ETHNO-SCIENCE AND BIODIVERSITY IN AMAZONIA[1]

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Introduction

The subject of my research as a social anthropologist in the last few years has been the role of traditional knowledge and management among indigenous population along rivers and seashores, particularly by "caboclos" of the Amazon and by "caiçaras" of the Atlantic Forest.

The choice of this issue was strongly influenced by the social movement of the caboclos/rubbber-tappers in the beginning of the Eighties, when the "seringueiros" appeared as important social actors in the Amazonian context, confronting big landowners using the "empates", (sitting-down in from of the sawing machines and tractors prepared to cut the forest) during the period of the military dictatorship. It was also deeply influenced by the conflicts generated by the establishment of national parks in the Atlantic Forest, resulting in the expulsion of many local/traditional dwellers from their territories.

My first work with the "caboclos-seringueiros" was in the middle Eighties when the Research Centre on Human Population and Wetlands started a research in the Guaporé Valley, where the first extractive reserves were being established in the State of Rondonia.

1. Social movements in Amazonia and their impact on Anthropology and Ethno-science

Until the Seventies, most of the research done by Brazilian anthropologists and ethnographers was on Indian Peoples (Povos Indígenas) and very few of them were

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interested in studying other non-Indian traditional populations in spite of the fact that there were over 12 different non-Indian traditional sub-cultures in Brazil, such as the "caboclos" in the Amazon, "caiçaras" in the Southwest Atlantic Forest, Raft-fishermen (jangadeiros) in the Northeast, "gaúchos/vaqueiros" and Azorian in the South, etc. Among the few anthropologists who studied these social groups before the 70's were Darcy Ribeiro and Manuel Diegues Junior using the concept of "cultural areas" to distribute these groups geographically and culturally within the Brazilian Territory.

Until the 70's the Brazilian Anthropology was strongly influenced by the work of foreign researchers who came from Europe to study the Indian population. Some of them, such as Levi-Strauss lectured at the University of São Paulo and have deeply influenced the first generation of anthropologist to whom the "other" was the "Indian" who has a radically different culture from that of the European colonisers, including language, myths,.. They were influenced by the idea of studying the primitive, still isolated natives as Malinowski had done some decades earlier in Polynesia. In this connection, the work of Malinowski as well as that of Levi-Strauss were fundamental in the building of new anthropological theories and practices. The other social and cultural groups and sub-cultures in Brazil were not considered as subject of study as they speak Portuguese, although they show remarkable regional differences and many of them have a distinct way of life, deeply influenced by theirs ascendants, the Indians and the black slaves.

The increasing interest of anthropologists in the study of the non-Indian traditional groups after the 70's can be explained by:

a) A greater social and cultural visibility of these groups, which started with the "seringueiros" in the middle of the Seventies opposing the deforestation the Amazonian forest and their rubber-trees by big landowners and commercial enterprises coming from the rich southern states. The fight of the rubber-tappers got strong support from the "social-environmentalists" who were influenced by a new form of environmentalism in tropical countries which associated protection of nature with the need of conserving also cultural and social diversity.

This greater social visibility was also enhanced by the reaction of other traditional groups to the growing expansion of capitalism in rural and coastal areas that led to increasing land expropriation of these groups by urban populations (tourists, land developpers, etc).

b) The establishment of new universities and research groups in the Amazon and Northeast

Until the late 60's most of the universities were located in the southern regions and students from regions such as the Amazon and Northeast came to the south particularly for their graduate studies. From the 70's onwards several federal universities were established particularly in the Amazon, creating departments of social sciences in which research groups started studying also non-Indian populations. Important research institutes such as the Museu Emilio Goeldi , the Federal University of Pará, the National Institute for Amazonian Studies- INPA, that previously were involved with research on Indian groups started research projects of riverine- caboclos populations, artisanal fishermen, etc.

2. The Increasing International and National Concerns with the Protection of the Amazon-Atlantic Forest and Their Traditional Dwellers and Its Impact on Social Sciences

Until the 70's-80's the major environmental concern was the protection of the forest and other natural environments which was done through the establishment of national parks and other protected areas as inhabited wilderness. This concept of wilderness without people – a national park - was developed in the United Sates in the late XIX century and transferred to other continents and societies, particularly in tropical countries, creating a series of conflicts as forests were not empty spaces but territories inhabited by scattered Indian and non-Indian traditional populations.

The model of national parks without people still receives the bulk of technical and financial assistance from large international environmental institutions and multi-lateral banks. It is also seen by government institutions as sources of funds and prestige. Brazilian Government, World Bank and some national and international non-government organizations still use the establishment of protected areas as their main strategy to counter-act the impact of the large projects in the forests such as dams, roads, settlement schemes. Most of these parks, however, are only "paper parks" and have not achieved natural protection of the forests.. On the contrary, the impact of

national parks on the livelihood of traditional peoples and their expulsion from their land are not leading to the conservation of the forest but to their degradation as the pressure of neighbouring latifundia over an “empty forests” increases.

The reaction of the rubber-tappers to the expropriation of their land and rubber-trees, and the proposal of extractive-reserves where they live were a crucial turning-point in the concept of protected areas in Brazil

3. The Importance of the Recent Discussions on Biodiversity and the Role of Ethnoscience

The important role of Traditional peoples and their knowledge on the protection of biological diversity are increasingly being recognised now both inside and outside Brazil. From the 80’s onwards there is a growing interest of ethnocientists (including ethno-botanists, ethno-biologists, ethno-icthyiologists) on the knowledge of these traditional communities about species and habitats. The fact that the Convention on Bio-diversity has recognised the importance of the traditional knowledge and that local communities have to be adequately remunerated for the commercial use of this knowledge is also a turning point on the need to reconsider the role of traditional communities on nature conservation. The number and quality of research undertaken by a new generation of ethno-scientists and anthropologists are increasing in recent years

4. Results of a Recent Survey on Publications Dealing with Ethno-Science in Brazil

The Research Center on Human Populations and Wetlands Conservation from the University of São Paulo has completed in 1999 an overall survey on publications dealing with traditional knowledge on biological diversity upon request of the Ministry of Environment.

The outcome of this inventory will be published soon by the Ministry of Environment under the title: Traditional communities and biodiversity.

From 3.000 publications on 206 Indian groups and 14 non-Indian groups examined, 868 titles of books, papers and thesis were retained as relevant to the issue of

traditional knowledge and management of biodiversity. These papers were analysed under 12 different categories (type, year of publication, subject, etc) and have shown an impressive richness of knowledge on species and habitats in Brazil, particularly in the Amazon and Atlantic Forest.

4.1. Publications onTraditional Knowlege of Indian and Non Indian Populations

4.1.1. Publications by Type of Population

From 868 publications dealing specifically with traditional knowledge, 385 or (44.4%) refer to Indian peoples and 483 (or 55.6%) refer to Non-Indian communities (Amazonian Caboclos, Caiçaras of the Atlantic Forest, Raft fishermen, “quilombolas”(ex-slaves communities, etc)

The first studies on traditional knowledge, using ethno-scientific methods were undertaken in the 70-80’s, mainly with Indian Peoples. As the majority of these Peoples live in Amazonia, most of the publications deal with that Region, as can be seen from Table 1.

In the table above, one can see the distribution of the publications among Indian groups.

Table 1 - NUMBER OF PUBLICATIONS ON INDIAN PEOPLES

Groups	Number	%
1. Kayapó	55	17,6%
2. Yanomami	18	5,8%
3. Kaapor	13	4,3%
4. Xavante	12	3,8%
5. Bororo	12	3,8%
6. Dessano	12	3,8%
7. Araweté	11	3,5%
8. Tukano	9	2,9%
9. Waiãpi	9	2,9%
10. Wayana	9	2,9%
11. Asurini Xingu	9	2,9%
12. Karajá	9	2,9%
13. Maku	8	2,6%
14. Pareci	8	2,6%
15. Guarani	8	2,6%
16. Kaingang	8	2,6%
17. Marubo	7	2,2%
18. Parakanã	6	1,9%
19. Suruí	6	1,9%
20. Tembé	6	1,9%
21. Açurini PA	5	1,6%
22. Jamamadi	5	1,6%
23. Juruna	5	1,6%
24. Kanela	5	1,6%
25. Kaxinawá	5	1,6%
26. Kayabi	5	1,6%
27. Krahô	5	1,6%
28. Others(less than 5 publications each	142	45,5%
Total	412	

Obs.: Some publications deal with more than one Indian People

It can be seen that among publications dealing with traditional knowledge of Indian Peoples, over 17% refer to Kayapó, which is the most studied Indian group, followed by the Ianomami (5.8%), the Kaapor (4.2%).

In Table 2, publications dealing with traditional knowledge of Non-Indian communities are shown

From the study mentioned above, Amazonia leads the ranking, with 34,8% of the publications on traditional knowledge of caboclo/riverine communities about bio-diversity followed by publications on caiçaras of the Atlantic Forest (21.5%).

Table 2 - NUMBER OF PUBLICATIONS ON TRADITIONAL KNOWLEDGE OF NON-INDIAN COMMUNITIES

Type of Population	Number	%
1. Amazonian riverine Pop.(caboclos).	168	34,8%
2. Caiçaras –Atlantic For.	104	21,5
3. Raft fishermen	45	9,3%
4. Artisanal fishermen	31	6,4%
5. Caipiras	29	6%
6. Praieiros	29	6%
7. Sertanejos	27	5,6%
8. Pantaneiros	26	5,4%
9. Quilombolas(ex-slaves)	18	3,7%
10. Non-Amazonian Riverine Communities.	17	3,5%
11. Peasants (Sitiantes)	14	2,9%
12. Azorian	10	2,1%
13. Babaçueiros	7	1,4%
14. Pastoralists	4	0,8%
15. Others	6	1,2%
Total	535 (1)	

Obs.: Some publications deal with more than one Non-Indian Communities

4.1.2. Period of publications

Only 2.4 % of the selected publications were written before the 60's and over 80 % of them were published from 1980 to 1999. The increase of publications in the last two decades can be explained mainly by the recent raise of academic and social concern about non-indian communities such as caboclos, caiçaras, etc.

Table 3 – PERIOD OF PUBLICATIONS

Períod of Publication	Nº de Publicações por População				Total	%
	Non Indían	%	Indían	%		
até 59	8	1,7%	13	3,4%	21	2,4%
60 - 79	56	11,6%	54	14,0%	110	12,7%
80 - 89	103	21,3%	170	44,2%	273	31,5%
90 - 99	286	59,2%	130	33,8%	416	47,9%
s/d	30	6,2%	18	4,7%	48	5,5%
Total	483	100,%	385	100,%	868	100,%

The distribution of papers by ecosystems show also a large concentration of publications in the Amazon (56.7%), followed by those on coastal ecosystems (particularly of the Atlantic Forest, 20.9 %) and by "cerrado"(19 .0%)

4.1.3. Subjects dealt in the selected publications

Table 4 – ISSUES DEALT IN THE PUBLICATIONS

Issue	Number of Publications/Populations				Total	%
	Non-Indian	%	Indian	%		
Total	483	100%	385	100%	868	100%
Arts	10	2,1%	84	21,8%	94	10,8%
Astronomy	16	3,3%	15	3,9%	31	3,6%
Non-cultiv.species	256	53%	264	68,6%	520	59,9%
Cultivated species	263	54,5%	229	59,5%	492	56,7%
Cosmology	24	5%	131	34%	155	17,9%
Entomology	3	0,6%	40	10,4%	43	5%
Pharmacology	91	18,8%	108	28,1%	199	22,9%
Hydrology	12	2,5%	6	1,6%	18	2,1%
Icthyology	208	43,1%	85	22,1%	293	33,8%
Pedology	19	3,9%	32	8,3%	51	5,9%
Tecnology	294	60,9%	213	55,3%	507	58,4%
Zoology	57	11,8%	143	37,1%	200	23%
Total	1253 (1)	..	1350 (1)	..	2603 (1)	..

1.Total of issues .

The most frequent types of traditional knowledge are those related to botany of wild/ tamed species (trees, herbs,etc, 59.9 %), cultivated species through small-scale agriculture (56.7%) techniques (boat building, craftmanship, 58.4%). ichtyology (33.8%) and medicinal plants (22.9%). The frequency of the fields of knowledge varies according to the type of population(Indian/non-Indian)

4.1.4. Publications in Which an Ethno-Scientific Approach is Used

Table 5 - ETHNO-SCIENTIFIC APPROACH

Ethno-knowledge	Nº Publications/Population				Total	%
	Non-Indian	%	Indían	%		
Yes	201	41,6%	331	86%	532	61,3%
No	282	58,4%	54	14%	336	38,7%
Total	483	100%	385	100%	868	100%

Around 61% of the publications use an ethno-scientific approach, which is more frequent in those dealing with Indian peoples (86%) than in those dealing with non-Indian communities (14%). This difference can be explained by the fact that most of the studies on Indian peoples are done by anthropologists and etno-scientists, mainly ethno-biologists, ethno-botanists, etc. Studies on non-Indian communities, however are undertaken by a variety of researchers from different disciplines that include not only Anthropology and Natural Sciences, but also Sociology, Economy, Geography, History less acquainted with the ethno-scientific approach.. It can also be said that this approach is more frequently used in the last two decades to study Indian communities. Around 93% of the studies on Kayapó. 83.3 % on the Yanomami, 92.3% on Kaapor, 92% on Xavante can be classified as studies using the ehno-scientific approach. As far as Non-Indians are concerned, 32.0% of the studies on "Amazonian Caboclos, 48.0 % on "caiçaras", 42.0 % on raft-fishermen, 48.0% on artisanal fishermen, the ethno-scientific approach has been used

4.1.5 Publications Dealing with Traditional Management

Traditional management, understood as manipulation of the organic and non-organic components of the environment is a very recent preoccupation of the researchers. Ethno-management of natural resources was firstly studies among Indian Peoples but is becoming also a field of concern of those researchers studying Non-Indian communities. In 67.0% of the studies on Kayapó, 68.0% on the Tukano, 42.% on the Dessana traditional management techniques have been described.

Traditional mangement practices were described in 31.0% of the studies on Amazonian Caboclos, in 20.0 % of the studies on "caiçaras", in 26.0% of the studies on raft-fishermen, in 38.0% of the studies on "pantaneiros"

Table 6. TRADITIONAL MANAGEMENT

Description of Manag.	Nº of Publications/Population				Total	%
	Non-Indían	%	Indian	%		
Sim	115	23,8%	103	26,8%	218	25,1%
Não	368	76,2%	282	73,2%	650	74,9%
Total	483	100%	385	100%	868	100%

5. Amazonia and inter-disciplinary thought

There is a growing recognition that the issue of biodiversity is not an exclusive field of natural scientists but has to take into consideration the contribution of ethnographers and ethno-scientists. Ultimately, biodiversity itself is not only a natural concept but also a social-and cultural construction in which traditional peoples play an essential role .This concept becomes particularly crucial in Amazonia, where traditional communities live inside national parks and are continuously threatened with expulsion from their territory which was transformed into protected areas. When these communities are expelled or their traditional livelihood practices are forbidden in the name of an imported conservation approach, not only their knowledge and management practices are threatened, but also the basis of their communal access to resources is destroyed.

However, until now the criteria to select the so-called “hot-spots” for biodiversity conservation have been selected only on the basis of biological factors,(diversity of species, genes and ecosystems) and human threats to biodiversity are the only “social factors” been considered by international conservationist agencies that fund the workshops organized to identify those priorities. Several ecologists, such as Gomez-Pompa, Balée, Posey and Toledo are calling the attention to the fact that traditional communities, through their knowledge and management practices have been able not only to protect but enhance . biological diversity.

6. Critical Issues that need special attention:

a) Ethno-ecology and ethnography as a tool to understand nature conservation should be better recognized by Government Agencies and Research Institutions. In spite of the fact that the number of research on traditional knowledge is increasing , there is a critical need for regular training of ethno-scientists in Amazonia. There is also a need to involve ethno-scientists in the current discussion about intellectual rights of traditional communities when their knowledge is used commercially.

b) There is an urgent need to involve social scientists, particularly anthropologists and ethno-scientists in the current discussion about conservation and sustainable use of bio-diversity as until now these subjects are mainly dealt by natural scientists. In this connection ethno-conservation of nature, involving traditional knowledge and participation of local communities in conservation schemes become a crucial issue for Amazonia.

c) There is a need to study and to make inventories of existing communal access to resources which are threatened by privatisation or by the extension of State property (national parks) over their commons””.