affecting the continuity of service: young professionals enter this field because they are interested in social aspects of medicine and Indian communities. The qualities which draw them to this work also lead them to reflect on their experience of the role of medicine in such communities. Many of them withdraw from practical work to seek extra medical education (especially in public health) or to turn to the social sciences, particularly social anthropology.

108. All these factors make it difficult to find enough long-term employees. EPM staff agreed that it would be impossible for any one person to keep up intensive field-work in the Xingú over more than, say, three to four years. Roberto Baruzzi was sanguine about the present staffing level: he regarded it as part of a natural fluctuation just as he accepted that the Program would have to adapt to different political and economic circumstances now that the window of opportunity created by RFFI was over. The small staff-size did create difficulties because one doctor had to be available to run the out-patient service and receive the radio calls from the PIX, and one was often away at national meetings about Indian health. Each of the three had multiple roles, leaving little time for field visits.

B.1.2.4. Salaries

109. It was difficult to understand the relation of health-workers' salaries to the RFFI budget. Roberto Baruzzi and Douglas Rodrigues were not paid from this budget. Selma and Marina (nurses) were and Dr Sofía Mendonça was for most of the time. Researchers and students were given expenses only. Roberto Baruzzi estimated that it cost about R2000 to keep a professional in the field for a month and that there was not much difference between a doctor and a nurse. It proved impossible to even try to untangle to what extent this sum was exclusive or inclusive of travel, salary outside the field, etc. due to the fact that Douglas Rodrigues oversaw the budget and was not in SP. on our return from the Xingú (see also section C.2.3.).

B.1.2.5. Comment

110. We understand that a twice-yearly vaccination Program has been completed, without fail, throughout the whole area. We would like to acknowledge this tremendous achievement and to underline how impressed we were by what we saw of EPM staff at work. These were remarkable and dedicated people whose high professional standard was combined with flexibility and breadth of skills. It takes special personal and emotional resources to do this demanding and, at times, dispiriting and lonely work. We also appreciated how the project had managed to develop over time to become increasingly sensitive to new sources of disease contagion and to issues of self-determination, respect for cultural values and the need for Indian participation.

111. It is clear that the original plan of a neat rota with doctors and nurses spending two months in the PIX and one writing reports, resting and preparing the next phase, never worked. Perhaps it would be unrealistic to have expected it to without a much larger staff. EPM have the network facilities to attract staff if there is a pool of

potential applicants and a source of financing salaries. Neither of these conditions has held. Roberto Baruzzi's loosely-knit interest group of those with PIX experience has ensured the continuity of the vaccination and training Program in spite of shortage of permanent staff, thus proving the value of this system.

112. It would have been useful if the reports had contained data on personnel employed on the projects and how their time was spent. The data would have revealed a gap between the proposal and the reality, but this is the nature of practical work with Amerindians in remote areas. Discussion of the problems involved may have helped EPM and RFFI and possibly streamlined some aspects of the project. For instance, journeys in and out of the Xingú are such a large part of the budget that they are an obvious target for savings. Budgeting for staff and their journeys should have been possible to analyse, but it wasn't (see section C.2.3).

113. We would have welcomed written information not only on how project staff spent their time but also on where they spent their time when in the PIX. The concentration of activity around PID is understandable in the light of current Xingú politics but it is not discussed in the reports. We are clearer about the situation in the Upper PIX after our visit, but less so about the situation north of the BR-080 in Kayapó territory. EPM staff answered all our questions frankly and gave us as much information as possible but a retrospective summary of events (which are no longer uppermost in the minds of the informant) is no substitute for an account derived from factual reports produced at the time. As explained below we think that the responsibility for these gaps lies largely with RFFI (see section C.2.2.).

B.2. INFRASTRUCTURE

114. The proposed Care Model envisaged investment in infrastructure mainly at village and PI level, establishing and equipping (an unspecified number of) village pharmacies and up-grading first PID then PIL as Health Units with more advanced infrastructure and sophisticated equipment. Additional aims included the improvement of basic sanitation; an efficient radio communication system linking villages and PIs and allowing direct communication with EPM/USMA in SP; an efficient transportation system with air links between PIX and relevant cities and motor boats serving villages and PIs.

115. The need for these investments, their scale, and their eventual outcome must all be set in the context of FUNAI's general decline and consequent spending cuts and in that of the failed proposal to co-ordinate the activities of the various agencies involved (see section C.1).

116. FUNAI's decline resulted in the halting of all projects of infrastructure improvement, shortage of money for fuel or maintenance/replacement of equipment, reduction and ultimate grounding of FUNAI's air fleet and diversion of resources to the Yanomamö area.

117. Lack of co-ordination has meant duplication of effort and resources in some areas, their absence in other areas and, in the Upper PIX, a general decline of facilities and morale. At the same time, the EPM has been forced to take on work not originally planned or budgeted for and to seek extra funding to meet the costs involved. Over the review period, the EPM has received funds and equipment from a number of different sources besides the RFFI (sources include: Canadian Embassy, FIOCRUZ, Kellogg Foundation, Passian Foundation, PRODEAGRO).

118. In the PIX context, there are no clear lines between health and areas such as education, community development, frontier patrols, marketing, etc. Funds and equipment are not easily assigned to specific categories (thus bureaucrats can easily refuse to pay for activities which they consider to lie outside their particular domain). These factors, combined with the absence of clear accounts (see C.2.2.), makes it extremely difficult for any outsider to determine what money, from what source, was spent on which items and when. Our information is gleaned from observations, interviews and information scattered in various reports. It is probably both incomplete and inaccurate and does not pretend to cover all issues comprehensively.

B.2.1. Buildings

B.2.1.1. Village Pharmacies

119. Prior to the Program, the only pharmacies in the PIX were those constructed by FAB at PID, PIL, PIP and in the village of Morená. In the period 1991– 5, using RFFI funds, pharmacies have been built in Cachoeira, Cururu, Capivara, Ricô (Suyá), Tuiararé. We visited the last three (and also that of Morená). Under the original agreement, half the construction costs were to have been borne by the EPM and half by FUNAI via the PIX administration. In the event FUNAI's share never materialised; they supplied the labour, the Program paid for materials and transport and the communities supplied further labour and local materials.

120. The EPM have also built a pharmacy at Kapoto, part-funded by the Swiss Passian Foundation (see C.1.3), and have plans to build further pharmacies at Waurá,

Moira and Kuikuru, possibly using funds from PRODEAGRO. Meanwhile, the Kuikuru have already constructed a building destined to be a pharmacy (currently used as a dwelling) and now eagerly await the funds and equipment they claim has been promised them by the Manitsauá Foundation (see #295).

121. We were very favourably impressed by the new village pharmacies themselves and by the obvious community pride and enthusiasm they generated. Built to a standard plan with cement base, white-painted plank walls and cement compound roof, they provide a large general treatment room, two smaller rooms for radio and dentistry and cool, secure conditions for the storage of drugs and medicines. To us they seemed simple, effective and modest in scale yet well suited to their purpose. Though all our visits were unannounced, we found them consistently clean and well ordered and often showing signs of imaginative input - like the home-built dentist's chair in Ricô.

122. Beyond their obvious functions, these pharmacies also save time and effort. Tamariko, a Kuikuru IHA explained that, without a pharmacy, he not only lacks a place to keep materials and see patients but is also forced to do time-consuming rounds of a large village, playing the role of guest and visiting kinsman in each house. Time is an important consideration in the IHAs evaluation of their role and duties (see B.1.1.6).

123. In Kuikuru, the difficulties faced by vaccination teams working on portable tables under makeshift sun shades provided a (negative) illustration of another important function provided by these buildings.

124. The pharmacies also have an important and successful role in relation to indigenous self-administration and community involvement. Communities were involved both in discussions concerning the siting and plans of the buildings and in providing labour and local materials for their construction. As they are only built once one or more IHAs from the village in question have been trained, the pharmacies are also the physical counterpart of the IHA training scheme and a visible sign of its success.

125. As each community now has at least one IHA, the corollary of this is the importance, for both IHA and community morale, of each community having a pharmacy. In addition, because IHA training is an ongoing and cumulative process, it would be desirable if the IHAs' increasing sophistication was in some way reflected in a progressive up-grading of the pharmacies and their equipment.

126. In Morená, the pharmacy forms part of the same building as the school; in PID, materials used in IHA training courses are stored in the pharmacy. These two cases illustrate the overlap between health and education – the pharmacies play an educational role both in IHA training and in disseminating health-related information to the community; the training of IHAs is often hampered by poor command of Portuguese and a lack of basic literacy; economies of scale could be achieved by designing dual-purpose buildings.

127. Maintenance of the new pharmacies is already a matter of concern – paint is beginning to peel and boards to rot; in the case of the older FAB-built pharmacies this is an urgent problem. Maintenance problems are probably exacerbated by cement construction which is costly to maintain and ends up looking a mess

128. Periodic relocation of villages (for demographic, economic and political reasons) is an integral feature of Amerindian society. These moves are affected (positively and negatively) by the presence and activities of outsiders: the recent relocation of several villages has been stimulated by recent developments outside the

PIX (see A.3.2.) while the construction of airstrips and permanent facilities (pharmacies, schools, etc.) is probably one reason why other groups have chosen to remain in one place.

B.2.1.2. Indian Posts

a. Diauarum

129. Along the river front at PID are a shed for a tractor and a boat/outboard motor repair facility (the latter a RFFI project), a pharmacy, a radio house and a school. Behind is a house used by the doctors and nurses of the EPM and two visitors lodges, each with earth floors, wooden palisade walls and thatched roofs. These are surrounded by an oval of houses, the dwellings of various FUNAI functionaries belonging to different local groups - Juruna, Kayabí, Suyá - together with their respective visitors' lodges.

130. The pharmacy clinic, built long before the Program began, has the following facilities:

- surgical centre - funded by FIOCRUZ / Canadian Embassy but little used except for gynaecological examinations.
- store room - originally for TB diagnosis; now used for storage, esp. of IHA course materials
- infirmary w. outer lobby - intensively used for out-patient treatment, administration, record-keeping and meetings.
- sick bay with 2 beds - dilapidated, unpopular and little used
- toilet - defunct, in disrepair and w. no running water
- store room
- dentistry - w. 2 chairs (one portable)
- laboratory w. 2 microscopes - much used in malaria diagnosis (also TB, parasites and IHA training)
- drug store - containing current useful drugs, outdated drugs and assorted free-samples of dubious value.
- room containing two refrigerators and two ovens
- X-ray room containing one refrigerator, one oven and X-ray machine donated by Phillips Holland 1991 - much used and w. very satisfactory results

131. As Douglas Rodrigues himself emphasised, the building itself, built by FAB in their own inimitable style - hot and airless with cement walls, a cement-compound roof, small windows and dark, cramped interiors - is far from satisfactory:

- the building is in a poor state of repair with peeling paint, dirty walls, and broken or missing windows;
- lighting and ventilation are inadequate;
- there is no running water or proper sanitation;
- the sick-bay is dilapidated and under-used (partly due to its shabby state but mainly because sick Indians do not like to stay isolated and alone in a room where others have died);
- there is inadequate provision for relatives and others who accompany the sick (though different groups are encouraged to build their own lodges for patients and their relatives);
- there is little proper space for administration and record-keeping;
- there is no meeting / teaching space and no place for the elaboration or storage of educational materials;
- the working / living conditions for doctors and nurses are rudimentary. The people we met were all admirably well adjusted but they acknowledged problems experienced by people living and working for long periods under difficult, isolated and stressful field conditions. This suggest that the psychological importance of adequate facilities should not be ignored.

132. PID's planned new health centre, more suited to local culture and circumstances, easier to maintain, and using more local materials, would be a great practical improvement and a boost to morale.

133. In sum, although the PID pharmacy has been extensively re-equipped, its projected upgraded has not been fully realised. However, it should be stressed that, despite the building's obvious shortcomings, the PID Health Unit works well. The EPM, wisely in our view, have concentrated their limited resources training IHAs, on establishing and equipping village pharmacies, on basic and necessary equipment (see B.2.3.), and on setting up a workable system of communications and transport (see B.2.4/5.).

b. Kapoto

134. This was not visited by us. It has a recently-constructed pharmacy (see A.3.4; C.1.3).

c. Posto Leonardo

135. Once home and base for Orlando Villas Boâs, PIL has a semi-mythical status as the centre and symbol of non-Indian presence in the PIX. In its time, it was a well-appointed and efficiently run administrative centre. Today, despite its beautiful setting, it presents a sorry picture of abandonment and progressive decay; for the local leaders, this speaks eloquently of their feelings of neglect.

136. At the top of the long flight of concrete steps from the river, only the skeleton of Orlando Villas Boâs's house remains. Next door, a FUNAI-employed cook cooks Indian style on the broken remains of an impressive range in the once well-equipped but now ruined, smoke-blackened kitchen. Outside, radio masts and water towers lean drunkenly whilst piles of rubbish, smashed hospital beds and parts of buildings slide down the slope towards the river below. There are holes in the roof of the school building, entries and exits for the flocks of bats that live in the near dark, rubbish strewn interior. Inside the spacious rooms, a tangle of wooden poles, jammed at odd angles between floor and roof, serve as supports for the hammocks of visitors – there is nowhere else to stay.

137. The few remaining serviceable buildings are mainly occupied by FUNAI-appointed auxiliary nurses. There are locks everywhere, our gasoline must be brought up from the river and locked away, and the windows of Armando Piva's newly restored house sport thick metal bars set in fresh cement (for Armando Piva see #287, #298). Marina Machado commented on the poor working conditions at PIL – cooking and nursing must be done in same place, pilfering of gasoline and assaults on the buildings are common, and conditions for the vaccination teams fall little short of camping.

138. The pharmacy is perhaps the saddest sight of all. In what was once the dental surgery of a well equipped small clinic-hospital, Ibene, a Kuikuru IDHA, extracts the tooth of an elderly woman sitting in an immaculate dentist's chair. They are surrounded by a scene of chaos – wrecked equipment and broken furniture; papers, medicines and bandages scattered on the floor; dusty shelves and cupboards piled high with out-dated medicines; and a leaking roof above. Things are so bad that, under the auspices of Dr. Armando Piva, work has recently begun on the foundations of a completely new FUNAI-funded pharmacy (see C.1.2.).

139. There are a number of reasons for the decline of PIL and its pharmacy. In our interview with him, Aritana (Yawalapiti leader) blamed it on the lack of any proper administration and absence of an overall (non-Indian ?) direction. It is certainly hard for any local person to raise above the endemic factionalism of the area. Douglas Rodrigues emphasised the difficulties that he has experienced in establishing effective administration during his stay at PIL and spoke more generally of the complexity and time-consuming nature of running a PI and setting up the necessary infrastructure.

Between 1991-3 he made regular visits to PIL including a stay of nearly one year when he became *de facto* Head of Post.

140. Aritana's brother-in-law Tacuma (Kuikuru shaman) blamed it on Megarón, the last Administrator of the PIX: as a Kayapó, he had diverted all available funds northwards. The decline of FUNAI, its lack of funds, and its current approach which favours *ad hoc* trouble- shooting over longer term planning and investment are also highly relevant.

141. The PIL pharmacy may have been too large and over-equipped. There is an unresolved issue of whether small hospitals in remote areas can be justified or whether it is not more cost effective, in terms of both time and resources, to send patients out to urban centres. A further factor appears to have been the lack of co-ordination between the various different agencies involved on the one hand and the indecision of Indians on the other. We heard that in 1992, the Kuarup Foundation (see #290) had had grandiose plans for a mini-hospital at PIL; Roberto Baruzzi stated that he too had thought of building small hospital at PIL (or at Jacaré) but that local people had not been sure whether or not they wanted one. Their indecision appears to have related partly to a dislike of being interned in places where others have died (see also #257). It presumably also relates to their being caught between conflicting ties to various outsiders: the backing of any particular project is itself a statement of political allegiance. The construction of a new (FUNAI/Armando Piva-sponsored) pharmacy should probably be seen in this light.

142. Certainly the proposed second-phase up-grading of the PIL pharmacy has not taken place; during the period under review, this task has been beyond the EPM's already over-stretched resources. This has important implications for the Upper PIX leaders' current attitudes to the EPM. For them PIL is the historic centre of the PIX, legitimated by their memories of the Villas Boâs. The decline of PIL and rise of PID symbolises the decline of Alto Xingú hegemony over the PIX and underscores their perception of EPM neglect.

d. Pavurú

143. PIP is on a much smaller scale than PID or PIL. Its FAB-constructed pharmacy, (of similar scale and equipment to other village pharmacies), is in a sorry state having lost part of its roof in high winds. The Ipeng have been waiting for materials for two years; meanwhile the community feels unable or unwilling even to attempt temporary repairs, a reflection of their dependence on outside technology and assistance.

144. EPM tried to repair the old FUNAI-supplied microscope but ended up buying a new one (not with RFFI funds). An EPM-supplied refrigerator bought to preserve vaccines and snake serum lacked gas at the time of our visit. There is also a non-functioning water system: the pump being 3-phase and the generator 2-phase.

B.2.1.3. Jacaré Brazilian Airforce Base

145. Since its closure two years ago, this has been in the hands of the PIX administration. EPM/ FMV had thought of using it as a health and / or education centre but as yet the necessary ingredients for this, or any other, possible use - agreement, political will and money - have not been forthcoming. Aritana stated his opposition to its development in this form as it would detract from PIL as the 'administrative centre of the PIX'. At present its buildings are starting to decay. If completed, the proposed road (see below) will profoundly affect Jacaré's future.

B.2.1.4. BR 080 Vigilance Post

146. This was established on the right bank of the Xingú to control the BR 080 river crossing. Subsequent EPM research (see #192) showed it to be a major focus of malaria infection. The EPM's initial proposal to shut it down was abandoned as it is much used by Indians selling produce to passing travellers and for travel in and out of the PIX. Instead, under the AVA Frontiers Project, PI Jarina was established on the western border of the PIX. The requirement that buses should spend the night there rather than at the river crossing may have reduced the risk of malaria. This is an important example of the effective inter-action between different RFFI-funded projects.

B.2.1.5. Indian Houses

147. In SP, Goiania and Brasilia (formerly), there are FUNAI-financed and administered Indian Houses. These are used when Indians visit the cities to attend political and other meetings, to sell handicrafts or when they or their relatives need specialist attention in a city hospital. Technically they are beyond our brief as no RFFI funds or EPM personnel are directly involved. Nonetheless, these buildings are of crucial importance for the third, city-based level of the Health Care Model and have considerable implications for the question of where Indians are best and most economically treated outside the PIX. Any hospital that is prepared to take in Indian patients depends upon a Indian House to accommodate them and any accompanying relatives or translators. We visited the Indian House in Goiania and enquired about those in SP and Brasilia.

a. Brasilia

148. Once much used by PIX Indians, its (legitimate but unpopular) use as a base for lobbying senators and government officials, led to the closure of the Brasilia Indian House. The original proposal envisaged both Brasilia and SP as external, third-level health facilities. The closure of the Brasilia Indian House is a major reason why the UnB University Hospital no longer plays a any significant role as a referral centre for PIX Indians.

b. São Paulo

149. At the time of our visit there were no Indian in-patients at the EPM. One major reason for this was the closure of the SP Indian House following an outbreak of chickenpox which caused the death of one Indian. However, because FUNAI relies on rented private accommodation, the Indian House is often shut down anyway as the landlords dislike its chronic overcrowding. The solution would be for FUNAI to build or buy a suitable house. The lack of a proper Indian House makes the EPM Indian Out-Patient centre (see below) even more important as it provides a quick, efficient service which minimises time spent in the city.

c. Goiania

150. Now the main referral centre for PIX Indians. FUNAI-owned and purpose-built, its dormitories, individual rooms, collective cooking and washing facilities, central refectory and activities room (now used for administration) were made for 40 but regularly accommodate 80 or more people from all over Brazil. Despite the overcrowding and lack of funding (the sick bay is used for ordinary accommodation and the laboratory is closed) we found reasonably well maintained facilities and good morale amongst a staff. We could not think why the administration did not provide for the use of hammocks which would improve hygiene, save space and fit with

Indian custom all in one go. Besides food and lodging, the Indian House provides medical services in its own right. It is equipped for minor surgery and biopsies and has a pharmacy, autoclave and (defunct) laboratory. There are three part-time doctors and a dedicated but harassed nursing staff. Perhaps full time doctor would provide continuity and better liason with the 5 hospitals to which patients are referred

B.2.1.6. EPM-USMA Indian Out-Patient Clinic

151. Though we did not see it in action, we were impressed by the out-patient clinic. Located close to the EPM's Department of Preventative Medicine in what was once a private house, it is clean, light, well-decorated and well-equipped with the feel of a British general practitioner's surgery.

B.2.2. Basic Sanitation

152. We saw only one **well** and only one **pit latrine** (both at PID) but were told of others. The people of Tuiararé made effective use of the EPM's teachings concerning diarrhoea to assert their case for a system of stored, piped water and flushing toilets. We were impressed their clear understanding of the message but not convinced of their need. We are not in a position to comment on the more general need for improved **water supplies** beyond saying that, on grounds of cost and cultural interference, alternatives to traditional sources should only be considered where they are demonstrably required.

153. Pit latrines are not popular (amongst both Indians and non-Indians); again, we feel that their use should be encouraged only where it can be shown that traditional resources pose a serious risk to health. The villages we saw were generally free of obvious rubbish and we saw several well-used **waste pits** (and several small boys extracting playthings from them !).

B.2.3. Equipment

154. At PID, electric power (for lighting, radio, refrigeration, television, etc.) is provided by **diesel generators** (one supplied by PRODEAGRO, another bought with Project funds). The generators get heavy use and suffer frequent breakdowns – a problem exacerbated by the community making *ad hoc* extensions to a growing and unplanned system of external and domestic lighting. The 'rational' solution to this problem – forbidding such extensions – has to be balanced against the need to maintain community co-operation and goodwill.

155. Four sets of **photoelectric generators** were bought with Program funds; we saw very effective use made of solar panels (mainly for radios) in both the PIs and in the village pharmacies.

156. Electricity supplies have certainly been greatly improved and appear to be adequate for the needs of the Health Units. However break-downs are still a problem and funds for maintenance and replacement of damaged equipment are still limited.

157. PID has three **gas stoves** – two bought with project funds, one from the Canadian Embassy and three **refrigerators** – one (gas powered) bought with project funds. Using refrigerators and **insulated cold boxes,** the EPM has been remarkably successful in maintaining a cold chain for live vaccines between city and village. However there have been problems with inefficient refrigerator thermostats causing unacceptable temperature fluctuations. The Canadian Embassy supplied a solar-

powered refrigerator which requires many expensive solar panels: it runs best on the same hot days that produce the high ambient temperatures which cause it to overheat. This is one illustration of the importance of well-researched and -tested technology for a project of this kind.

158. The PID health unit has two binocular **microscopes**; there are also microscopes in the following communities: Waurá, Pavurú, Cachoeira, Kapoto, Tuiararé and PIL. (At least) three **sphygmomanometers** and two **stethoscopes** were bought with project money. Several IHAs commented on their need for a microscope and also for **thermometers** (Suyá), opthalmoscopes (Suyá), and sphygmomanometers (Suyá).

159. Two portable **dental drills** were bought with project money. In reports, both Agda Detogni and Eduardo Biral mentioned their preference for working in the villages rather than at the PIs. For this they depend on access to suitable portable equipment. Agda Detogni uses a low-torque, car battery-powered drill and is aware of even more sophisticated equipment but does not yet have full details or access.

B.2.4. Communications

160. The Program aimed to establish an efficient radio communication system linking the villages and PIs, with high priority given to establishing direct radio communication with EPM/USMA in SP. All this has been achieved.

161. To our knowledge all the villages in the PIX are now supplied with **solar powered short-wave radios**. Those for Suyá, Juruna, Tuiararé, Morená, PIL, Kuikuru, Kalapalo, Matipú, Nahukwá, Tanguro (Kalapalo), Aweti, Waurá, Mehináku and Canaraná were supplied by the Kuarup Foundation. Those for PID, Capivara, Panará, and Cururu were supplied by FUNAI whilst that in Kuikuru was supplied by Foundation Manitsauá.

162. Direct radio links between EPM/USMA and the two Health Units (PID and PIL) were established by Aug. 1992 (it has not been possible to connect the villages directly with EPM/USMA as the necessary variable frequency radios are too expensive). There is scheduled daily radio contact with the PIX.

163. This radio network appears to have been set up with little difficulty and is now working very well (though Marina Machado mentioned abuse of radio time and batteries in the Upper PIX). Each week, three one-hour radio sessions are reserved exclusively for health-related issues and the IHAs make extensive use of radio for mutual help, consultation and co-ordination; EPM nurses also use radio to co-ordinate their activities with FUNAI auxiliaries.

B.2.5. Transport

B.2.5.1 Boats

164. In the PIX most travel is by river with outboard motor boats used to transport doctors, nurses, vaccination teams and patients between the villages and PI health units. The Program now has five (+) aluminium boats kept at PID and in other strategic locations. Most were bought with RFFI funds; one was bought by the Canadian Embassy. In addition, the larger diesel powered 'Mata Virgem', a wooden river boat bought with Program funds, is much used by the vaccination teams, in ferrying IHAs to and from the PID training courses, and in bringing fuel supplies

from the BR-080 crossing. As a community initiative, the Kayabí are also saving up to buy their own big boat for health and other uses.

165. In the Upper Xingú, at the mouth of the Tuatuarí below PIL, another boat is moored. This motor launch - high powered, high tech, high speed but totally unsuited to local conditions and no longer working - symbolises some of the worst features of NGO intervention in the PIX - inappropriate technology, lack of co-operation and factional self-interest. It was supplied by the Kuarup Foundation (see #290), theoretically for the benefit of the PIX as a whole, especially in relation to health. In practice, until it broke down, it was used almost exclusively by the Yawalapiti, the Kuarup Foundation's main beneficiaries; the July 1995 vaccination program was the first and only time that it was available for use by the EPM.

166. Three 25 Hp and one 15 Hp **outboard motors** have been bought under the Program. Douglas Rodrigues stated that, though slower, diesel engines were cheaper to buy and run and need less maintenance. However, the PIX communities are not keen on diesel boats and much prefer the faster outboards. They are given punishing use and last about two years.

167. This further emphasises the importance and value of the AVA-sponsored initiative to establish boat and motor repair shop with associated training Program at PID. Prior to this, all motors had to be repaired by (often dishonest) repair-men in local towns, with the cost of transport added to their inflated bills. This initiative, a successful and creative solution to an urgent problem which directly benefits the local population and provides them with new skills, illustrates the linkage between different aid initiatives.

168. **Fuel** for boats has been obtained from three main sources: the Program; FUNAI; community (Juruna, Suyá) initiatives in which gasoline is bought with the proceeds from the sale of honey and handicrafts. We are not in a position to comment on whether or not the Program established a fixed allotment of gasoline exclusively for health service use; we can confirm that it does make allocations of gasoline specifically for health use which are kept in strategic locations and reimbursed each time that they are used up in travel from the villages to PID.

169. In the PID area, we heard several complaints about the insufficiency of gasoline and that villages did not receive their proper allocation. Recurrent theft of gasoline (and misuse of boats) at PIL has been a major problem, causing friction between EPM personnel and the local population and compromising the Program. These problems were exacerbated by the ending of FUNAI's role as the provider of subsidised fuel. In addition, at the start of the July 1995 immunisation visit, all available boats were away in Canaraná where people had gone to buy supplies and consumer goods. As a result the ice melted causing yet further delay.

170. For the Lower and Middle PIX at least, the aim of establishing an efficient River transport in the PIX has been achieved. The system appears to work quite well but it is costly and makes inefficient use of available resources. AVA is considering an attempt at more rational planning with a regular boat service travelling up and down to Xingú river. If it can be made to work, this would be a sensible and welcome move but its success will depend on the people's willingness to co-operate and to sacrifice individual or sectional interests in favour of the common good.

B.2.5.2. Aeroplanes

171. In the past the EPM was well served by FAB, a close link which ended in the '60s when FUNAI took over the role of providing air transport. In addition, whilst

most PIX villages once boasted their own airstrip, today these are only available at Cachoeira, PIL, Pavurú, PID, Kapoto and Kuikuru (this last a community effort of two years ago). Never very satisfactory, FUNAI's decline has created a serious air transport problem which the original proposal described as 'one of biggest bottlenecks in the project which could even impede execution of planned activities' (doc. 1).

172. As a solution to the problem, the project proposal includes the creation of two 'airlines' (one monthly for professionals; one every 45 days mainly for supplies but also for personnel when needed) to transport people and materials between Brasilia and PIX. This was to be provided via renewed FAB co-operation and strengthened FUNAI air support.

173. In practice, the EPM has sometimes had to pay for fuel for FUNAI flights and to supplement these with chartered flights; it also pays for some of transport costs of Indians attending the SP Indian out-patient clinic. No 'airlines' have been set up, no help from FAB has been forthcoming and at present all FUNAI planes are grounded so that both FUNAI and EPM must often rely on private charters. (Wherever possible, EPM personnel make use of the cheaper regular air services to Canaraná and of a small commercial airline that stops at PID).

174. The PIX's external transport problems are far from being solved. Air transport remains very costly and unpredictable with FUNAI complaining about the high cost of flying (what they consider to be an excessive number of) Indian patients out to the city hospitals and the EPM complaining about the difficulty of finding the necessary airoplanes, fuel and funds.

B.2.5.3. Roads

175. With the establishment of a better road system, the EPM vaccination teams and other personnel have begun to make much greater use of land access to the PIX via Canaraná and BangBang. The bus ride from Brasilia takes some 30 hours; a Toyota vehicle bought with funds from the W. K. Kellogg Foundation funds has made this journey - at 25% of the cost of air travel - much shorter.

176. The poor state of the western section of the BR-080 within the park is one factor which affects the potential use of the relatively nearby hospital at Matupá (another is that it has no Indian House).

177. The Kamayurá and Yawalapiti have begun a project to construct a road to the old FAB base at Jacaré. Although Aritana claimed to us that it would be used exclusively for the transport of gasoline and other necessary supplies, the consequences of such a road are likely to be far reaching. Unless very strictly controlled, it is likely to jeopardise the security and integrity of the PIX.

B.2.5.4. Information Technology

178. The project's aim 'to organise and install a health information system to monitor the health conditions of the Indian population' depended ultimately on adequate information technology and data processing equipment. Parallel to their very impressive written and photographic records, basic demographic and health data for the PIX has now begun to be entered on the EPM's computer data base.

179. Roberto Baruzzi emphasised to us that these computerised records were not as good as they might be, partly due to a inadequate computing / data processing

equipment but more crucially because of the lack of good secretarial help, problems which have affected the more general administration of the project as a whole. Both equipment and secretaries are funded through the EPM's own limited budget (see also #236). (It is also worth noting that the absence of computing facilities at the Goiania Indian House means that their own health records are in a very poor state).

180. The wisdom of hindsight suggests that, in the original proposal, greater allowance should have been made for information technology and associated secretarial help, a point on which the RFFI might also have insisted.

B.2.6. Concluding Remarks

181. Douglas Rodrigues emphasised that the success of the EPM's activities round PID had depended upon his initial ability to set up adequate infrastructural arrangements and achieve the necessary community support and co-operation, a task which took considerable time and effort. By the same token, a lack of funds, insufficient human resources, and poor local co-operation have meant that the same results have not been achieved at PIL. When Rodrigues was there, he managed (with difficulty) to get things running; when he left they appear to have largely collapsed. It was also clear, from both what he and AVA personnel told us, that these infrastructural arrangements were very complex, in part due to the difficult local conditions but also because activities related to health cannot be disentangled from transport, education, marketing, frontier vigilance, etc.

182. The lessons to be drawn from all this are the crucial importance of infrastructural arrangements in and of themselves and also the need for careful, integrated planning across apparently separate domains to achieve maximum efficiency and economies of scale.

B.2.7. Recommendations

183. • For practical reasons, to further self-administration, to support the IHAs, and to raise morale, high priority should be given to the construction of pharmacies in all PIX villages.

184. • Existing pharmacies might be adapted to give more explicit recognition to their role as places of education as well as health care; in planning new buildings for health or education consideration should be given to combining these two functions under one roof.

185. • Future Programs should include a plan for the maintenance of pharmacies backed by adequate funding. Further consideration might also be given to a greater use of locally available materials, notably wooden boards supplied by small, locally established saw-mills.

186. • All future plans for investment in infrastructure should take into consideration their potential impact on the size and duration of settlements; where possible, pharmacies should be constructed in such a way that relocation is not too difficult or costly.

187. • A new purpose-built health centre/pharmacy should be constructed at PID as soon as funds and time allow.

188. • The possibility of siting refrigerators below ground level (where temperature is lower and more constant) might be explored.

B.3. TREATMENT AND PREVENTION OF DISEASE

B.3.1. Introduction

189. While the program under evaluation is a continuation of EPM's work prior to RFFI funding, there are two new commitments:- to respond to changes in health from increased contact and to promote community responsibility. There is also a new opportunity to assess the health needs in the PIX and make a planned, continuous response to replace the old combination of twice-yearly immunisation visits and crisis intervention.

190. In order to evaluate the health impact of a program such as this, we really need comprehensive data on the state of health of the population at the outset, on all the health program activities and on the outcome of these activities in terms of measurable improved health status. We certainly need to be able take into account the epidemiological changes outside the control of the program. We also need to be able to estimate what the outcomes of alternative uses of resources might have been in order to decide whether the comparative cost-benefit status of the program justifies its continuation or modification. Of course, the information for such an exercise is never complete and, in the working conditions of the PIX, such an assessment is bound to be very patchy but it is still worth attempting.

B.3.2. Disease in the PIX

191. There was broad agreement from all health workers and PIX communities that malaria and TB were the major epidemic diseases and that most recurrent ill-health was from non-TB respiratory infection and diarrhoea-infections. There was general recognition that immunisation had prevented epidemics of measles and whooping cough. There was apprehension about influx of sexually transmitted diseases, particularly HIV. We saw, or heard reliable records of, a wide range of infectious diseases, but we were also told of the very low incidence or absence of other pathology including hypertension, disease, diabetes mellitus, malnutrition, uterine prolapse and endometrial carcinoma. The first three are just beginning to appear in the Lower PIX where cultural change is more accelerated. Among specifically tropical diseases, Jose Lobo's mycosis (confined to Kayabí), and leishmaniasis are present in the PIX.

B.3.2.1. Malaria

192. The 1991 outbreak of malaria with 98 cases mainly in Cachoeira (pop. 230) in the lower PIX prompted a Ministry of Health survey and a determination to improve control on the part of EPM. A spot-check on 27 bus passengers at the BR-080 Xingú raft crossing revealed 8 positive cases, identifying one of the obvious points of entry: from then on, various solutions were proposed to prevent cattle transporters and prospectors travelling between Sao Felix de Araguaia and Peixoto de Azevedo from breaking their journey inside the PIX. It proved impossible to close down the Indian Post on the east bank but the PI created at Jarina (western park border) was welcomed by EPM as a control point. Nevertheless, just such PIVs (Vigilance Posts) were blamed in a subsequent report for facilitating malaria outbreaks by attracting Indians to the park circumference. This highlights, not the inconsistencies of EPM, but the very real difficulty of attempts to control borders resulting in even more traffic in disease and agents of economic exploitation.

193. Extra efforts at malaria control were very likely effective in curtailing the incidence. There was twice-yearly insecticide spraying (DDT) of villages by SUCAM/FNS and the number of individuals trained in malaria microscopy within the park rose from 7 to 12 (7 Indians) between 1991 and 1993 There were only two other epidemics within the funding period - a 1993 outbreak among the Panará, possibly from Marcelandia, and one in 1994 among the Waurá, introduced from the South, to which there was prompt and effective response. The original diagnosis was made by an IHA who had had EPM training but no previous experience of malaria - a tribute to effective IHA training and skill.

194. Besides the three outbreaks there have always been scattered cases. EPM have plenty of data on these - for instance from June to November 1994, of 59 blood tests from suspected cases in the lower PIX, 32 were negative, 18 had P. vivax, 6 had P. falciparum and 3 cases were of mixed infection. We observed careful written IHA records of the follow-up and daily administration of medication to a malaria patient. On the negative side, the planned comprehensive PIX malaria reporting and monitoring system has not been set up. We think there are only three IHAs currently fully competent in reading malaria slides. As far as we were able to establish, FNS continues to undertake regular spraying: we are not certain to what extent they would respond by sending specialists to the PIX in case of epidemics.

B.3.2.2. TB and Respiratory Infections

195. TB was selected for special attention in the original proposal with emphasis on field training and specialised training of IHAs in sputum microscopy, population screening of high-risk groups, contact screening and prompt attention to respiratory symptoms with supervised treatment according to national drug regimes. A TB reporting and monitoring system similar to that for malaria was planned.

196. As with malaria, a TB update is a regular item in all reports. BCG vaccination continues. Lack of drugs to initiate and complete treatment courses is a constant problem and EPM had had difficulties with the national protocols whereby drugs are released for registered cases on a monthly basis - clearly impractical for the PIX situation. We heard of individuals from the Upper PIX travelling out of the park for monthly control and medication supplies.

197. In 1991 the Panará were the worst affected group. In 1992 -3 TB was described as the biggest health problem in the PIX and an X-ray machine donated by Phillips - Holland was set up at PID. An examination of all those with respiratory symptoms (298 individuals) was made by a double set of sputum slides - one to be read in the PIX and one at the Instituto Adolfo Lutz in SP - and 145 cases were sent on the FMV boat or by FUNAI plane to PID for radiological assessment. This yielded a final total of 33 cases, 29 of these from only two groups: Panará and Kayapó-Metuktire (doc. 23). The active search continued with more cases diagnosed and the recognition that the geographical isolation and poor compliance of the Metuktire merited specially targeted nurse's visits (doc. 29).

198. The present situation is of mixed success. The EPM IHA training in respiratory disease has heightened awareness of the TB problem. IHAs are aware of typical symptoms but only one IHA is trained in reading sputum slides and does not have facilities to do this. Diagnosis in the PIX is thus impossible without a health professional trained in sputum microscopy. EPM are transporting sputum culture samples for improved diagnosis in SP.

199. As with much of the reporting of medical coverage, it is difficult to assess how well the Upper PIX is served. We reviewed the records for PIX Indians in the

Goiania Indian House, 1.94 - 9.95, and found 12 cases of TB, 4 of whom had died, suggesting that many cases from the Upper PIX are receiving treatment in Goiania, although EPM may still have had a role in diagnosis, referral and some part of treatment. The proposed reporting and monitoring system has not been set up although collation of all the detailed reports of EPM staff (e.g. doc. 28) would provide a solid basis for such a system.

200. Other respiratory diseases make up a large portion of acute case-loads. They also cause great anxiety because of the rapid and unpredictable deterioration of some patients with pneumonia, particularly children. We observed such a case at PID: a small child was carefully monitored by the EPM team and when she became severely ill and failed to respond to the maximum appropriate drug treatment available, was referred by FUNAI flight to Goiania, where, happily, we were able to confirm her full recovery. It is difficult to criticise such referral decisions: lives are undoubtedly saved but rapid unpredictable recovery is also common with respiratory infections. We were impressed by IHAs' ability to reserve antibiotic treatment for those with raised temperature together with chest signs.

201. The range of respiratory diseases is largely unknown. There are a few cases of asthma. One EPM report (doc. 27) mentions the high incidence of penicillin and cephalosporin-resistant pneumonia and recommends further micro-biological research into respiratory diseases in the PIX. Without the benefit of any further data, it seemed to us that many of these infections might be either viral or represent atypical pneumonias. It may be worth investigating whether Chlamydia psittici which is transmitted by pet birds, particularly parrots, is present in the PIX and adapting antibiotic regimes to include tetracyclines and macrolides, if appropriate. Another suggestion from EPM is that pneumococcal vaccine be considered.

B.3.2.3 Sexually Transmitted Diseases and Women's Health.

202. PIX communities, particularly leaders and IHAs, are well aware of the risks and gonorrhoea, genital Chlamydia and syphilis have all occurred. HIV has not yet occurred within the PIX but awareness is high. IHAs and leaders recognise that they can only advise against risky sexual encounters with outsiders but not prevent them and that journeys to sell artefacts are a potential source of trouble.

203. Following the deaths of 2 PIX women with suggestive symptomology, EPM nurses have conducted a cervical screening program for which there is good uptake. In the first year there were 6 women with grade 2 with Human Papilloma Virus or grade 3 (abnormal) cervical cytology results. By 1993, 23% of female population over 15 had been screened but there have been problems in getting women out of the PIX for further investigation and specialist treatment. There is on-going debate about the ideal frequency of screening (possibly every 2 years). The cervical screening initiative draws attention to the problems of screening in remote areas where it may be difficult to establish an ongoing program with appropriate plans for positive findings. The immunisation visits would be an ideal opportunity for this but the one we witnessed in Kuikuru was too rushed for extra procedures to be incorporated.

204. EPM monitor pregnancies by registering these on vaccination visits and follow them up as possible. There are no facilities for haemoglobin estimation. Neither EPM personnel, nor IHAs, routinely attend deliveries: these are left to TBAs with assistance given only if requested. C.H-J did attend a delivery with a complicated, prolonged second stage (occipito-posterior position) in Diauarum, at which the EPM doctor and nurse assisted in the most sensitive way possible and set up an intravenous infusion to promote contractions. The baby was born in very poor condition (but survived) and would probably have been still-born without

intervention. Neither forceps/ventouse or episiotomy are used in the PIX. Breast feeding is encouraged and we did not see evidence of any prepared milk-feeding.

B.3.2.4. Gastro-Intestinal Infection

205. Diarrhoeas and intestinal parasites (especially Ancylostomiasis and Ascardiasis) are ubiquitous in the PIX, although did not feature much in the consultations we saw (perhaps because of the dry weather). PIX communities were well aware of transmission via contaminated water but seemed less conscious of the direct faecal-oral route. It is virtually impossible to interrupt this route: latrines have been discussed and, in some cases built (see #152) but EPM consider that poorly-kept facilities would probably increase infection and many Indians (and non-Indians) dislike using such facilities. Some communities are keen on a piped water supply (see #152) but, again, EPM consider the storage tanks an infection risk and foresee problems of upkeep. In spite of the practical difficulties in reducing infection risks, we thought that the doctors doing house visits after the vaccination in Kuikuru might have washed their hands between patients simply to set an example.

206. IHAs encourage simple measures such as increasing fluid intake with packeted electrolyte replacement if necessary. Home-made salt/sugar solutions are not encouraged by EPM because they are reluctant to introduce refined sugar (see #223). The advantages of regular treatment for parasites have been raised but, as far as we know, no decision has been made.

B.3.2.5. Ophthalmology

207. An EPM survey by a visiting ophthalmologist revealed trachoma to be the most prevalent disorder but there was a surprising lack of corneal lesions. It was proposed that IHAs should be trained to measure visual acuities and that a visual correction program be set up (prescription and dispensing of glasses). We do not think this has been done and we have no information to help us judge the potential benefit of this as opposed to simply making standard prescriptions for presbyopia (long-sightedness of ageing) available.

B.3.3. Treatment in the PIX and Referral

208. There are two principle contexts for this: treatment of local communities by IHAs and IDHAs; treatment by EPM doctors, dentists and nurses during their prolonged stays in the PIX or during immunisation trips. We attended consultations with both the EPM doctor and nurse and with IHAs both in pharmacy clinics and in Indian houses. Where EPM staff are present, they work in conjunction with an IHA where possible. In the Middle PIX, the local IHA would summon the patients for whom he needed guidance if the doctor or nurse arrived.

209. We do not know of data on the numbers consulting for different complaints or classes of complaint although typical lists may be drawn from IHA's books or EPM reports (e.g. doc. 28). Upper respiratory tract infections (including tonsillitis), pneumonias, earache, abdominal pain, diarrhoea and worms, urinary tract infections, feverish illness of unknown pathology, minor skin problems (fungal infections, abscesses, etc.), headaches, musculoskeletal aches and pains and follow up of malaria and TB appear frequently, much as would be expected. Most of the cases we saw are included in this list but some brought up particular problems. Examples were one patient who had received four months TB treatment but for whom there was no more medication, two children of the same family with a severe undiagnosed skin disease

(with a sibling who had recovered from the same condition), a woman with irregular bleeding and a history of repeated miscarriage and several cases of convulsions of unknown aetiology.

210. We sympathised strongly with those who had to decide whether cases such as these should be referred for diagnosis and/or treatment because this is the point at which rationing of medical and transport services becomes overt. It is also the point at which the limitations of Western medicine have to be explained to a population who are in a poor position to understand them.

211. We did not have data on the number of referrals made to services outside the PIX but Dra. María Bittencourt thought there might be about 30/month to Goiania, which is currently the main referral centre. Her own figures showed that 98 Indians from various parts of Brazil attended the specially targeted out-patient centre in SP in the first half of 1995. 34 of these were from Central Brazil, the majority being from the PIX. These would include individuals referred for higher-tech investigation than is available in Goiania as well as for high-tech treatment.

212. The list of referrals resulting from the Sept. 95 immunisation trip include 4 suspected TB cases, 3 cases of recurrent fits, a 44-year old woman with jaundice and fever post miscarriage, a 21-year old man with genital warts, 2 cases of hernia with risk of incarceration, one of suspected biliary colic, one of congenital cataract. Other sources include a person hoping for renal transplant for chronic renal failure and a boy with a mal-united fractured jaw. Lists of individuals needing referal would be passed on to the FUNAI PIX administration but the EPM team was doubtful that the arrangements would actually be made. We met several individuals who had had successful intricate surgery, for example for prolapsed intervertebral disc. We heard of other disappointing cases - for instance of a jaundiced, chronically unwell individual who had been refereed to Goiania and returned after weeks with a minimal discharge letter re-describing the problem he had been sent for and apparently no action beyond a routine blood test. We saw a local newspaper feature on one of the Goiania hospitals frequently used for PIX Indians declaiming a crisis in services and showing queues of patients sleeping outside in the street.

213. It was difficult for us to judge the appropriateness of these referrals and this might be expected to vary according to who they were initiated by: EPM doctor or nurse, IHA, doctor without past experience of PIX (e.g. those accompanying immunisation trips) or even self-referral by those with an opportunity to travel. The opinion of a part-time Goiania Indian House doctor was that many cases from the PIX did not need hospital treatment and Armando Piva thought that some EPM referrals to SP were academically motivated. It is always easy to criticise referrals with hindsight, when the patient has spontaneously recovered, and it is clear that some referrals turned out to have been pointless only because of the unexpected inadequacies of the hospital services received.

214. The question of whether the referral rate in unnecessarily high is complex. It might be too high because cases could be dealt with equally well, or perhaps better, *in situ* or too high because health workers are seeking diagnosis and treatment in inappropriate or 'hopeless' cases. This immediately raises questions with both ethical and practical aspects about what types of hospital-based care are appropriate for Indians who will have to return to PIX conditions; what rights they should have to the same level of care as other Brazilians - whether rich or poor - and what the policy of EPM should be with respect to referral.

215. Reccommendation

- We think realistic aims might be to develop better contacts with institutions to whom PIX Indians are referred to improve communications. This would facilitate an analysis of referrals and outcomes which is essential to development of a clearer policy. A narrower and more-easily defined aim should be to reduce referrals for TB which can only serve to spread the disease in the cramped conditions of the Indian House.

B.3.4. Immunisation Program

216. The EPM's vaccination program is probably the longest-running and most successful program of immunisation for any lowland South American Indian population. It met with unanimous approval from all the PIX residents we encountered; in the opinion of many of them, it was this program that halted a history of traumatic epidemics [12] and led to the current population increase. It has run uninterruptedly since around 1966 administering Sabin (anti-polio), anti-measles, DPT (diphtheria, tetanus and pertusis/whooping cough), anti-tuberculosis (BCG intradermic) and anti-tetanus (pregnant women) vaccines as stipulated by the Ministry of Health for the whole population of Brazil. The program is also at the heart of the EPM's health records for the PIX population, the regular immunisation visits and enthusiastic local co-operation providing the opportunity for systematic updating.

B.3.4.1. Team Visits

217. Immunisation teams visit the PIX four times each year covering the Upper PIX to Pavurú in April and August and the Middle and Lower PIX in January and July. Each team comprises two or more doctors and nurses and always includes medical and/or nursing students who gain experience and are a source of future recruits to the Program. The team are assisted by the IHAs resident in the villages they visit.

218. Vaccines are carried in insulated boxes packed with ice. The visits require careful logistical planning to avoid delays. With no facilities for cold storage in the PIX, delays threaten to break the cold chain. The teams travel by boat and must be able to rely upon transport and gasoline being available without delay. This is one of the major reasons why so much emphasis is placed on transport (see B.2.5.).

219. We observed a vaccination team in operation in the Kuikuru village. Village leaders and IHAs guarantee the presence of all residents. Using photocopied duplicates of the EPMs central record cards, the team calls those due for vaccination one after the other, checking their health and noting cases in need of treatment. At the same time, the team and IHA(s) go through all the villagers' records, recording pregnancies, births and deaths and updating individual identity photographs where necessary. The team then makes a round of each house in the village, visiting those in seclusion or too ill to move, providing treatment and selecting cases for outside referral.

220. The following schedule gives some idea of the speed and efficiency of the operation:

7.9.95	arrive PIL by boat from Canaraná
8.9.	vaccination in PIL and in Yawalapiti village

[12] See B. Francetta's 'O aparecimento dos caraíba', in M. Carneiro da Cunha org., História dos Índios no Brasil, 1992.

9.9.	vaccination in Kamayurá village
10.9.	vaccination in Waurá village (70 km by jeep)
11.9.	vaccination in Kalapalo village
12.9.	vaccination in Pavuru, Jacaré, Morená, Esperanza
13.9.	vaccination in Pavuru and Terra Preta
14.9.	return to PIL
15.9.	vaccination in Nahukwá village
16.9.	vaccination in Matipú village; travel to Kuikuru village
17.9.	vaccination in Kuikuru village; return to PIL
18.9.	vaccination in Aweti village; travel to Mehináku village
19.9.	vaccination in Mehináku village; return to PIL
20.9.	vaccination in Tanguro (Kalapalo) village; return to Canaraná

B.3.4.2. Monitoring and Evaluation

221. Although we did not see the results, a report (doc. 18) mentions a survey of the infant population to evaluate the effectiveness of the immunisation program in terms of cover, immunological response and incidence of cases preventable by immunisation. We heard of at least one whooping-cough fatality. The report also mentions a survey of Hepatitis B amongst children. With a high prevalence of Hep. B markers in the PIX population, the survey aimed to assess need to include Hep. B vaccination for children. Both BCG for 14-year olds and MMR (measles, mumps and rubella) are also under consideration; unfortunately the latter is not currently available for the population of Mato Grosso. Also under discussion is the eventual transfer of the immunisation program to IHA control but without *in situ* cold storage, there is concern about how the cold chain might be established.

222. It is clear from both informants and documents that the immunisation visits happen without fail each and every year and that all villages are covered (though there is sometimes difficulty in getting vaccines from the Ministry of Health - doc. 15). Whilst we suspect that individual coverage is very high, this is less clear from the available documentation. The reports list the total numbers of different vaccinations given but do not set these against the target numbers.[13]

B.3.5. Dental Health

223. Like other lowland South American Indian groups, PIX population suffer poor dental health due to a combination of several different factors - a low level of environmental fluoride, a high starch diet, consumption of sweets and biscuits purchased by locals or brought in by visitors, caries as an (alien ?) infection easily spread through shared food and drinks and a possible genetically-based susceptibility.[14] The UHCP proposed a shift away from a previous pattern of emergency intervention in individual cases towards a focus on prevention, with priority care for 3 - 15 year olds and with IDHAs taking on much of the task of practical dentistry, now integrated into a wider preventative effort. Below we consider **education**, **prevention** and **assistance**.

B.3.5.1. Education and Dental Health Promotion

224. As there were already IDHAs prior to the UHCP (see #53), EPM dentists have sought to change the IDHA's self-image from curer / extractor of teeth to that of

[13] In one case (doc 29) we lear that of a target of 42 pregnant women , 23 receive tetanus immunisation.

[14] Compared with other PIX peoples, the Kayapó have a higher incidence of caries.

promoter of oral health with a primarily preventative role. A program of community-wide education was instituted, mediated by the IDHAs who would pass on their own training in their own native languages and using visual cues (models, drawings, puppets, etc.). Our evidence suggests that the IDHAs have adapted well to their educational role, making good use of local schools and in some cases combining dental training with training as teachers (IEAs). In addition, both IDHAs and EPM professional dentists give advice to individual patients in the context of preventative or remedial treatment.

225. In interview and in her written report (doc. 23) Agda Detogni noted a high and constant demand for dental-care equipment (brushes, paste, floss); regular (especially evening) brushing; adults brushing their children's teeth or providing brushes for them; a near 100% presentation of children and adolescents (with some adults) for application of fluoride gel; adults seeking dental inspection and/or treatment for themselves or their children outside emergency contexts. These indicators would suggest that the program of education and promotion of oral heath, mediated by local people, suited to local conditions and building on existing cultural habits with respect to dental care has been very effective and has lead to a change of values and expectations at community level.

B.3.5.2. Prevention

226. The PIX population is now well supplied with dental-care equipment supplied, free of charge, by Colgate-Palmolive Ltd and distributed on a regular basis by EPM dentists and IDHAs. From a previous baseline of treatment at 6-monthly intervals, the IDHAs now carry out a regular program of 3-monthly topical applications of fluoride gel for the 4-18-year age group, using disposable moulds of ingenious local design. Application of a fluoride varnish coating (on both newly-erupted teeth and in conjunction with remedial treatment for older patients) was begun in early 1994 and some IDHAs are receiving training in this technique. Together with the use of sealants (to block holes and fissures), this treatment aims to consolidate teeth, promote remineralisation and prevent further infection.

B.3.5.3. Assistance

227. Clinical assistance is increasingly seen as part of wider preventative action with emphasis on damage limitation rather than extraction and with a focus on the 4-18 age group who are most at risk from caries. A comparison of dental health indices (undamaged / caried / missing / filled teeth) for 1992 against 1994 (doc. 23) for people of the Middle PIX shows a very high but now declining incidence of dental caries (mainly amongst the young), an increase in the proportion of undamaged teeth and a proportionate increase of fillings over extractions, all indices of improving dental health.

228. The IDHAs are successful in preventing local infections with no infections following extraction. Only some 40 people use or require prostheses. Beyond the need for more chairs, our impression was that IDHAs were relatively well equipped and made appropriately restrained use of analgesia (exclusively Dipirona). Finally there is clear evidence of growing technical skill amongst IDHAs: increasing numbers can now do permanent (amalgam) in addition to temporary (IRM) fillings.

B.3.5.4. Coverage

229. As in other aspects of the Program, coverage has not been uniform - finding professionals available for fieldwork and arranging adequate transportation are recurrent problems. Improved provision of dental health care is most evident amongst the Kayabí, Suyá, Juruna, Panará, Trumai and Kamayurá, groups living within the orbit of PID where most of Agda Detogni's efforts have concentrated. The Kayapó, whose dental heath is reportedly very poor, have been a second focus of effort, by Eduardo Biral working in and around Kapoto. In the Lower and Middle PIX there is a IDHA in each village; in the Upper PIX, visits by EPM dentists are more sporadic and a single IDHA, Ibene Kuikuru, tries to cover the whole area. In connection with the Upper PIX, Armando Piva spoke of a team from Minas Gerais and SP, of a dentist friend of Ianaculá, of volunteers and of visits by a regional dentists but our impression was nevertheless of unreliable and sporadic coverage.

B.3.5.5. Monitoring and Evaluation

230. While monitoring the effectiveness of treatment is perhaps easier in dentistry than in many other branches of medicine, we were very favourable impressed by the prominence given to this by dental workers. The program began with a thorough epidemiological study and Agda Detogni stressed her commitment to continuous monitoring of results to evaluate the effects of both preventative intervention and community education, using feedback to guide the future evolution of the Program. This emphasis on systematic evaluation is apparent in her 1994 report (doc. 23). She (and others) stressed that work overload, with the feeling that action should take priority over analysis, often prevented her from fully writing up her results.

B.3.5.6. Comments

231. Over the 1991-95 period there are clear signs of an overall improvement in the situation with regard to dental health: an increase in material resources; more and better trained IDHAs; a shift away from dealing largely with acute or emergency cases towards a more systematic program of prevention and education; a declining number of extractions and initial statistical evidence of fewer caries. The full benefits of a program of prevention of dental caries will only become apparent in the medium to long term but even after this short time, the indices mentioned above suggest increased control. In addition, there is evidence of increased awareness of dental health amongst the general population and of changed habits with respect to the use of brushes and floss. Much of this can be directly linked to the successful educational role played by IDHAs. We are not able to comment on whether or not people are now willing to forgo sweets and biscuits; we suspect that changes in diet will present an increasing problem in the years to come.

B.3.6. Records and Epidemiology

232. The EPM / USMA's centralised individual medical records on the PIX population are outstanding for their complete coverage, for their time depth (some go back more than 30 years) and for the wealth of information they contain. Each person's record, complete with identification photographs, is begun at birth and continually updated at regular immunisation visits and at each significant health event.

233. As we understand the system, copies of these records are held at PID, and further copies are carried on immunisation trips to be updated. The EPM obviously

have to contend with the need to have a secure data base in one place and to have records on hand in the PIX. There is no answer to this problem which does not incur laborious copying of data. Besides the central patient records, consultation books are kept by IHAs (at least the most conscientious ones) listing name: group: age: sex: simple diagnosis: temperature: duration of illness: treatment given. When EPM health workers hold clinics they enter consultations into the same book. The drawback of this system in that the IHAs have no local individual case notes and a system of cumulative case histories on cards has been suggested with the idea that this may develop into a system of patient-held records.

234. There are also ledgers of referrals outside the PIX and discharges back to the PIX in Diauarum. These are not in exact chronological order and it is difficult to match up the referrals with the discharges, largely, we understand, due to inadequate discharge communications (see #212).

235. The EPM central database in SP is now being transferred to computer, a task held up by shortage of time and suitable staff. The fact that the records are not yet fully computerised, together with the pressures on project personnel, partly explains why we found relatively little written synthesis and analysis of the extensive available data in the reports themselves (we realise that there is an enormous body of work which we would not have had time to review). The initial proposal spoke of 'indicators for determining the results attained relative to specific goals' and 'variables that can contribute to understanding the degree of effectiveness of the proposed activities'. Several reports mention initial data collection and subsequent comparison but, while they contain much data and summarised information, there is little attempt to use data to monitor conditions, detect changes and to evaluate results (doc. 23 on dental health is a notable exception).

236. While it is probably too early to analyse the full effects of the RFFI-funded period, EPM could and should now begin to evaluate using a more systematic analysis of their impressive collection of data. Had such an analysis been an integral part of the project and reporting, our task would have been much easier but there would also have been funding implications.

B.3.7. Comment and Recommendations

237. As set out above our assessment is bound to be impressionistic and uneven. First, we can ask whether the program has been appropriate, given the epidemiological patterns in the PIX. We think that it has. The training programs have concentrated on the most significant diseases and have undoubtedly improved knowledge about these and encouraged simple, safe and effective standardised responses. The theme of change and introduced diseases has been stressed. EPM professional input has acknowledged the key importance of malaria and TB and efforts have been made to import specialist expertise.

238. The immunisation program has been an outstanding success, largely, we imagine, because of its impact on measles and whooping cough and, perhaps, TB. We do not know anything about the incidence of tetanus or polio but it is obviously correct that Indians should share in the national prevention program. PIX Indians all think that their population has grown thanks to the immunisation schedules. Whether or not there are other factors involved, population is increasing across the board (see table 1).

239. Such faults as there are in the effective treatment and prevention of disease have less to do with conception of the program and more with the difficulties in establishing it evenly throughout the PIX (discussed at length in this report). If this

had been possible, the proposed malaria and TB monitoring systems might have been established and had a knock-on effect in the reduction of these major treatable illnesses.

240. Recommendation

- To facilitate continuous monitoring and evaluation of results, time allocated to these tasks should be included in the time budgets of project proposals and plans. The necessary time, including secretarial help, should be funded.

- We strongly support the development of individual record cards in the PIX as a contribution to improved patient care and to IHA training.

B.4. MEDICINE AND CULTURE

B.4.1. Introduction

241. The UHCP contains several references to 'respecting (Indian) cultural values', understanding cultural barriers and the need 'to study the communities' traditional curing practices and save information' (doc. 2). We were asked to pay particular attention to the 'extent to which the program manages to strike a balance between creating a Western model of health care and promoting/including traditional health practices', to consider the impact of the newly-created role of health monitor on the status of practitioners of traditional medicine, and, where possible, to look at the effects of the Program on the total social situation in the PIX. These questions are not easily answered through brief field observations and interviews especially because peoples' responses to enquiries about a potentially sensitive domain are not necessarily a reliable guide to what they actually think and do; parts of what follows are necessarily impressionistic.

B.4.2. Traditional Medicine

242. We begin with a very brief sketch of what traditional health practices and practitioners might mean in the PIX context.[15] Illness is typically attributed to one or more of: a. failure to observe restrictions on diet or sex; b. contamination by menstrual blood; c. soul loss or attack by spirits and witches. People involved in processes of significant social or physiological change or in liminal or ritually-marked states are considered especially vulnerable to illness. Theories that bodily substance ('blood') is shared between individuals mean that one person's illness may affect closely-related others. For these and other reasons, ideas about illness have a strong social and moral component.

243. The principle modes of treatment are: 1. herbs used as emetics, fumigants, poultices, infusions, or rubs and selected as much for their odour and/or analogical qualities as for pharmacologically active constituents; 2. spells and incantations employing metaphoric imagery; 3. shamanic intervention to extract pathogenic agents, placate or send away spirits and restore lost souls. Treatment of minor ailments (through herbs and spells) deals mainly with effects; in treatment of more serious illness (by shamans), the focus is as much or more on sociological or cosmological causes and explanations.

244. Individuals often specialise in one or more modes of treatment. Shamanism (pajélança) carries greater prestige as a mode of treatment and is more developed amongst the Kayabí and Upper Xinguanos than amongst Gê-speakers. People may seek treatment or training from pajés belonging to other tribes: the Suyá consult Kayabí pajés whilst Raoni's son (a Metuktire) trained with an Upper PIX pajé after beginning as an IHA.

246. Shamanism and witchcraft or sorcery accusations are an integral part of factional politics and competition for leadership. Accusations, normally directed against other communities, may also lead to the expulsion or murder of people in the same community. The Ipeng expressed reluctance to use the facilities at PI Leonardo and Diauarum because of their fear of foreign witchcraft and Roberto Baruzzi stated

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[15] See also Seeger : Nature and Culture in Central Brazil , 1981: chs. 9-10; C. Verani: 'Representacões tradicionais da doença entre os Kuikuro (Alto Xingu)' in D. Buchillet org.: Medicinas Tradicionais e Medicina Ocidental na Amazönia 1991.

that Upper PIX pajés have to prepare IHAs before they attend training courses at Diauarum.

247. The more technical nature of dentistry probably makes IDHAs less prone than IHAs to mistrust as potential witches; such mistrust might be one reason behind reports (from Agda Detogni and various IDHAs) that IHAs have more difficulty than do IDHAs in treating people from other communities. It is also likely that, under certain circumstances, the political implications of shamanism and witchcraft will affect the selection and work of IHAs.

248. IHAs and other Indians sometimes made a distinction between Indian illnesses and white people's illnesses, suggesting that the former were better treated through indigenous techniques whilst the latter - malaria, measles, influenza, colds, STDs - were best dealt with by Western medicine. This distinction indicates that the ideas and categories of 'traditional medicine' have themselves been influenced by the long history of EPM activities and other Western medicine in the PIX. The image of complementary treatments for different kinds of illness probably oversimplifies actual practice. Mairawë, a Kayabí pajé mentioned someone who took medication for malaria, felt improved but still unwell so then consulted a shaman who freed him from entanglement by an animal spirit.

B.4.3 The São Paulo Medical School and Traditional Medicine

249. The spirit and practice of the EPM program has certainly not been that of a simple transfer of medical technology or the training of a specialised elite. Repeatedly we both heard and saw an emphasis on collaboration with and learning about Indians which ran in parallel to the training of IHAs and the prevention and treatment of illness. EPM do not see traditional medicine as an obstacle to success of program - a point which both Douglas Rodrigues and Sofía Mendonça consider as distinguishing them from missionaries.

250. Community participation is stressed to avoid the creation of a small team of indigenous specialists ministering to a passive and uninvolved community. However, at least one pajé/elder (Tacuma Kamayurá) stated his preference for isolating the impact of outside training by the creation of a small, specialised young elite who could take care of Western medicine and education, leaving the rest of the younger generation to devote their full attention to traditional knowledge and the pursuit of wrestling and body painting. Insistence on community participation was one reason why the EPMs refused to pay IHAs for their work (although Douglas Rodrigues affirms that they will back IHAs in their demands for payment from FUNAI or FNS). This policy of non-payment is perhaps the major cause of Indian complaint about the IHA program (see also B.1.1.6.).

251. Rather than seeking to co-opt traditional medicine into the program itself, the basic model is that of two parallel and mutually-respecting complementary systems with a two-way flow of information via co-operation between the IHAs and EPM personnel. During medical crises, the presence and active role of pajés within the pharmacies is accepted and encouraged; they are recognised as local experts but there has been no attempt to co-opt pajés as IHAs or paramedics, a wise decision in our view.

252. The EPM also avoids intervention in normal births preferring to leave matters in the hands of the local TBAs (midwives). These TBAs have not been willing to extend their activities to ante-natal care or to get involved in more general issues of health care. Despite a shortage of female IHAs, the EPM has respected their decision.

To avoid compromising the TBAs' established role, the EPM discourages male IHAs from involvement in midwifery.

253. Sofía Mendonça stated that the IHA training courses stress respect for the IHAs own culture and are careful to present Western medicine as 'how white people think' and not as a single unquestionable 'truth'. The EPM also emphasise that the choice of candidates for training as IHAs should rest entirely with the communities concerned. These and other examples provide clear evidence for a general respect for indigenous culture.

254. Cultural respect and sensitivity has been underscored by the EPM's annual (since 1989) two-week courses on medical anthropology, each on a different theme. Abstracts and course outlines indicate excellent content, interventions from highly-qualified specialists and the participation of a wide variety of professionals involved in indigenous health issues throughout Brazil (including selected IHAs). In addition to more general considerations, these courses (and the long term expertise of the more senior EPM personnel) provide detailed information about indigenous cultures and health situation in the PIX. Talking of the shock of her first experience in the PIX (as a FUNAI nurse) Selma Ferreira emphasised the value of these courses in providing an understanding of and respect for indigenous culture and raising confidence through meeting others engaged in similar work.

255. The bridging role of the IHAs in both transmitting Western ideas to their own communities and explaining indigenous ideas and practices to the EPM was often mentioned. Marina Machado talked specifically of learning about plant medicines; Sofía Mendonça stated that the doctors used the training courses to find out about the IHAs categorisation and understanding of illness; more generally Carmen Junqueira suggested that this exchange of information worked well. However the relative youth of most IHAs may make them less knowledgeable and also self-selected as being especially receptive to the views of outsiders and hence torn between two worlds.

256. EPM personnel appeared to have a good knowledge of traditional medicine, derived both from their own field experience and enquiries and from the EPM's cumulative experience in the PIX. They are also willing to make use of herbal remedies (for e.g. kuten-ko, a bark tea used by the Kayapó to treat breathing difficulties). However, apart from Baruzzi's paper on puberty seclusion[16] and his mention of the unsuccessful trial of a passiflora-derived contraceptive on rats, we found little evidence of active research on traditional medicine to compare with Cibele Verani's FIOCRUZ-sponsored work on the Kuikuru. Such research – or its absence – can send powerful messages about the relative valuation of different systems of knowledge. Carmen Junqueira said she had urged Douglas Rodrigues to record indigenous curative techniques; he is doing so (he spoke of an effective treatment for sting-ray wounds) but is hampered by lack of time and skilled (anthropological/ethnobotanical) assistance.

257. We were especially impressed by the degree to which the EPM accommodated the local community into their day-to-day activities. During medical crises, pajés are encouraged to play their part and concerned relatives and interested spectators are made welcome. Where possible, effort is made to attend patients in their own homes; at Diauarum, each ethnic group is encouraged to build a visitors house for patients (and their relatives) as an alternative to the unpopular pharmacy sick-bay inhabited by the ghosts of those who died there.

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[16] N. Pinto and R. Baruzzi: 'Male pubertal seclusion and risk of death in Indians from Alto Xingu, Central Brazil, Human Biology, Vol. 63, no. 6, 1991.

258. It might be objected that exclusive use of Portuguese in all teaching materials displays a lack of cultural sensitivity. However, given the polyglot character of the PIX, the small numbers speaking each language, and the uneven coverage of professional linguistic studies, this seems a sensible strategy. We were also very impressed by the extensive use of visual rather than verbal teaching materials: once explained and understood, these allow IHAs to pass on their instruction to others without recourse to literacy.

B.4.4. Indian Attitudes to Western Medicine

259. Although some leaders expressed concern about the IHA training courses taking young men away from their traditional education and physical training, we found no evidence of worry that traditional medicine and its practitioners were threatened by the spread of Western medicine. Memories of the catastrophic epidemics that followed contact and continued into the 50s[17] are still fresh in people's minds; several elders stressed that PIX Indians owe their lives and present burgeoning population to EPM intervention and the efficacy of Western medicine. Their criticisms were reserved for perceived failures to intervene in specific cases (especially in the Upper PIX) and inadequate or unfair allocation of resources in different areas or between different groups.

260. All the elders and village leaders we spoke to expressed strong approval for the training of IHAs, pointing out that whilst white people had shown themselves incapable of putting up with the conditions in the PIX for any length of time, IHAs were a permanent presence. They also felt that, once properly trained, IHAs and education monitors could teach others in a way that would not interfere with Indian life and customs (several IHAs mentioned their training of others as IHA assistants).

261. Sofía Mendonça stated that IHAs were keenly aware of Western medicine and traditional medicine as different systems of knowledge, that they tended to bracket the two systems apart rather than substituting one for the other, that the potential conflict between them was acknowledged and openly discussed at the IHA training courses, alongside the importance of preserving and respecting indigenous knowledge and practice.

262. Several Kuikuru (mistakenly) supposed that, in the vaccination team, students could be distinguished from real doctors by the fact that only the latter gave injections. This is an isolated example of the fact that Indians do not always see Western medicine in the same light as doctors; it probably relates to a common Amerindian notion that injections are more effective than pills because they penetrate the body and cause pain.

263. Our enquiries also failed to reveal any overt concern over the potential conflict between pajés and the IHAs. For the Kayabí, Mairawë stated that there had been a recent renaissance of shamanism with many more pajés than he had known in his youth. Most people explicitly denied any conflict and stressed instead the IHAs' amicable, co-operative and complementary relation with the pajés with the latter as very much the senior partners. As most IHAs are selected by the communities, pajés and other leaders have some control over them: Douglas Rodrigues told us of two cases of community leaders 'firing' IHAs with bad bedside manners who did not do their job properly; more generally, Sofía Mendonça stated that IHAs with strong community support had little or no trouble with the pajés.

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[17] See B. Francetta: 'O aparecimmento dos Caraíba: para uma história Kuikuru e alto xinguana' in M. Carneiro da Cunha org.: História dos Índios no Brasil, 1992: 352-3.

264. The remark by one IHA that 'we treat but the shamans cure' suggests that Western medicine is seen more as a complementary mode of treatment rather than as an explanatory theory in the round. Unlike traditional medicine, Western medicine has little to offer concerning the relation of illness to a wider social, moral or cosmological context. That Western medicine is seen as dealing more with symptoms and immediate causes means that it is felt to conflict more with herbalism than with shamanism.

265. In practice and as EPM policy, the training of IHAs is a process and not the creation of a status after a fixed term. According to their character, life circumstances and interaction with their own community, some IHAs are more committed and active than others and their enthusiasm comes and goes. In some cases, initial training as an IHA has been followed by an intensified interest in shamanism (as in case of Raoni's son).

266. Despite the image of harmonious co-existence, given links between shamanism, the diagnosis of illness, witchcraft accusations and factional politics, there is certainly potential for conflict between IHAs and elders/pajés, a conflict more over leadership than over competing medical systems. As Bruna Francetta remarked, knowingly or unknowingly, all outsiders get dragged into the complex factional politics in the Upper PIX and witchcraft accusations can simultaneously involve neighbours, enemies and even EPM personnel.

267. Interviews with Aritana (Yawalapiti leader) and Tacuma (his Kamayurá pajé brother-in-law) indicated, in somewhat veiled form, the concern of an elder generation who see themselves as losing power to a new generation of IHAs (and education monitors). The prestige of new forms of knowledge and the patronage of medical specialists and NGOs threatens to de-stabilise a leadership based more on the patronage of (a now virtually defunct) FUNAI and on redistributing consumer goods to which they once had privileged access. For the northern area, Sofía Mendonça stated that there was more conflict amongst the Kayabí whose leaders are more dependent upon/influenced by outsiders than amongst the Kayapó.

268. The Upper PIX leaders we met expressed open concern that young people were 'loosing their culture', stressing that IHA training courses should be timed not to interfere with the ritual and wrestling calendar, that they should be held in the Upper PIX and in IHAs own villages. Tacuma also expressed more general misgivings about the acculturative effects of all education by outsiders, a view that Sofía Mendonça says is being increasingly challenged by some of the younger IHAs.

269. In the Upper PIX, where ritual seclusion of adolescents ensures both their proper education and their submission to authority, concern over loss of culture might also be read as concern over the elders' own loss of control. Inter-generational conflict associated in part with the training of a new elite of younger professionals appears to be more acute in the Upper PIX and seems likely to increase over time. The political impact of the IHA training scheme forms the focus of anthropological research being undertaken by Sofía Mendonça

B.4.5 Conclusion

270. As Buchillet[18] has noted, the common assumption that contact between traditional and western medical systems inevitably leads to competition and/or conflict often involves an implicit assumption concerning the superiority of Western

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[18] D. Buchillet : 'A antropología da doença e os sistemas oficiais de saúde' in D. Buchillet org.: Medicinas Tradicionais e Medicina Ocidental na Amazönia 1991:32.

medicine. In the context of the PIX one should not try to isolate a specific field of 'traditional medicine' made up of selected elements that happen to correspond to Western knowledge and practice either in their form (i.e. herbal medicines) or in their supposed efficacy (i.e. those that 'really work') for here as elsewhere, traditional medicine includes ideas and practices that lie well beyond the normal scope of Western medicine.

271. Several reasons might be given for promoting or including traditional health practices as a part of outside intervention in indigenous health: to reduce costs and or/reliance on medical drugs and/or outsider specialists; to enlist ideas and practices that supplement or complement Western medicine; to avoid resistance to Western medicine and/or conflict with/displacement of indigenous healers; to avoid paternalism, cultural imperialism and the loss of knowledge; to encourage self-administration, stimulate community involvement and avoid creating a culture of dependency. Many of these were mentioned in the original proposals and subsequent correspondence.

272. The cultures of the different PIX groups are undoubtedly changing and evolving in response to changing circumstances and the presence of outsiders but the evidence available to us does not suggest either a resistance to Western medicine or that it threatens to eclipse traditional medicine. The relative isolation of the PIX and the absence religious missionaries are two factors favouring traditional medicine.

273 Despite 30 years of EPM activity in the area, the Indians we met stressed relations of complementarity rather than substitution between the two systems. This may be due, in part, to the EPM's own efforts to respect and stimulate traditional medicine; it may also relate to the pragmatism of the Indigenous population. For them Western medicine is probably seen more as a way of dealing with specific situations rather than as a general explanatory system. People choose between agencies and ways of dealing with illness but are not yet required to choose between systems of ideas. In this respect the IHAs may be in a difficult position – for them at least the choice must also and increasingly be one of ideas.

274. Overall the EPM has certainly succeeded in its aim of avoiding competition with traditional medicine; it may be less successful in avoiding the creation of a new form of dependency.

B.4.6. Recommendation

275. • Despite constraints of time and resources, we nonetheless feel that more active research on traditional medicine would be desirable. This would be valuable in itself, would convey a message of respect and commitment to indigenous culture and would give it prestige within a collaborative health project.

C. THE EPM AND OTHER INSTITUTIONS

C.1. CO-ORDINATION BETWEEN AGENCIES IN THE XINGÚ INDIAN PARK

C.1.1. Introduction

276. Co-operation between EPM and the PIX dates back to 1965. Since FUNAI's creation in 1968, periodic agreements have been signed between FUNAI and EPM to ensure co-operation in delivering health-care to PIX Indians. Over the years, several other state institutions and NGOs have become involved.

277. The original EPM proposal (doc. 1) identified lack of inter-institutional co-ordination as contributing to the inadequacy and limited scope of health-care provision in the PIX. A Co-ordinating Council was proposed which would integrate the various institutions - EPM, UnB, SUCAM, FIOCRUZ, FUNAI, MDM; the original budget also included financial undertakings (budgets) from FUNAI, SUCAM and FIOCRUZ in addition to those from EPM itself.

278. The 1990 FUNAI–EPM contract (doc. 42) underwrites co-operation between the two parties: the EPM are charged with health-care; FUNAI with logistics, infrastructure and the supply of medicines and vaccines. Both parties commit themselves 'to seek articulation with other institutions active in the area so as to maximise available resources' (doc. 42: 3, n. 4.h.).

279. We have no information on whether any of the other institutions made such contractual arrangements. As we know that difficulties had arisen in earlier discussions, we suspect they were few or non-existent. Crucially, although the 1991 five-year FMV - USMA/EPM contract (doc. 44) concerns a 'Unified Health Care Program...' (reinforced by an addendum concerning USMA/EPM's co-ordinating role - doc. 45), none of the other organisations was a signatory to this agreement.

280. RFFI funding was thus made to a program already reduced in scope. The notion of an EPM co-ordinated health-care program was never accepted by the other institutions, leaving the EPM to go it alone with reduced, *ad hoc* co-operation from a weakened and impoverished FUNAI. EPM clearly tried to co-operate with the other groups but their different aims, methods, and mutual rivalry made this impossible. There was mutual suspicion between FIOCRUZ and EPM and the lack of clear definition of responsibilities for Indian health created tensions between FUNAI and FNS. [19]

281. In what follows we provide some information on the extent of on-the-ground co-operation and on some of the problems involved. These are relevant both to the difficulties experienced by EPM in the Upper PIX and to likely future developments.

C.1.2. State Agencies

282. **SUCAM**'s main role has been the prevention of malaria through a program of regular DDT spraying and teams which deal with specific outbreaks (see B.3.2.1.). When **FNS** was created in 1991 they took over the supervision of malaria control.

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[19] These problems appear to be foreshadowed in a second proposal (doc. 2) which already mentions the lack of support for a earlier (1983) proposal implying inter-institutional co-ordination (p. 2) and which speaks only of 'improving the co-operation model developed with FUNAI' and of 'rationalising PIX Indian health services' (p. 22), omitting all mention of more general inter-institutional co-ordination. We note that, in their response to these proposals, the NRFF made no specific comments on this issue.

Sofía Mendonça spoke highly of SUCAM's work but said it had broken down when they began to charge for spraying and other activities.

283. Officially, Indian health has passed from FUNAI to FNS but in practice there is no clear definition of responsibility. Dr. Armando Piva (see below) claimed that FNS does not deal directly with EPM as EPM resists FNS requests for data and their attempts to exert more control. According to Piva, the FNS Regional Co-ordinator for Mato Grosso, Dr. A. Monteira, intends to evaluate EPM's work before deciding on the nature of future FNS-EPM relations. We were unfortunately unable to meet any FNS representatives.

284. **FUNAI**'s inadequate state funding, the freezing of all new posts, the erosion of its responsibilities for Indian health, and the lack of clear definition of responsibilities between FUNAI and FNS all meant that EPM experienced difficulties in getting both agencies to meet their obligations. As neither body appears to have a fixed allocation of funds for the PIX, the EPM have had to push constantly for the necessary support. FUNAI has provided transportation, medicines and building labour but EPM has also had to assume some of its obligations. In effect FUNAI has offered sporadic assistance rather than full co-operation.

285. Some IHAs have been receiving salaries from FUNAI (see #85). FUNAI also maintained an auxiliary nurse at PIL who was in charge of FUNAI health work in the PIX. Marina Machado spoke of co-operative relations between her and EPM personnel; Armando Piva suggested that EPM attitudes made FUNAI auxiliary nurses feel a lack of confidence and caused Indians to reject them on the grounds of their not being 'real doctors'. (The Chefe do Posto at PIL also said that Indians only wanted 'real doctors' but for a different reason – because they already have auxiliaries in the form of their own IHAs). Piva also claimed that EPM wished to monopolise health in the PIX and refused to share its data with either FUNAI or FNS - a charge EPM denies.

286. The PIX is administered by FUNAI through an Administrator elected from amongst the Indian population. The first Indian Administrator was Megarón, a Kayapó from the Lower PIX. Megarón appears to have had a close working relationship with the EPM, a point consistent with the fact that EPM is better accepted and has more influence in the Middle and Lower PIX. Under Megarón, EPM were the *de facto* co-ordinators of PIX health-care and did virtually all the work themselves.

287. After the recent election of Ianaculá, a Yawalapiti from the Upper PIX (see #45), co-ordination has now officially passed to FUNAI. Ianaculá has nominated his secretary, Armando Piva, as Health Co-ordinator for the PIX (he is also in charge of education and land). Piva says that he intends to work in partnership with EPM: EPM will be responsible for vaccination and IHA training whilst FUNAI will take responsibility for permanent medical assistance. Piva also says that FUNAI can no longer support the excessively high costs of EPM's work, in particular the expensive referral of many patients to São Paulo. In future, he intends to treat more cases in situ and to make more use of Goiania and Cuiabá as referral centres.

289. Under Piva, FUNAI now has three auxiliary nurses working at PIL with two more making fortnightly visits. Another nurse is to be installed at Waurá and there are plans to bring in two doctors and two dentists. All these health workers are to be sub-contracted as, under government austerity measures, FUNAI is not allowed to create any new posts. Armando Piva claims that this will be through IAMA. When we spoke to Betty Mindlin, the President of IAMA, she denied this. At present, it is unclear who is funding the nurses at PIL; they were evasive on this issue saying

merely that they were 'working for Armando' and that they were as yet unsalaried. It is possible that they are being funded by a missionary organisation (see C.1.4. below).

C.1.3. Foundations

290. The **Kuarup Foundation** has its origins in a film of same name (Ruy Guerra 1988), shot amongst the Yawalapiti (with Kuikuru and Kamayurá assistance). The film was supposed to raise much money for Indian causes but flopped. Established in 1992, the Kuarup Foundation is closely associated with Sandra Wellington, a well-connected UK citizen. Her chief ally, Aritana, the Yawalapiti leader, describes her as a person close to the Indians, who allows them to take all the decisions and who is 'showing them the way'. Non-Indians were less complimentary, describing her as autocratic and hostile to any form of co-operation. She has refused to co-operate with the EPM and also refused Armando Piva's request to sub-contract for nurses via the Kuarup Foundation. Tacuma Kamayurá mentioned that Sandra Wellington had been instrumental in turning people against EPM.

291. Apart from her role in inter-factional and inter-institutional politics, Sandra Wellington's main and important contribution to health-care has been the supply of some fourteen radios (see B.2.4.). We heard of plans for a hospital at Canaraná and a mini-hospital at PIL. We also heard of a Kuarup Foundation-sponsored IHA training course in Rio de Janeiro run by a dermatologist (Dr. Jacqueline Menese); those we met had not been impressed.

292. With no young doctors, no structure for local services and a positive emphasis on research **FIOCRUZ** is not well adapted for work in practical projects. Its main contribution to the PIX has been in the form of equipment – freezers, solar panels, boats, and materials for training IHAs and Education Monitors. It also sent four Indians to a first aid course in Rio but appears to have made no attempt to co-ordinate such activities with those of the EPM.

293 Dr. João Carlo of **Médecins du Monde** (MDM) arrived in the PIX in Sept. 1987 with his dentist wife. Working in PIL rather than the villages, he delivered health care and began training IHAs with FUNAI support. João Carlo appears to have made a point of refusing to co-operate with EPM. Roberto Baruzzi only managed to meet him when both were in Paris; he stated that he wanted to work alone.

294. In Luis Carlos Pinagé's view, João Carlo's hostility and influence over the local population was one of main causes of EPM's problems in Upper PIX. Roberto Baruzzi agreed that the MDM influence meant that Aritana Yawalapiti and other leaders did not give EPM the political support needed to mount their program, sustain the necessary infrastructure and keep permanent staff in area In the end they withdrew their support for MDM too – João Carlo left the PIX after his house was ransacked.

295. The **Passian Foundation** (Indianerhilfswerke Freundeskreis Rudolf Passian) supplied funds to build and equip the Kapoto pharmacy and to contribute towards an EPM-trained doctor's salary for two years (doc. 46). The **Manitsaua Foundation**, established by Kamal Ben Jelloun, a wealthy New-York based Moroccan, is linked to the Kuikuru. He appears to have promised much (including a pharmacy - see #120) but delivered little except a fine 2-way radio (see #161).

296. Finally we should briefly mention the **Body Shop** who have an ambitious FUNAI-contracted health project amongst the Kayapó living to the north of the PIX in Pará. With backing from the World Bank and FIOCRUZ, the project has already

built a hospital in Redenção and has another base in Altamira. Kapoto village, at the extreme north of the PIX, does not fall within the Body Shop's orbit and is remote from the EPM's operational centre in Diauarum We were unable to visit the Lower PIX area but understand that, despite an EPM-trained IHA and new pharmacy, Kapoto's interstitial status affects health care. It is accessible only by air and FUNAI is unable to fund the long and expensive flights to Guarantá.

C.1.4. Missionaries

297 There is much missionary pressure to gain access to the PIX, an area traditionally closed to missionary activity. Health and education provide obvious covers and entrées. Between 1987-9 MICEB (Missão Cristã Evangélica do Brasil) had a missionary couple working in Waurá village as school teacher and nurse; they were later transferred to the Panará. [20]

298. Dr. Armando Piva's missionary connections are known to both the EPM and Indian leaders in the Upper PIX. Armando Piva is an ex-EPM student who was not permitted to work in their program. Instead, he worked at Pavurú for 1 year till July 1994 'on a voluntary basis', moving to PIL soon after the EPM pulled out. He was nominated to his present position in FUNAI despite Douglas Rodrigues' official complaint to them concerning his missionary affiliations

C.1.5. Brasilia University Hospital

299. Although UnB Hospital had a role in the original proposal, it is neither a close regional hospital centre with an attached Indian House – like Goiania – nor a national centre specialising in Indian-related medicine – like the EPM. UnB has played no significant medical role in the PIX.

C.1.6 Conclusion

300. Our terms of reference specifically ask that we look into the issue of inter-institutional co-operation. Inter-institutional co-operation would certainly have been desirable and it is reasonable to ask how much of this has occurred in practice. We do not think EPM can be faulted for having failed to meet an objective which was already beyond their control when the project began. Our information indicates that FMV-RFFI agreed to fund the EPM knowing there were no contractual obligations underpinning an integrated program and we understand that certain members of the FMV board were unhappy with this arrangement and foresaw potential difficulties.

301. EPM lacked the sanctions necessary to enforce co-operation and others appear not to have wanted it. The factional tendencies of PIX Indians, especially those of the Upper Xingú, mirror and interact with those of the various agencies concerned with health care in the PIX. These agencies have different policies, aims and methods and are not above exploiting local political tensions to compete for power and influence over the Indians. This was one factor in EPM's failure to establish the program on a firm footing in the Upper PIX.

302. Confusion between FUNAI and FNS means that EPM has not yet managed to renew it's contract with FUNAI. Roberto Baruzzi. suggests that co-ordination may become more effective when FNS establishes DSEIs which will bring FNS, FUNAI,

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[20] Povos Indígenas no Brasil 1987 / 88 / 89 / 90, Aconteceu Especial no. 18, 1991: 475

Universities, NGOs and Indians under a single umbrella organisation and require a contract between EPM, FNS and Indian representatives.

C.2. THE ROLE OF THE RAIN FOREST FOUNDATION: RELATION WITH THE SÃO PAULO MEDICAL SCHOOL

303. This section deals with the relationship between EPM-USMA and the RFFI complex just prior to, and during, the funding period. For a separate historical summary of each of these, see sections A.3.3, A.3.4.

C.2.1. Project Co-ordination: the Role of AVA

304. For reasons explained below (section C.3), the EPM early on established a direct line of communication with RFFI. One effect of this was to distance FMV/AVA from the EPM. Whilst Fernando Bittencourt and Helcio Souza were very well informed about EPM's activities in the field, both they and Laura Valero, AVA's Director, emphasised that AVA had a relatively minor role in the co-ordination and planning of the EPM project. This was also reflected in the relative lack of documentation on the UHCP available in AVA's Brasilia office - there appeared to be no files at all for the period 1993-4 when we visited.

305. Another effect was to diminish FMV/AVA's capacity to co-ordinate and integrate the various RFFI-sponsored projects – health, education, marketing, frontier-surveillance, motor repairs and transport – being developed in the PIX. As we have shown elsewhere in this report, these fields of activity interpenetrate: IHAs need literacy skills; IEAs attend IHA training courses; Indians patrolling the PIX boundaries help control pollution and the spread of disease but also expose themselves to malaria; etc.

306. Given these overlaps, it would have been advisable to have sought more integration between the different projects – most notably those in education and health – right from the start. In part this is the wisdom of hindsight. As AVA personnel explained, whilst there was some measure of integration early on, the need and potential for fuller integration only emerged through community response to the various initiatives. However, we also suspect that integration would have been easier if AVA had had a more prominent role in the health-care program.

C.2.2. The Rain Forest Foundation Complex

307. We are not certain of the relationship between the International Office of the RFFI and the Norwegian branch. While we understand that the founding of FMV/AVA as a Brazilian-registered charity may have been essential to the smooth-running of projects within Brazil, we do not understand the constitutional relation between RFFI and FMV/AVA. We do not know at which level different decisions were made about initiating, managing, financing and closing projects.

308. We do know that, at the outset of this particular project, Prof. Baruzzi was on the Board of FMV, President of the Board of Advisers to FMV and the *de facto* Project Director for EPM/USMA (see #61). Later, for two years, he was President of the Board of Directors of FMV. His practical experience, national reputation, and familiarity with political networks must have made him an obvious and effective candidate for FMV. However his position as key figure in both funding and fund-holding bodies was bound to raise problems. It probably did provide a 'direct line' between EPM and RFFI–New York leaving FMV/AVA–Brasilia poorly informed about some aspects of the project.

309. In our opinion the most serious problem was the inability of RFFI to set up a proper protocol of ongoing evaluation and constructive communication with the project. This was something which they could have requested but it was made more difficult because the Project Director was also President of the Board of FMV. We think that this dual role should have been avoided on principle but we do not think that the failings in evaluation and management of the project can necessarily be blamed on this structural fault. We do not think that RFFI foresaw the crucial importance of clearer targets and mechanisms for regular review and therefore these were lacking at the outset.

310. Section VIII of the original EPM UHCP document reads:

> 'Evaluation:
> An internal evaluation of the program is proposed every year and an external assessment every two and a half years according to the following criteria:
> 1. Elaboration of indicators for determining the results attained relative to the specific goals.
> 2. Identification and recording of variables that can contribute to understanding the degree of effectiveness of the proposed activities'.

Therefore the proposal for external evaluation came from EPM, was not reproduced in the official contract, and does not seem to have been pursued by RFFI.

311. In practice EPM did produce carefully written reports and internal evaluations. In addition to the prior samples we received, there were very many more at EPM because virtually every professional visitor to the Xingú seems to leave a full report of activities, complete with lists of cases treated or referred, etc. The reports we read are frequently overlapping in time and repetitive in content and there are gaps in the time covered, nevertheless they are very informative about many aspects of the project. Reports and assessments from the project tended to discuss the changing political context and to concentrate on the volume of work done but not the set-backs, disappointments or changes of direction due to local forces outside their control.

312. There is no evidence of an external evaluation. There is a short report by Carmen Junqueira discussing some socio-political aspects of the project from an anthropological perspective but the general work of the project is neither analysed nor critically appraised.

313. The problem with the reports and internal assessments can be illustrated by the following:- in spite of our prior reading, when we arrtived in Brazil, we were totally surprised by the extent to which regional factionalism had affected the project and had no knowledge of the history of this over the 5-year program. How could this have happened? We think there are various explanations:

- –the 'indicators' were not drawn from the proposal itself nor were they clearly described before the funding period;
- – the EPM did not feel able to report frankly on the difficulties it encountered;
- – there was no satisfactory external evaluation.

314. Both EPM's proposal and our terms of reference stress development of indicators but, as we discussed with Douglas Rodrigues and Roberto Baruzzi, objective, quantifiable health indicators are difficult to isolate. Demographic statistics and morbidity statistics are altered by many factors besides health-care activities (increased health work can even make disease-trends look worse via improved case finding and diagnosis). Comprehensive TB and malaria monitoring systems might have given some evidence of the efficiency of EPM's program if they had been achieved and we can assume that the vaccination program was efficient in helping to reverse population decline but hard proof is lacking. If evaluations of the outcomes of health-care are notoriously difficult in a standardised, integrated national health

service, such as we have in the UK, how much more difficult must they be in the conditions of the Xingú ?

315. We suggest that, instead of hoping for 'indicators' to emerge, analysis of the proposal itself should have allowed EPM and RFFI to jointly develop clearly defined short-term aims (for a year) and longer term aims (for the remaining duration of the project). These aims need not necessarily have been measurable in figures but they should have been stated in terms more closely related to the operation of the program. They could have included clearer details on aspects of staffing, time spent in the field, supervision schedules, practical operation of the IHA system, ways of minimising expensive referrals, methods of economising on travel, specific plans for capital development, etc. To give an example: in the discussion of IHAs, their geographical spread, competence in different tasks, degree of training, motivation, etc. are all important factors which should be amenable to discussion and evaluation and should indicate how well the program is working in a way which mere numbers of agents could not possibly do.

316. At evaluation-time, whether this is internal or external, the actual achievements and development within the project can be compared with the aims and the reasons for over- or under-achievement can be analysed. The point is not to criticise failure and praise success, but for both parties to understand the dynamics of the project in order to allow realistic and constructive future planning. This breakdown into piecemeal goals is the only way to maximise the chances of meeting the overall aims of the project such as 'improved health care' or 'Indian self-determination'. We think that projects must be expected to have strong and weak areas and to meet unexpected obstacles and that a funding agency has an obligation to make it possible to discuss these in the interests of effective co-operation.

317. We think that definition of aims and evaluation are particularly important in fixed-term funding and that there should have been discussion of exactly what would be achieved during the funding period and of how the project would carry on afterwards. Although EPM staff have been active in lobbying for improved government responsibility for Indian health-care, it would have been utterly unrealistic to assume that they could 'make' FNS and/or FUNAI take their project forward.

318. We think that a failure to define aims and to keep up an evaluation schedule resulted in a large amount of funding on one side and an ambitious, integrated program on the other but with no mechanism for deciding precisely how the two were articulated together. This was likely to breed dissatisfaction on both sides. The funders were bound to wonder whether they were getting 'value for money' and the project staff were bound to think that the difficulties they were working under were not appreciated.

C.2.3. The Accounts

319. These should have been one of the main tools for matching performance to aims but we simply did not see the type of data which would have allowed us to analyse spending patterns. The budgets produced in UHCP seem to have represented notional financial contributions from EPM administration, FUNAI, SUCAM and FIOCRUZ with a year's proposed budged for the program itself. We have seen no more financial statements of any type except the multi-year budget for PRODEAGRO and the detailed account sheets covering the project period. These came to an abrupt end in Dec. 1994.

320. The largest problem with any financial analysis of this program is the difficulty in knowing which parts of the program were financed by RFFI at any one time. This should have been clearly stated. The W. K. Kellogg Foundation was co-funding and provided a Toyota. From Roberto Baruzzi, we gathered that, over the years, there had been many sources of funding for bits of the project but we are not sure whether there were others besides Kellogg, Passian and, latterly, UNDP and PRODEAGRO, during the funding period. The contributions of the EPM administration and of FUNAI also need setting out clearly. We know, for instance, that some salaries were paid directly by EPM administration. We also know that FUNAI was supposed to pay for transport and keep of Indians referred out of the Xingú for specialised health care but that EPM was sometimes left with the bill.

321. We think that an analysis of the multi-funding of the project work is especially pertinent given the five-year span of the RFFI contribution.

322. As is probably inevitable, the format changed during the accounting period, but there were worse confounding factors:

- the control over the project budget was originally FMV 40% / EPM/USMA 60%.
  It later changed to.....FMV 20% / EPM/USMA 80%
  and then to ..... FMV 0% / EPM/USMA 100%

- we are not sure of the exact dates and, although we were told that the FMV percentage was used to cover flights and benefits for Indian patients, sometimes these items seemed to be paid by EPM.

- inflation and the change of Brazilian currency to the Real complicate interpretation

- Christian names and surnames are used at random and items are often described indiscriminately as 'travel'.

- there are some records of advances from RFFI but many of these seem to be missing.

- we asked AVA for a summary of the sums of money paid to EPM/USMA over the project period with an example of the spending made from the FMV percentage of the budget for any one month but did not receive either.

A sheet of accounts is included (appendix 6) to illustrate the difficulties.
In summary: we could not analyse the accounts.

323. This said, we have no evidence of money being wrongly spent and the arrangements we witnessed for EPM staff travel, their subsistence in the Xingú and their working conditions in São Paulo were all basic rather than luxurious.

324. In order to reach a better understanding of the cost of the project, potential for savings and options for redefining the services offered, we would have needed regular budget proposals and summarised accounts divided into spending categories which reflect the way in which the project operates. For instance, we would have liked to see the names of those employed by, or contributing to, the project, their dates of employment and roles together with linked salaries and expenses. We would also have liked to see amounts spent on travel broken down in such a way as to answer questions about the number of flights necessary, options for overland travel, etc.

325. We think that a dialogue about the way the money was or would be spent should have occurred between RFFI and EPM and should have accompanied each

year's retrospective assessment and forward proposal. Assessing priorities should have been part of this dialogue. If certain parts of the project were deemed to be too expensive, then these should have been costed and their importance to the overall project should have been assessed.

326. We are aware that planning of activities and associated economic planning were constantly sabotaged by the changing political and economic situation and especially by the contributions of FUNAI. Financial planning and budgeting under these conditions is certainly difficult; however such difficulties are informative in themselves.

D COMMENTS, CONCLUSIONS AND RECOMMENDATIONS

D.1. CONCLUSIONS

We begin by answering the terms of reference:

327. Overall the structure of the program was appropriate for its objectives and it was successfully implemented. Although it did not achieve even coverage of the PIX nor did it quite manage to maintain a permanent professional staff at the Indian Posts, there are understandable reasons for these shortfalls.

328. Is the program appropriate for the PIX health situation ?

Yes, there has been a thorough effort to assess the health situation and respond appropriately. TB, malaria and sexually-transmitted diseases rightly have a high profile and training has included consciousness-raising about the threat of introduced infection. EPM are beginning to look at pollution (mercury poisoning) and prepare for the effects of changing diet and lifestyle on health. There is a good balance between preventative medicine and interventional primary care.

329. How could the program's effects on health be measured ?

It is not realistic to seek definitive quantitative indicators' of the impact of the health program because so many variables outside the control of the program are involved. Nevertheless, population growth, incidence of cases, successful response to epidemics, etc. all point to a positive impact on health.

330. Is the IHA system working ?

Yes. The training programs have been an unqualified success and the IHA/IDHA system is functioning well with an admirable level of competence and motivation. Morale is good although resentment about pay continues to fester. The principle defect is coverage, with the Upper PIX having fewer IHAs less well integrated into the system and the Middle PIX being the best served.

331. What success has there been in attaining Indian self-administration ?

Goals were not clearly defined at the outset. Clearly a system which ultimately depends on doctors and nurses with extensive hospital training in Western medicine cannot be administered and delivered by PIX Indians in its entirety. Nevertheless, IHAs and IDHAs have a more autonomous role than originally planned and support their less-experienced colleagues. There is an impressive level of Indian participation in the operation of the program. EPM are responsive to Indian priorities, have taken an active part in promoting local meetings and have encouraged Indians to promote their rights to land and health-care at local and national levels.

332. Has there been a balance between Western medicine and traditional health practices ?

Although this is frequently stressed in health project work, insistence on 'supporting traditional health practices' is too often a knee-jerk reaction of any NGO working in this field. We agree that this is an important issue but have observed that the motives for this insistence and the practical issues involved are rarely given serious critical examination. In the EPM / PIX case it has been a matter of successfully avoiding conflict rather than achieving any integration. The two systems coexist in a

surprisingly harmonious way. Integration would be difficult given that IHAs are young men while shamanism and herbal medicine are in the hands of elders. Herbal medicine is most amenable to integration with Western medicine but EPM has not had the facilities to make an adequate study of practices nor an evaluation of their usefulness.

333. What was the socio-political impact of the program ?

The program has, in general, been very well-received by PIX Indians. Latterly, the increasing involvement of non-Indian interest groups in the factional politics of the PIX populations has made EPM's work increasingly difficult in the Upper PIX and, to a lesser extent, in the Lower PIX. It is worth repeating Carmen Junqueira's point (doc. 17) that all these non-Indian elements, including the EPM, are actually part of the socio-political situation in the contemporary PIX. PIX Indians now have 30 years experience under the benevolent patronage of non-Indians and substantial contact with the commercial world in Brazil and beyond. Any institution working in the area will encounter problems generated by this experience.

334. Was the program cost-effective ?

The bottom line is the expense of this project (in excess of $500,000) and the question of value for money. To analyse this, we would need data about the cost of other contemporary health programs amongst Amazonian Indians in Brazil and the budgets would have to be assessed in relation to the respective aims of the programs. We regret that there was no discussion of priorities, no costing of separate elements of the program and no budgetary analysis in appropriate spending categories. Nor was it clear how much, or which parts, of the project were funded by RFFI. Without this information, it is impossible to estimate whether equally good services could have been provided more economically.

335. Uncomfortable questions arise such as: is the PIX receiving preferential treatment among Indian communities ? Has the creation of a comprehensive service created expectations which are simply too expensive for a rural area of Brazil ? Should the referral rate to hospitals outside the park be reduced in order to put more resources into basic primary health care measures? In answering this kind of question, there are an equal number of opposing factors to be considered. For instance, the PIX project is valuable both as a training ground and as a good example to other projects; besides, reducing services to one area does not necessarily mean better services for another. Perhaps we must accept that each individual or NGO has both a right and need to specialise and neither EPM nor RFFI could be expected to take on the problem of Indian health wholesale. Ultimately, the answer to this question depends on the goals of the two institutions which should have been clearly stated at the outset.

336. Was the administration of the program satisfactory ?

Yes, given the limited resources. We were impressed by the thoroughness and efficiency with which a very limited EPM staff achieved an enormous amount of very varied work. A capable professional secretary/administrator would have been a valuable asset.

337. Was there co-ordination of the different institutions involved ?

Not enough: there does not seem to have been sufficient political will to co-operate on the part of the various institutions. Official responsibilities shifted between FUNAI and FNS throughout the funding period. The co-ordination was not backed by contracts, except in the case of FUNAI, which has been unable to meet many of its

obligations. We do not imagine that Roberto Baruzzi ever thought he could enforce his position as inter-institutional co-ordinator. Rather he had to gamble on the best way to secure the maximal useful input into Xingú health from statutory bodies. It would be unfair to criticise EPM for deficiencies beyond their control.

338. Was this NGO initiative a stimulus, complement or substitute for state responsibility ?

There is much debate about NGOs 'doing the work of the state' and it is impossible to know what would have happened in the EPMs project had not been funded by RFFI. It is important to remember that, in the original proposal, one of EPM's principle incentives was the deprivation left by FUNAI's reduction in services. Also, the project has operated in a context of constantly shifting government departmental responsibilities. EPM has been, and still is, pursuing a parallel drive towards national political solutions. We think that the project may have stimulated some state responsibility and complemented other FUNAI and FNS inputs. We do not think it has prevented state activity.

339. We understand the current trend amongst NGOs against substitution of state functions but we wonder whether this will be sustainable in the long run. It is salutary to remember that Médecins du Monde have a large primary care clinic in central Paris.

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As mentioned in the introduction , we have extended our evaluation to include the role of RFFI and associates.

340. Was the administration of the project by RFFI satisfactory ?

The funding of the project was an undoubted success but there were problems with the funder / fund-holder relationship which, in retrospect, might have been avoided. With Roberto Baruzzi's key role in FMV, there was no clearly-defined relationship between funders and funded at the outset of the project. There were no clear interim or final goals for the project and no detailed protocols for reporting and evaluating or for presenting accounts and budgets. Above all, the evaluations stipulated in the contract (doc. 45 2.b) should have been carried out more systematically. (In accordance with the original proposal [doc. 1] the contract itself should also have made specific reference to external evaluation). Had these evaluations occurred, we suspect that critical review would have stimulated creative dialogue. Sharing an understanding of the difficulties encountered by the project should have helped both sides towards constructive planning.

D.2. RECOMMENDATIONS

341. • RFFI establishes a protocol for setting up projects which includes a clear statement of the reasons for the funding decision and the short and long-term goals. Budgeting, reporting and regular review procedures should be set out. The format for these should be designed to yield maximum information about the operation of the project in terms of the predetermined goals. We hope this will allow project teams to discuss their difficulties in an open and constructive manner and help both parties understand the sources of any problems and seek either solutions or redefinition of aims.

342. • Before funding a project, RFFI does careful research on other similar projects. This should result in an analysis of the relative merits, costs, etc. of the project and how it fits in to a wider regional / national context. It should also facilitate frank discussion of the likely difficulties with the project team and establish a closer partnership from the outset.

D.3. THE FUTURE

343. Our role in evaluating a project after funding had ceased was, in some senses, a melancholy one. The staff are thinking ahead creatively but planning in the face of so many political and financial uncertainties is far from easy.

344. On the negative side is the continuing freeze on FUNAI staffing and the stand-off between FUNAI and the FNS with no definite prospect of the new DSEIs being established and funded in the Mato Grosso area. The antagonistic attitude of Armando Piva towards EPM is likely to cause friction between FUNAI and EPM and possibly to intensify regional factionalism. Funding is bound to be a continual headache for EPM.

345. On the positive side, EPM already has some future funding from PRODEAGRO, a World Bank aid project for the state of Mato Grosso, until 1997 and is negotiating some money for salaries (excluded in PRODEAGRO funding) from the United Nations Development Program. There are hopes that Marco Santilli will be an effective Director of FUNAI in spite of the financial squeeze.

346. EPM has considered redefining its role in order to operate with fewer staff and yet to maximise its most valuable resource - experience. Everyone agreed it was impossible to supply professionals to provide local health care in the PIX without a source of salaries. One possibility mentioned by Sofía Mendonça was to concentrate on human resources, specialising in the training of health agents, doctors and nurses. Douglas Rodrigues is exploring the possibility of more advanced training for IHAs outside the PIX by negotiating with the Mato Grosso Health and Education authorities to start an Indian auxiliary nursing course which does not require the usual four years of first Grade education.

347. We know that Roberto Baruzzi and the other staff members are used to changes in fortune and we suspect that they will adapt to whatever happens. Our visit and evaluation was a glimpse at a short episode in the long history of EPM work in the Xingú. We have every confidence that the project will continue to be successful and wish it the best. We have no doubt that RFFI support of the EPM program has been successful and worthwhile. Xingú Indians attribute their thriving populations to EPM health-care and, in fact, numbers have doubled over the past ten years. RFFI are lucky to have backed a winner and we are grateful to have had the chance to evaluate one of the pioneering projects of its kind.

CHRISTINE & STEPHEN HUGH-JONES
Cambridge Jan. 1996

Postscript (May 1996) The future has already become the past. Marco Santilli has ceased to be Director of FUNAI and Roberto Baruzzi tells us that Armando Piva no longer holds his position in the PIX administration.

APPENDICES

1. LIST OF ACRONYMS AND GLOSSARY

Acronyms

AI	Area Indígena
AVA	Assocação Vida e Ambiente
CEDI	Centro Ecumênico de Documentação e Informação
DSEI	Distrito Sanitário Especial Indígena
EPM	Escola Paulista de Medicina
FIOCRUZ	Fundação Oswaldo Cruz
FMV	Fundação Mata Virgem
FNS	Fundação Nacional do Saúde
FUNAI	Fundação Nacional do Indio
IAMA	Instituto de Antropoligía e Meio Ambiente
IDHA	Indian Dental Health Agent ('health monitor')
IEA	Indian Education Agent
IHA	Indian Health Agent ('health monitor')
RFFI	International Rain Forest Foundation
ISA	Instituto Socio-Ambiental
MDM	Medecins du Monde
NRFF	Norwegian Rain Forest Foundation
PI	Posto Indigena
PID	Posto Indigena Diauarum - 'Diauarum'
PIL	Posto Indigena Leonardo Villas Bôas - 'Posto Leonardo'
PIP	Posto Indigena Pavurú - 'Pavurú'
PIX	Parque Indigena do Xingú
PRODEAGRO	Project of Agro-Environmental Development, Mato Grosso
SPDM	Sociedade Paulista para o Desenvolvimento da Medicina
STD	Sexually transmitted disease
SUCAM	Superintendencia da Campanha da Saúde; now under FNS
TBA	Traditional birth attendant
UHCP	Unified Health Care Program
UnB	University of Brasilia
USMA	Social and Environmental Unit

Glossary

Antacid	Simple remedy for acid indigestion
Autoclave	Apparatus for sterilisation using heat
Kuarup	Inter-village mortuary ritual
Otoscope	Instrument for looking in ears
Roça	Swidden, field, cultivation site
Sphygmomanometer	Apparatus to measure blood pressure

2. DOCUMENTS CONSULTED

A.. The Proposal

1. FMV	'Unified health care program in Xingú Indian park', São Paulo, Sept. 1990
2. EPM	'Health care program proposal', São Paulo, 1990
3. NRFF	'Comments and questions from the NRFF concerning "Unified health care program in Xingú Indian park"', nd.
4. EPM	'Health and Environmental Unit Unified health care program in Xingú Indian park - response to NRFF comments and criticisms', 11/01/91
5. Douglas Rodrigues	Letter to Lars Løvold, 2/03/94
6. Larry Cox	Letter to Douglas Rodrigues, 14/09/94
7. Douglas Rodrigues	Letter to Larry Cox, 21/09/94
8. Douglas Rodrigues	Letter to Lars Løvold, 01/11/94
9. Douglas Rodrigues	Letter to Lars Løvold, 09/11/94
10. Larry Cox	Letter to Douglas Rodrigues, 16/12/94

B. Reports

11. Eduardo Biral	'Relatório sobre o atendimento odontologico na aldeia do Kayapó e no PI Pavurú entre 8 de Fevereiro e 5 de Março de 1991'
12. EPM	'Relatório de atividades do programa de saúde para o Parque Indígena do Xingú no periodo de 16/06/91 a 01/08/91'
13. no name (nn.)	'Relatório do curso de formação de monitores de saúde do PIX - julho/91 - PI Diauarum - Modulo 1'
14. Min. da Saúde / FNS	'Relatório sobre surto de malária no Parque Indígena do Xingú.' Brasilia, 12 Sept. 1991.
15. FMV/EPM	'First year report: health care project for indigenous communities in Xingú Indigenous Park'
16. EPM	'Programa de saúde da EPM/FMV/RFF. Relatório de atividades de 31-08-91 a 29-02.92'
17. C. Junqueira	'Xingú indigenous park - July 6 - August 1, 1992. A report'
18. EPM	'Assessment of the work of the health care project for the communities of the Xingú Indigenous Park (PIX) by the health and environmental unit of the EPM. - EPM/FMV agreement - Sept. 1991 - Aug. 1992'
29. EPM	'EPM/RFFI/FMV health care program of in the Xingú Indigenous Park. Feb./Mar. 1993'
20. EPM/R. Baruzzi	'Health program of EPM/RFFI/FMV in the Xingú Indigenous Park'. Feb. 16.1993
21. EPM/S. Mendonça	'Relatório do curso de monitores PIX/julho de 1993'

22. EPM — 'Evaluation of the activities of the health care project for the communities of the Xingú Indigenous Park (PIX) by the health and environmental unit of the EPM. EPM/FMV accord - Sept. 1992 - Jan. 1994'

23. EPM/A. Detogni — 'Programa de saúde bucal - PIX. USMA/EPM. Relatório de atividades 1994'

24. nn. — 'Relatório de atividades. periodo: 19/03 - 17/05/94. Local: PI Diauarum'

25. nn. — 'Relatório de atividades do programa de formação de agentes indígenas de saúde no Parque Indígena do Xingú (PIX) - 1994'

26. EPM — Agentes indígenas que participaram do 4º curso modular no PI Diauarum/julho-94

27. Dr. Betina Gracjer — 'Relatório de. periodo 28/03 a 10/03 (sic). Local de permanencia: PI Leonardo'

28. nn. — 'Relatório de viagem da equipe de vacinação da USMA/EPM ao Parque Indígena do Xingú'

29. Marina Machado — 'Relatório de atividades da USMA/EPM no Parque Indígena do Xingú (PIX) no periodo junho de 1994 a março de 1995'

30. nn. — 'Anexo 1. Relatório sobre o 4º curso de formação de monitores Indígenas de saúde Parque Indígena do Xingú PI Diauarum / 15 a 29 de julho de 1994'

31. nn. — 'Relatório sobre o 5o. curso modular de formação dos agentes indígenas de saúde do Parque Indígena do Xingú'

32. M. Mindlin Lafer. — 'Relatório de viagem ao Parque Indígena do Xingú, julho/1995'

C. Teaching Materials / Newsletters

33. EPM — '2º curso de antropología médica da EPM 13 á 30/08/1990'

34. EPM — '3º curso de antropología médica da EPM 12 á 29/08/1991'

35. EPM — 'Manual para monitores de saúde do Parque Indígena do Xingú, vol. 1 - março/93. "Doenças diarréicas"'

36. EPM — 'Manual para monitores de saúde Parque Indígena do Xingú, vol. 2 - fev/95. "Doenças respiratórias"'

37, 38, 39. IHAs — 'Saúde no Xingú'. julho 1994, setembro 1994, julho 1995

D. National Meetings

40. II Conferência nacional de saúde para os povos indígenas. 'Relatório final'. Luziânia, 25 a 27 outubro de 1993

41. Oficina de trabalho — 'Capacitação de agentes indígenas de saúde. Sistematização de experiências'. Manaus, 24 a 28 abril de 1995

E. Contracts

42. EPM/FUNAI — Convenio no. (sic)/90 que, entre si celebram a Fundação Nacional do Índio e a EPM, objetivando assistir à população indígena da administração regional do Xingú, na forma abaixo

43. FUNAI — Relatório sobre a reunião de saúde no PQIN. jan. 1992

44. EPM/FMV — Convênio no. (sic)/91 que, entre si celebram Fundação Mata Virgem e a Sociedade Paulista para o Desenvolvimento da Medicina, com a interveniência da USMA do EPM, objetivando assistir à população indígena do Parque Indígena do Xingú, na forma abaixo

44. EPM/FMV — Adendo ao convênio nª 001 celebrado entre a Fundação Mata Virgem e a Sociedade Paulista para o Desenvolvimento da Medicina, objetivando assistir à população indígena do Parque Indígena do Xingú, na forma abaixo. (June 1991)

45. FMV/ Indianerhilfswerk. Rudolf Passian. Convênio no. 001 que, entre si celebram a Fundação Mata Virgem e a Indianerhilfswerk Rudolf Passian objetivando assistir à população indígena do Parque Indígena do Xingú, na forma abaixo. (July 1993)

46. EPM/FUNAI — Convênio no. (sic)/95 que, entre si celebram a Fundação Nacional do Índio e a EPM, objetivando assistir à população indígena da administração regional do Xingú, na forma abaixo

F. Accounts

47. EPM — Sundry accounts sent to RFFI and AVA - these are **not** listed in detail.

3. INDIGENOUS GROUPS OF THE PARQUE DO XINGÚ
(From Povos Indígenas do Brasil 1987/88/89/90 - CEDI)

location	group	language	population
AI Kapoto	Kayapó Metuktire (Txucarramãe)	Gê	nd
AI Jarina	"	Gê	nd
AI Jarina rt. bank	"	Gê	nd
PQ Xingú	Aweti	Tupi	80
	Ipeng (Txicão)	Carib	146
	Juruna	Isolated	132
	Kayapó Metuktire (Txucarramãe)	Gê	449
	Kalapalo	Carib	249
	Kamayurá	Tupi	279
	Kayabí	Tupi	526
	Kuikuru	Carib	277
	Matipú/Nahukwá	Carib	102
	Mehináku	Arawak	121
	Panará (Kreen Akrore)	Gê	122
	Suyá	Gê	165
	Tapayuna (New Suyá)	Gê	48
	Trumai	Isolated	78
	Waurá	Arawak	187
	Yawalapiti	Arawak	140
			3101

APPENDIX 4 EVALUATION TERMS OF REFERENCE

TERMS OF REFERENCE FOR THE EVALUATION OF THE HEALTH PROGRAM OF THE PAULISTA MEDICAL SCHOOL IN THE XINGU INDIGENOUS PARK

A) THE PROGRAM

The Paulista Medical School (EPM) has been involved in medical work in the Xingú Indigenous Park (PIX) since the sixties. From September 1991 till March 1995, this work has been supported financially by the Fundaçao Mata Virgem (FMV) and the Rainforest Foundation International (RFFI). It is the work done in this period which is to be evaluated.

The stated **general objectives** of the program are twofold (from FMV document entitled "Unified Health Care Progran i Xingú Indian Park", dated September 1990):

> a) Set up an inter-institutional model for action corresponding to the new PIX health reality concerning the changes that have been taking place in the region which are responsible for a new picture of contact and contagion.
>
> b) Direct all efforts towards developing self-administration in the Indian populations, both by teaching Western medical practices and by stimulating traditional behavior that promotes health.

The more **specific objectives** include the following: Setting up a health care delivery model which improves quality of care at the various levels; intensify control programs for common diseases; install a health information system to monitor health conditions, detect changes, and adopt preventive and intervention measures when necessary; train local Indian health agents and provide courses in Health and Medical Anthropology to professionals involved in the program.

The proposed **health care model** includes three levels: village level, where Indian health monitors will be responsible for less complex health activities with regular visits from nurses, dentists and physicians; the level of Indian posts with more advanced infrastructure and permanent presence of professional staff (nurses, physicians and dentists); and finally the level of facilities outside PIX, referring to hospitals of São Paulo and Brasília.

Concretely, the **activities** of the program comprise investments in infrastructure (equipment for Indian Posts, and establishment of village pharmacies); training programs (of Indian health monitors and courses for professional staff); basic care activities at the three levels specified above; and specific health programs (immunization program, control of malaria, tuberculosis and gynecological cancer, ophtalmology, oral health).

In order to realize these goals, the program aims at coordinating all the institutions implementing health activities in the PIX. These include the EPM, FUNAI and SUCAM (and possibly also the Ministry of Health, COSAI and FIOCRUZ).

B) QUESTIONS TO BE LOOKED INTO

The consultants will evaluate to what extent the activities being implemented and the three-levelled health-care model are appropriate for reaching the objectives of the program. Particular emphasis should be placed on the following questions and problem areas:

- To what extent is the health program appropriate for the particular health/disease situation of the PIX? Is it possible to evaluate the **effects of the program on the health situation**? The basic care activities and the specific health programs should be evaluated individually.
  (The original proposal aims at elaborating "indicators for determining the results attained relative to the specific goals", and "variables that can contribute to understanding the degree of effectiveness of the proposed activities". To the extent that this has been done, the consultants should evaluate these indicators and variables. If it has not been done, it would be very useful if the evaluation team could contribute to the identification of such indicators.)

- To what extent can the program be said to be progressing on the road towards the goal of **self-administration**?
  Is relevant health knowledge being disseminated to the population at large and practices adjusted correspondingly?
  How is the system of **health monitors** functioning? What tasks are the monitors doing in the villages, and how is their performance? Is the training program adequate? Do they receive sufficient support for their work in the villages? Are they being compensated for their work in any way? Is it possible to identify particular obstacles to the efficient functioning of this component?

- Particular attention should be paid to the extent to which the program manages to strike a balance between creating a Western model of health care and promoting/including **traditional health practices**. Is the latter objective being achieved? Does the introduction of a new role - that of health monitor - have consequences for the status of practitioners of traditional medicine/shamans?

- The team should not only look at the impact of the program on the health situation, but to the extent that this is feasible within the scope of the field work, also look at the effects for the **total social situation**.

- The program should also be analyzed in terms of **cost efficiency**. Is

there a reasonable relationship between financial input to the program and results obtained? In this respect, particular attention should be paid to the high cost budget items of transport and salaries, and to the localization of third level health services as far away as in São Paulo.

- The evaluation should also cover **institutional aspects** of the program. Is the EPM program being efficiently administrated?
How is the coordination of the different institutions involved in health activities? Does the division of labor between the involved institutions ensure a rational use of resources?
What is the effect of an NGO assuming the responsibility of health services? Does it simply allow the government to cut down on its own expenditure on health programs for Indians? Or is a functioning health program an incitement for the government to assume the responsibility? Or is it not possible to see any effect one way or another? Could the FMV/EPM have done more to make the government assume the economic responsibility for the program?

C) METHODOLOGY

The evaluation shall be conducted in Brazil, partly in São Paulo and Brasília, and partly in the Xingu Indigenous Park. In São Paulo the team will consult all relevant documentation at the EPM pertaining to the project in the period mentioned, such as plans, reports, statistics, individual health records, internal evaluations, budgets, accounts, etc., as well as inspecting the medical and other relevant facilities at the specialized health clinic. The team will also interview project participants at various levels of responsibility and function, and will also, if feasible, interview representatives of cooperating or other relevant institutions. In Brasília the team will interview representatives from FUNAI, including from the Regional Administration of the PIX, and from other relevant institutions (like the Fundação Nacional de Saúde) as the team deems appropriate.

The team shall spend a mimimum of seven working-days in the Xingu Indigenous Park, during which time the team shall analyze the problems posed in point B) in at least five different villages, including both the Alto and the Médio/Baixo Xingu. The team shall take care to include all levels of project involvement in its work, from the activities of full-time project personell to segments of the population who might be unaffected by the project.

D) COMPOSITION OF EVALUATION TEAM

The team shall be composed of the UK citizens Christine Hugh-Jones, PH.D. in Social Anthropology and practising medical doctor, and Stephen Hugh-Jones, Ph.D. in Social Anthropology.

E) TIME FRAME, REPORTING DEADLINES

The evaluation will take place in Brazil between September 3 and September 25 1995. The team will spend at least five working days in São Paulo before going to the Xingu.

The results will be presented to the Rainforest Foundation International in a written report in English no later than October 30, 1995. At the same date accounts should be presented for expenses incurred (apart from per diems), including original receipts and, for air fare, also the counterfoil.

* * * * *

APPENDIX 5 Professional visits to PIX june 1994 to March 1995

3

A tabela 1 mostra a permanência de profissionais em campo de acordo com o mês e a categoria profissional e a tabela 2 refere-se especificamente ao sub-programa de saúde bucal. A tabela 3 mostra a morbidade observada nos atendimentos realizados no Posto Indígena Diauarum, no ano de 1994 e a tabela 4 mostra o total de atendimentos realizados em 1994, também no PI Diauarum.

Tabela 1. Profissionais de saúde ligados à USMA/EPM que permaneceram no PIX, por categoria, de junho de 1994 à março de 1995.

	Médico	Enfermeiro	Dentista	Total
junho	1	2	-	3
julho	4	3	1	8
agosto	1	2	2	5
setembro	1	1	2	5
outubro		2	-	2
novembro	1	2	-	3
dezembro/94	-	-	1	1
janeiro/95	2	2	-	4
fevereiro	1	2	-	3
março	-	2	-	2

Tabela 2. Principais atividades do sub-programa de saúde bucal no período de junho a novembro de 1994.

Atividade	Nº de dentes tratados	%
restaurações c/ amálgama	666	44
restaurações com resina composta	13	1
restaurações com ionômero de vidro	31	2
restaurações com IRM (intermediárias)	255	17
exodontias	283	19
selantes	253	17
outros	10	1

APPENDIX 6 Sample sheet from accounts

SPDM - Fundação Mata Virgem — FOLHA 1 — Fundação MATA VIRGEM

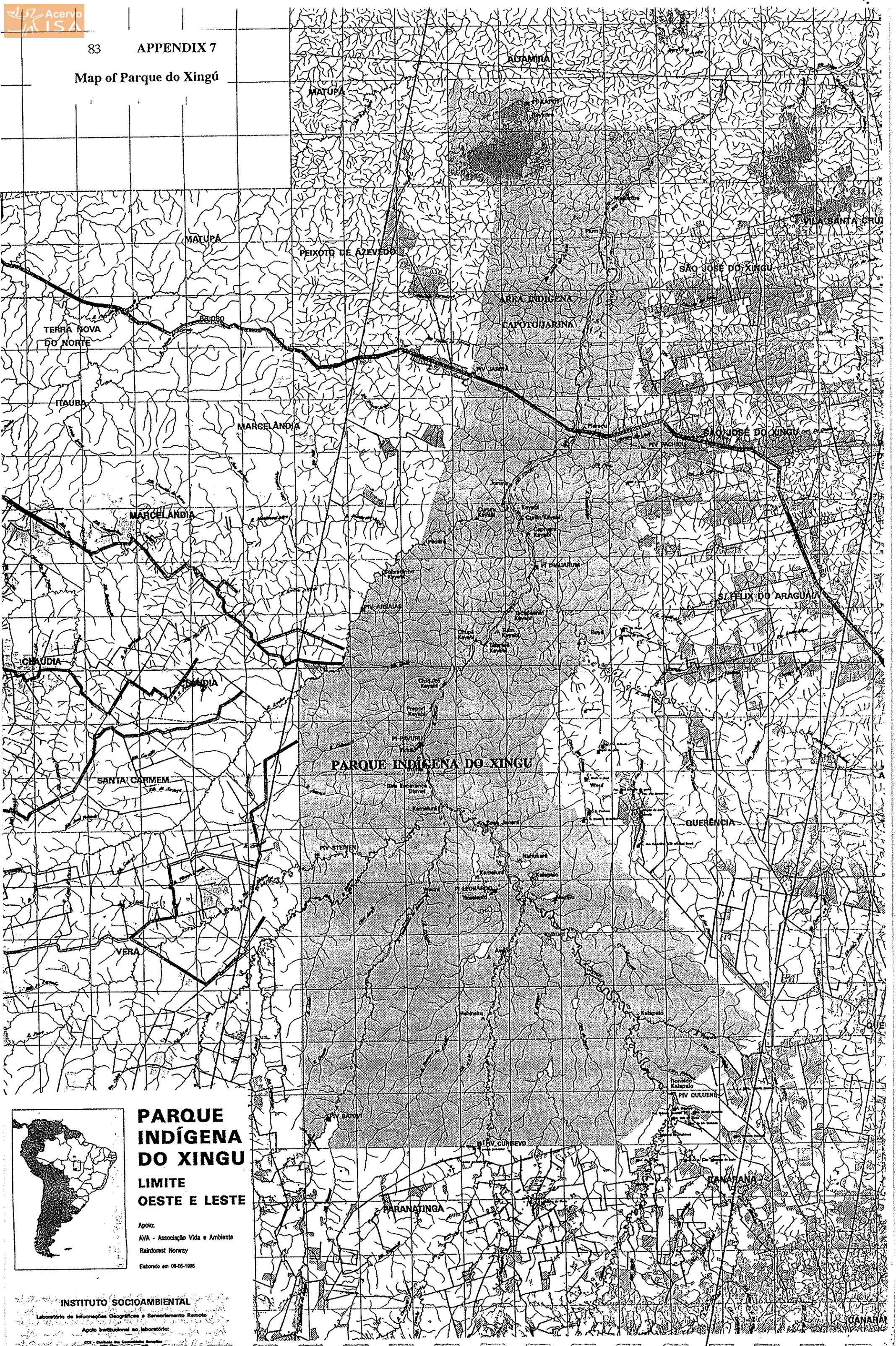
Contas do mês de NOVEMBRO de 1992 — C/C 9.251-7

DOC.No	DATA	DOCUMENTO/FAVORECIDO	CHEQUE	ENTRADA Cr$	SAIDA Cr$
1	outubr	Taxa bancária de emissão de extrato (débito direto em conta-corrente) - Banco do Brasil S.A.*			2.600,00
2	031192	Recibo de venda de produtos no 560819 (Cr$ 9.056,00) e Certificado de postagem de 03/11/92 (Cr$ 120.708,00) - Empresa Brasileira de Correios e Telégrafos	506142		129.764,00
3	041192	Bilhetes de passagens nos 87347 e 87348, cada um no valor de Cr$ 225.443,67 (Total = Cr$ 450.887,34) - Rápido Federal Viação Ltda.	506144**		450.000,00
4	051192	Recibo 26826 - SPDM/Hospital São Paulo (folha de pagamento de outubro/92 de Marina e Selma)	506143		8.351.734,14
5	051192	Recibo s/no, de 05/nov/92 - Penikaihan Juruna (ajuda de custo para despesas de viagem após alta médica do Hospital São Paulo)	506145		100.000,00
6	051192	Recibo 07 - Departamento de Medicina Preventiva da EPM (xerox de outubro)	506146		112.800,00
7	061192	NF 959449 - Drogaria Santos Dumont	506147		510.000,00
8	091192	Recibo s/no, de 09/nov/92 - Lagu's Náutica Ltda (conserto de motor de popa)	506148		9.000.000,00
9	091192	NF 96371 - Labtec Serviços Fotográficos Ltda.	506149		468.800,00
10	091192	NF 96757 - Dias Pastorinho S.A.Com.Ind.	506150		1.488.248,00
11	091192	NF 024768 - Toyobra S.A. Com.de Veículos	438904		1.506.841,23
12	101192	NF 45863 - Dental Gaúcho	438901		596.700,00
13	101192	Recibo de adiantamento s/no, de 10/novembro/92 - Douglas Antonio Rodrigues	438902		2.000.000,00
				---	---
A TRANSPORTAR				0,00	24.717.487,37

CONTINUA NA FOLHA 2

APPENDIX 7

Map of Parque do Xingú



PARQUE INDÍGENA DO XINGU

LIMITE OESTE E LESTE

Apoio:

AVA - Associação Vida e Ambiente

Rainforest Norway

Elaborado em 08-05-1995

INSTITUTO SOCIOAMBIENTAL

Laboratório de Informações Geográficas e Sensoriamento Remoto

Apoio Institucional ao laboratório:

TABLE 1 POPULATION GROWTH BY ETHNIC GROUP
(after R.Baruzzi: personal communication)

GROUP	1970	1979	1987	1994
METUKTIRE		220	398	556
JURUNA		70	101	175
PANARA		85	98	151
SUYA		130	199	208
KAYABI		290	477	603
IPENG/TXICAO		100	139	176
sub-total		895	1412	1869
TRUMAI	24	20	59	83
YAWALAPITI	47	100	147	165
KUIKURU	161	170	240	327
KALAPALO	85	165	229	311
AWETE	41	50	66	91
MEHINAKU	63	80	109	144
NAHUKWA	60	40	84	130
KAMAYURA	128	170	256	326
WAURA	95	110	166	218
sub-total	704	905	1356	1795
TOTAL		1800	2768	3664

TABLE 2 INDIAN AGENTS' ATTENDANCE AT TRAINING COURSES

GROUP	IHA	rôle	1st	2nd	3rd	4th	5th	Men
LOWER PIX								
Metuktire & Mekrãgnotire	Atoronquet	H/FUNAI			@	@	@	
	Bepbati	D						m
	Bepiore	H		@	@	@	@	
	Bepkaroti	D	@		@	@	@	m
	Bepkran	H				@		
	Bepte	D				@		m
	Beptoit	H	@	@		@		
	Kokodjoriti	H/EX		@		@	@	
	Mo-i	H/EX					@	
	Nhakapru	H/FUNAI	@	@	@	@	@	
	Nocre	H/EX					@	
	Oiti	H	@	@	@			
	Panoire	H				@		
	Pituiaru	H/FUNAI						m
	Txuacre	H			@			
MIDDLE PIX								
Juruna	Adjiha	E				@	@	
	Doriu	H		@	@	@	@	
	Dukare	D	@	@	@	@	@	m
	Djamamadi	D				@	@	
	Iamaradi	D						m
	Nakude	H	@	@				
	Paiawa	E					@	
	Pichanha	H/FUNAI	@	@	@	@	@	
	Tamariko	H/FUNAI	@	@	@	@	@	m
	Tarinu	E				@	@	
	Wayaya	H				@	@	
Panará	Kiampoprin	E					@	
	Kiompe	H		@	@	@		m
	Paturim	D			@	@	@	m
	Peranko	E				@	@	
	Sinku	D/E			@		@	m
	Socre	H				@	@	
	Sukiam	H	@	@	@	@	@	m
Suyá	Angro	E					@	
	Benti	H				@	@	m
	Kokuene	H		@				
	Koikoro	D			@	@	@	m
	Koiroro	H	@	@	@	@		
	Poinko	H	@	@	@	@	@	m
	Weteme	D	@	@		@	@	m
Kayabí	Aramut	D			@	@	@	m
	Arupaiup	H					@	
	Aturi	E		@	@	@	@	
	Awatat	E			@	@		
	Dipiari	D					@	m
	Gaindomberi	H		@	@			
	Inata	D				@		m
	Joao Mirawe	H/EX					@	
	Kunha-ete	H	@	@	@			
	Moiawa	H/SAL	@	@	@	@	@	
	Momot	H			@			
	Murici	D			@			m
	Paie	H	@					
	Preayup	H	@	@	@	@	@	
	Puram	D	@	@	@	@	@	
	Roberto	D/EX					@	
	Rose Kunha-ete	H/EX					@	
	Tarei	H	@	@	@	@		
	Tumai	H			@	@	@	
	Upiri	H			@			
	Yawe	H			@	@	@	
	Yawot	H/FUNAI		@	@	@	@	m
	Yefuka(1)	D/H	@	@	@	@	@	m
	Yefuka(2)	H					@	
	Ynamurap	D/H	@	@	@		@	
	Ynata	D					@	
	Yuamin	H		@	@	@	@	m
Ipeno/Txicão	Aigure	H	@	@	@	@		
	Korotowi	E				@	@	
	Maiua	E					@	
	Manaqu	D	@	@	@	@	@	m
	Napiku	H	@	@	@	@		
	Sampo	H	@	@	@	@	@	
	Yokore	E				@	@	
UPPER PIX								
Trumai	Koinu	H			@	@		
	Tiaiu	H			@	@		
	Yakairu	H			@	@		
	Yakuta	H			@	@		
Yawalipiti	Yunak	H			@			m
	Arautara	H/MDM						m
Kuikuru	Ibene	D/MDM	@	@		@	@	m
	Taliko	H/MDM	@		@			m
Kalapalo	Aru	H			@			
	Claudio	H			@			
	Diaua	H			@			
	Joi	H			@			
	Taliko	H			@			
Awete	Kuarau	H			@		@	
Mehináku	Kumaiu	H			@			
Nahukwa	Tafuraki	H			@		@	m
Kamayurá	Anuia	H/MDM	@	@			@	m
	Arutara	H		@	@			
	Koinu	D						m
	Japao						@	
	Marcelinho	H/E			@		@	
	Pablo	H/E			@		@	m
	Tauaba	H						m
Waurá	Yanahi	H/MDM	@	@	@	@		m

Key

H	IHA
D	IDHA
E	Indian education agent
MDM	Medecins du Monde
Ex	from outside PIX
FUNAI ...	FUNAI employee
Sai	employee of local authority
@	attended course
m	mentioned in reports

TABLE 3 TRAINING COURSES & ATTENDANCE OF DIFFERENT AGENTS

YEAR		SUBJECT	IHA	IDHA	IEdA	TOTAL
1991	1	DIARRHOEA: CHOLERA	20	8	0	28
1992	2	RESPIRATORY DISEASE: TB	27	7	1	63
1993	3	STDs/AIDS/DERMATOLOGY	44	11	2	57
1994	4	HYGEINE/MALARIA/TECHNIQUES	31	16	5	52
1995	5	REVISION	31	16	10	57

TABLE 4 ATTENDANCE AT COURSES BY GROUP AND REGION AS PERCENTAGE OF POPULATION

REGION	GROUP	1st	%	2nd	%	3rd	%	4th	%	5th	%	TOT POP	%
LOWER X	METU/ MEKRA	4		5		6		9		7		556	
		4	14	5	14	6	10	9	17	7	12	556	15
MIDDLE X	JURUNA	4		5		4		8		9		175	
	PANARA	1		2		4		5		6		151	
	SUYA	3		4		3		6		5		208	
	KAYABI	8		11		18		13		18		603	
	IPENG/TXICAO	4		4		4		6		5		176	
		20	71	26	74	33	58	38	73	43	75	1313	36
UPPER X	TRUMAI	0		0		4		4		0		59	
	YAWALIPIT	0		0		1		0		0		165	
	KUIKURU	2		1		1		1		1		327	
	KALAPALO	0		0		5		0		0		311	
	AWETE	0		0		1		0		1		91	
	MEHINAKU	0		0		1		0		0		144	
	NAHUKWA	0		0		1		0		1		130	
	KAMAYURA	1		2		3		0		4		326	
	WAURA	1		1		1		0		0		218	
SUB-T		4	14	4	11	18	31	5	10	7	12	1771	48
TOTAL		28	[99]	35	[99]	57	[99]	52	[100]	57	[99]	3664	[99]