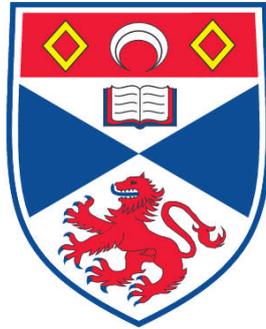


**"THE APPLICATION OF GEOMATIC TECHNOLOGIES IN AN
INDIGENOUS CONTEXT: AMAZONIAN INDIANS AND
INDIGENOUS LAND RIGHTS"**

David J. Menell

**A Thesis Submitted for the Degree of PhD
at the
University of St. Andrews**



2003

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**“THE APPLICATION OF GEOMATIC TECHNOLOGIES
IN AN INDIGENOUS CONTEXT: AMAZONIAN
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Thesis submitted by

David John Menell MA. MSc.

In fulfilment of the requirements for Degree of Doctor of Philosophy

30th June 2003



ABSTRACT

Indigenous people have employed Western analogue techniques (maps, charts, etc) to support their land rights ever since their traditional territories came under threat. Although indigenous groups utilise such tools there is still a significant divide between the epistemological conception of these analogue techniques and the ontology of the indigenous people. This research looks at one of the latest technologies to be utilised by indigenous peoples, that of geomatics technologies. It examines their design and application using the analytical techniques of anthropology juxtaposed with the geographical methodologies. Using both the literature and three case studies drawing from fieldwork conducted in the Peruvian Amazonian I argue that although previous analogue techniques carried a certain epistemological baggage, they were effectively neutral and did not impact of the ontology of the indigenous peoples. Geomatics technologies are not neutral and carry more than just baggage, so they are not so simply appropriated. Indigenous conceptions of landscape are not compatible with the current design of geomatics technologies but indigenous federations are increasingly employing them. The indigenous federation along with non-governmental organisations adopt the geomatics technologies because of their perceived authority in land rights and their applications in land management and saving cultural heritage. The State recognises this authority because the design and output of geomatics conforms to its legal system. However, indigenous peoples have a different agenda and conception of land rights. Their agenda is based on revitalising their heritage and land rights derived through self-determination. This research reveals such issues of power, politics and authenticity behind its application and the ontological and epistemological philosophy of its design.

AUTHORS NOTE

I am dyslexic and so the grammar, punctuation and spelling may be below the high standard found in commercially published texts. My most common mistakes are homonym confusion and phonetically spelt words. However, a word-processor spell checker and grammar filter has been used on this document to minimise these errors.

I must also note that due to ethical considerations the names of NGO's, informants and other individuals have been changed. For reference I have listed below the invented replacement names:

PeruPetroI	Silvia Flores	Enith	Carlos
<i>Federación Nativa del Río Amazonas (FEDNAA)</i>	Nacio	Javier	Amanda
Puerto Tambo	Chimay	Hector Pecha	Philippe
	Abraham	Pedro	
Dr Edwin Long	Renzo	Hugo and Manolo	
Dr Micheal Jones	Felix	Lolita	

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ACKNOWLEDGEMENTS

Thank you Professor Joanna Overing, it may seem mandatory to thank your supervisor but in this case it is said with all sincerity and genuine acknowledgement of the all her help, guidance and support that she gave me throughout these long years. Now the problem comes as to who to put next as it is inevitable that it will be interpreted as a hierarchical list of importance but all the following people have warranted my heart felt thanks and a debt of gratitude.

Thankyou to the ESRC who awarded me the funding to carry out this research and thanks to the RAI for the Emslie Horniman Award.

Friends and family a have to thank are, Emma Sutton who put a roof over my head for many years while I was turning fieldwork into academic text; my folks for the best ethos any parent could have “if your happy we’re happy” and of course the occasional cheque; Melly for proof reading and putting up with my manic behaviour towards the end; and James Littlewood, who provided an English sense of humour when I needed a break from jungle life. Many other friends gave me guidance and encouragement throughout my fieldwork and writing up, especially Javier Carrera thankyou all.

At the beginning of this research I was helped and partially tutored by Dr Stephen Kidd who guided me onto the path I finally took, so thank you Stephen. Alejandro, the Late Andrew Gray and Shelia Aikman all gave some invaluable contacts in the field. Then in the field thanks to Dr Catalina Romero and Juan Ossio for their assistance and academic facilitation. The Thomas Moore and Dr Richard Chase Smith for their help and collaborative links.

I would like to thank many indigenous friends and confidants who need special thanks for their hospitality and friendship during my stays in the jungle.

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CHAPTER ONE

Finding my Feet

Sovereignty over land, land ownership, territories, and boundaries are global phenomena enforced by all nation States. The rapidly expanding communications networks are now seeing these concepts applied and enforced in areas that could previously overlook their implications. In particular this effects indigenous communities in resource rich areas of the Amazon basin. Lumber, oil, gold, and other commercially mined minerals are all found in abundance in the amazon, so the communications networks have expanded into and criss-crossed the basin. These networks bring more than just miners they also bring opportunist immigrants such as those developing cash crop plantations or simple peasant farmers. This land development and colonisation, of previously remote areas, has resulted in the State imposition of land delineation and demarcation. The indigenous communities living in these areas have to contend with both the unavoidable competition for the land they occupy and the imposed State system of land rights.

Up until the last decade hard copy archives and paper maps were the medium with which these land registrations were stored and administered. However, with the computer revolution these documents are being transferred into the technology as digital copy. This land registration and management has further benefited from the technological innovations developed in the geographical sciences. These technologies are collectively known as Geomatics and are explained in the following chapters. Essentially they can incorporate all spatial data, such as land registrations, all of which can be reanalysed and manipulated by these technologies.

This technology has found its way into the world of remote indigenous peoples, effected by this global communications network expansion. This is principally because

indigenous federations, Geomatics practitioners, Geomatics vendors and researchers have applied this new technology to the indigenous people's biggest dilemma: land rights. The authority imbued to Geomatics is the reason indigenous peoples are actively employing such technologies in their land rights and land management agendas, because land rights claims need to be backed up by evidence and other advocative material that the State recognises as legitimate within its legal system. Geomatics technologies produce material of the required calibre. So Geomatic technologies are becoming increasingly prevalent within an indigenous context. It is clear from web publications that the First Nations and other large indigenous organisations are employing Geomatics in land rights and land management. So numerous questions arise as to its application within this indigenous context. For instance, at what levels is the technology utilised, is it simply the large federations and organisations or is it also used at a community level?; are these technologies epistemologically neutral and if they are not what effect does this have on those who use it?; land rights is a State conception so what is the indigenous perception of the same and can the technology be used to represent it? This research aims to develop these and other such questions and look at their implications through anthropological analysis, juxtaposed with geographical methodologies.

*

When I first began this research I tried to maintain a narrow focus. However, the more I researched the topic the more I realised that to successfully elucidate it I would need to understand a number of other issues. This chapter follows my exploration of the subject and the evolution of my primary fieldwork focus. It highlights and discusses those issues and aspects of my research, which I needed to incorporate in order to understand Geomatic technologies within an indigenous context. Here I expand on some of the issues in light of my fieldwork where it is relevant for the points I raise in later chapters.

At the beginning of my thesis research I was eager to build my understanding of all aspects of indigenous land rights, as I intended to use it as the framework for the rest of my research. Indigenous land rights follow a fairly typical history, the narration of which discloses the roots to all contemporary disputes over indigenous land. The general summary, below, of the history of indigenous land rights is taken from the literature. This discourse shaped my initial beliefs and understandings of what I saw as the present day 'plight' of indigenous people.

Indigenous land rights, as we know them today, are the result of a history Daes (1997) refers to as "doctrines of dispossession". These doctrines developed when Europeans first encountered indigenous peoples because they took with them a belief that they and their moral system were superior. Then, with the added scourge of the missionaries, they began to dispossess indigenous peoples of their lands. The driving forces were economic and religious, whereby there was a desire to convert the savages to Christianity and introduce them to the wisdom of sovereign rule by a foreign monarch. This often led to genocide, as is evident in the mass population declines in the Americas due to indigenous epidemics and theologically justified slaughter (cf. Stavenhagen, 1991). Other major disrupting factors came from a European belief in the proper divisions of labour, the role of gender, the monetary value systems and the commodification of land and resources.

There were several frameworks used to legitimate colonisation and the expropriation of indigenous peoples from their lands, territories and resources. They evolved from the migrants' bias in looking to the European culture and the church for legal and moral guidance and justification. It is interesting to note that the plight of the indigenous Indian could have been very different, if it were not for the power of the church. Daes summarises a point in history where things could have developed in

favour of the Indians. She is speaking about the early period of conquest and European explorations of the new worlds.

“Early naturalists actually advocated on behalf of the Indians against imperial and papal authority with regard to the assertions of Spanish ownership, use and exploitation of Indian lands and resources, which were based upon the doctrines of conquest and discovery. They argued that Indian peoples did in fact have rights to the land, and some went one step further by addressing, in the context of the laws of war, the rights and capacity of Indian nations and peoples to enter into treaty relations although they were “strangers to the true religion”. In their construction, if Indian peoples were in fact human beings and equal, they would have “just cause” to wage war against the invaders. However, unless conquest followed a just war, Indians could not unilaterally be dispossessed of their lands or their autonomous existence ... Theorists eventually modified the law of nations to reflect, and hence legitimize, a state of affairs that subjugated indigenous peoples ... principally because established Christian and other religious values became embedded in natural law and international law, undercutting any possibility for indigenous peoples’ claims, rights and values to be advanced in the years following conquest. Indigenous peoples were commonly labelled “infidels” and “pagans” in natural law discourse”.

Daes (1997: Item 18)

The indigenous territories were primarily taken under threat of, or direct action by, the military, backed by the new State which only recognised its own judicial and moral systems. The indigenous people were systematically dispossessed of their lands and territories under the international doctrines of conquest, discovery and the concept of *terra nullius*¹. Even though international law has addressed the injustice of ‘conquest’, ‘discovery’, and religious genocide is no longer openly sanctioned, there is still an attitude of *terra nullius* that is only recently being addressed². There are two standpoints on this issue and perhaps both are valid. One is rooted in Eurocentric legal theory and thought, whereby all land is *terra nullius* unless a legitimate (legitimate within the same judicial sense) claim is proffered for that land. The other view is that again nobody owns the land in the format of the imposed legal system. However, the land and the people are created in a relationship of identity through history and use. This second standpoint could be seen as the indigenous view or the view of the indigenous advocate. The above history of conquest introduces the contemporary

¹ Here I am referring to the notion that all land belongs to the state unless ‘legally’ acquired. See note one on page 216 for further examination of this concept.

² In 1975 the International Court of Justice ruled that the doctrine of *terra nullius* had been erroneously and invalidly applied against the tribal peoples of the Western Sahara. The High Court of Australia in its 1992 decision in *Mabo v. Queensland* discussed the legal and other effects of the doctrine of *terra nullius*. The Court essentially denounced the doctrine by concluding that this “unjust and discriminatory doctrine ... can no longer be accepted”.

problem with the second standpoint. The problem is that ‘indigenous’ people now live within States that hold to the first legal discourse and they have to establish the legitimacy of their values, beliefs, institutions and perspectives so that they conform to the modes of legitimacy of the State’s legal discourse. The involvement of international advocacy, as I will discuss later, has resulted in this problem or dilemma being further complicated with the question of just who is to be considered ‘indigenous’.

The concept of ‘indigenous’ was that which I next investigated, I did not directly look at this issue, for I was still working under three rather simple premises, which were as follows:

- 1. Technology is good in all contexts.*
- 2. Indigenous peoples and their land claims are authentic.*
- 3. Globalisation and colonisation pressures on indigenous peoples are bad.*

While exploring these I realised the depth of the debate about the concept of ‘indigenous’, so perhaps I should look at the origins of these premises. The last two I had picked up from the populist opinion, which has been created and fed by the media, or perhaps primarily by organisations, agencies and advocates who come under the banner of Non-Governmental-Organisations (Commonly referred to by the acronym NGO). The NGOs that deal with indigenous groups constantly advertise for help to alleviate the ‘plight of the indigenous peoples’. They portray the indigenous group as helpless and threatened, with an atypical history, the most common cause and effect scenarios of which are represented in the figure one below (page 7).

Each of these scenarios have been extrapolated from various NGOs’ publicity discourse. This discourse (Narrated in web sites, leaflets, media advertising, etc) has ‘definitions’ of who these indigenous peoples are, and it can be easily observed that these so-called ‘definitions’ are akin to political spin. Their aim is to paint a picture of a

downtrodden impoverished group that needs help and support. For example, the following quote is taken off the IWGIA³ web site (www.iwgia.org):

Indigenous peoples - who are they?

Indigenous peoples are the disadvantaged descendants of those peoples that inhabited a territory prior to the formation of a State. The term indigenous may be defined as a characteristic relating the identity of a particular people to a particular area and distinguishing them culturally from other people or peoples. When, for example, immigrants from Europe settled in the Americas and Oceania, or when new States were created after colonialism was abolished in Africa and Asia, certain peoples became marginalised and discriminated against, because their language, their religion, their culture and their whole way of life were different and perceived by the dominant society as being inferior. Insisting on their right to self-determination is indigenous peoples' way of overcoming these obstacles.

Today many indigenous peoples are still excluded from society and often even deprived of their rights as equal citizens of a State. Nevertheless they are determined to preserve, develop and transmit to future generations their ancestral territories and their ethnic identity. Self-identification as an indigenous individual and acceptance as such by the group is an essential component of indigenous peoples' sense of identity. Their continued existence as peoples is closely connected to their possibility to influence their own fate and to live in accordance with their own cultural patterns, social institutions and legal systems.

At least 350 million people worldwide are considered to be indigenous. Most of them live in remote areas in the world. Indigenous peoples are divided into at least 5000 peoples ranging from the forest peoples of the Amazon to the tribal peoples of India and from the Inuit of the Arctic to the Aborigines in Australia. Very often they inhabit land which is rich in minerals and natural resources.

Indigenous peoples have prior rights to their territories, lands and resources, but often these have been taken from them or are threatened. They have distinct cultures and economies compared to those of the dominant society. The importance of indigenous peoples' self-identification is crucial and a part of their identity.

Indigenous peoples face serious difficulties such as the constant threat of territorial invasion and murder, the plundering of their resources, cultural and legal discrimination, as well as a lack of recognition of their own institutions.

International Working Groups for Indigenous Affairs (IWGIA)

This discourse is very persuasive because it manipulates many media built presumptions about the Third World other, as well as playing off linked occidentally presumed concepts, e.g. "that indigenous people are indigenous", and "that indigenous people are indigenous because they are under threat". The above quote relies on the fact that people with Latin based languages will assume the meaning of 'indigenous' as that which comes from the Latin *indīgēna*, which means 'belonging to one's own country'. The contemporary definition of 'indigenous' refers to 'the original inhabitants of an area, which has subsequently been occupied by migrants' (Oxford English Dictionary). This abstract category of 'indigenous' is relatively innocuous when referring to the natural world, such as indigenous plants. However, when it is applied to human

³ See General Glossary on page 257.

populations, as in the above quote, its definition becomes contentious as well as carrying a hefty baggage of political implications.

Although a general definition of ‘indigenous’ as “those who have a longer historical connection with a territory than the immigrants threatening them”, can be broadly applied, it does not by any means incorporate all those claiming to be or categorised as ‘indigenous’. The International Labour Organisation (ILO) identified this problem back in the 1950s when they drew up Convention No. 107. This Convention was called the “indigenous and tribal populations Convention”, where ‘tribal’ was included due to the fact that ‘indigenous’ did not refer to all those concerned. For instance, they define ‘indigenous’ as that which “refers to those who, while retaining totally or partially their traditional languages, institutions, and lifestyles which distinguish them from the dominant society, occupied a particular area before other population groups arrived” (ILO Convention 169). This description is more or

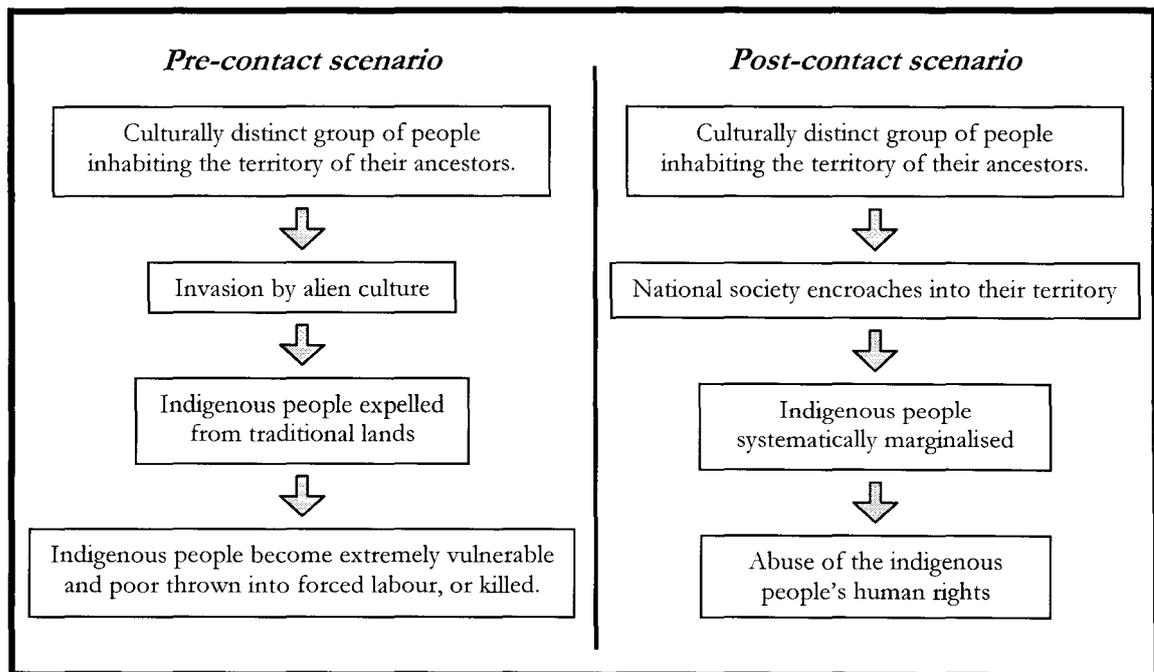


Figure 1 - Atypical Indigenous Plight

less applicable to groups in North and South America, and in some areas of the Pacific (Barnard & Spencer, 1996: 609). This is because in these areas there is significant historical evidence that those indigenous peoples arrived before the current populations,

which now comprise the respective nation States. However, in Africa, for instance, there is no evidence to indicate that the Maasai, the Mbuti or the San Bushmen arrived in the region they inhabit long before other African populations. The same is true in some parts of Asia. This is why the ILO refers to both 'indigenous' and 'tribal' peoples. The idea being that the use of both terms would refer to the peoples' cultural and social situation, rather than emphasising their historical links: i.e. whose ancestors arrived in a particular area first.

Another point to note about the terminology is that in the International Labour Organisation's (ILO) Convention 107, it refers to 'populations' rather than 'peoples'. This was because of the legal implication of the term 'peoples' in international law. In the later Convention 169, they have used the term 'peoples', because this term recognises the existence of organised societies with an identity of their own rather than mere groupings sharing some racial or cultural characteristics. Because the implications of the term 'peoples', as recognised in international law, could mean that they had the right to secede from the countries in which they lived, "the use of the term 'peoples' in this Convention is not to be construed as having any implications as regards the rights which may attach to the term under international law" (Third paragraph of Article 1, ILO Convention 169). The ILO are precise in their use of the term 'peoples', however, they (as do the NGOs) still work with an understanding of 'indigenous'. Even though Convention 169 stipulates the right of 'indigenous' people to self-determination. The convention also implies a definition of indigenous, when it is clear that any definition of who is indigenous could potentially devastate the livelihoods and lifestyles of many impoverished groups, which is why indigenous organisations are vehemently opposed to such a formalisation (cf. Burgess, 1987; Berman, 1988). The problem is that contemporary international legal discourse and thought is heavily dependent on eradicating ambiguity so that dispute can be efficiently arbitrated or resolved. Even

NGOs need to establish some delimited group of people on whom they can focus their fund raising programmes. Self-determination of group status is very difficult to incorporate into international legal systems, so, even the ILO has put forward a broad coverage as to whom the Convention refers, which is included in the first article of Convention No. 169:

Article 1

This Convention applies to:

- (a) tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations;
- (b) peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonisation or the establishment of present State boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

(International Labour Organisation, Indigenous and Tribal Peoples Convention No. 169, 1989)

It is interesting to note that the Convention does not claim to provide a 'definition' of who indigenous and tribal peoples are, but rather it calls it a 'statement of coverage' (So for all intensive purposes the application of convention 169 is providing a definition). They recognised that a definition would limit or exclude some of these peoples from obtaining the rights or assistance afforded by the Convention.

A definition *per se* has, however, been put forward by another section of the United Nations (UN). In 1986, José Martínez Cobo (Special Rapporteur) was commissioned by the UN Sub-commission on the Prevention of Discrimination of Minorities, to study the problem of discrimination against indigenous populations. In this study, he puts forward a definition for 'indigenous' as follows:

Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems.

José Martínez Cobo goes on to qualify the phrase "historical continuity";

Apart from this a number of factors are regarded as relevant for defining indigenous peoples and identifying their historical continuity, where a historical continuity may consist of the

continuation, for an extended period reaching into the present, of one or more of the following factors:

- (1) Occupation of ancestral lands, or at least of part of them;
- (2) Common ancestry with the original occupants of these lands
- (3) Culture in general, or in specific manifestations,
- (4) Language;
- (5) Residence in certain parts of the country, or in certain regions of the world;
- (6) Other relevant factors.

(José Martínez Cobo, 1986)

The other UN body that has influenced this dialogue, on the definition of ‘indigenous’, is the United Nations working group on indigenous populations (WGIP). The chairperson Mme Erica-Irene does not advocate the development of any official definition, although she does support the ILO and Cobo definitions as useful (Daes 1996), whilst advocating what Ingold (2000: 150) calls the “relational perspective”. What the WGIP has done is to develop the indigenous voice on this issue. The indigenous peoples’ main objections are that their unique identities are all lumped into one generic category, which results in a loss of autonomy. Any definition would deny indigenous and tribal peoples the “exclusive right to determine their membership, identity and status, thus refusing their right to self-determination. Definition, to these peoples, is a question of self-identification and acceptance by the indigenous communities to which they belong” (Draft Declaration on the Rights of Indigenous People, November 1995).

This emphasis on self-identification is an important part of the ILO and Cobo’s definition, as follows:

On an individual basis, an indigenous person is one who belongs to these indigenous peoples through self-identification as indigenous (group consciousness) and is recognized and accepted by the group as one of its members (acceptance by the group). This preserves for these communities the sovereign right and power to decide who belongs to them, without external interference.

(José Martínez Cobo, 1986)

Article 1: (2) Self-identification as indigenous or tribal shall be regarded as a fundamental criterion for determining the groups to which the provisions of this Convention apply.

(ILO, Convention 169, Part I, 1989)

Despite attempts to keep the ‘coverage’ as open as possible in both the working definition put forward by Martínez Cobo and the ILO’s Convention, it was contended

that there are some common characteristics to all groups being labelled indigenous which are:

- *because they are descendants of groups which were in the territory of the country at the time of colonisation by the migrant population that make up the current nation State; and*
- *because of their isolation from other segments of the country's population they have preserved almost intact the customs and traditions of their ancestors which are similar to those characterised as indigenous; and*
- *because they are, even if only formally, placed under a State structure which incorporates national, social and cultural characteristics alien to theirs.*

(José Martínez Cobo, 1986)

Despite common characteristics, no single accepted definition of 'indigenous peoples' exists that captures the diversity of peoples claiming indigenous status or is in line with the indigenous perspective (i.e. their auto-definition). Therefore, self-identification as indigenous or tribal is usually regarded as a fundamental criterion for determining indigenous or tribal groups' authenticity, sometimes in combination with other variables such as language spoken and geographic location or concentration. If indigenous organisations had their way, these 'definitions' would use only the criterion of self-determination, as any definition by its very nature is exclusive. (cf. Gray 1987, 1989, 1990).

There are obvious risks in the development of an official definition for 'indigenous peoples' as mentioned above. If a definition were adopted by international bodies such as the UN, then any group wanting to claim indigenous status would have a formidable task, fighting their own nation State which would inadvertently be backed by the only ally that this indigenous group may have had: the UN.

There are two main view points here: the indigenous one that is concerned with the loss of autonomy and issues of self-determination, and the international community that is trying to devise a formal method for the identification of those people who can claim a particular status that would allow them to gain certain rights under international law. Their objectives are at odds. Firstly, the 'objective' International community

needs to develop an unambiguous means of assigning certain legal rights to a disenfranchised group of people, whilst working to try and stimulate nation States to adopt (ratify) its guidelines for legal and political praxis; and secondly, the indigenous people have an alternate perspective, seeing it as their human rights being supported in one hand and then their rights to self-determination taken away by the other.

The international community's debate about the definition of indigenous is a product of a philosophy that separates nature and culture. The concept of *terra nullius* is derived from this philosophy, whereby people and the land are separate, which enables the legal ownership, sovereignty and exploitation of 'State' land. From this, the underlying principle in the definition of people as 'indigenous' or 'aboriginal' (within the international community) is that an area of land is under dispute and that one group of people maintain that they and their claim to it are authentic.

I said earlier that I was working on the assumption that indigenous land claims are authentic, and this again was a biased opinion that needed clarification. So I went back to the premise that 'indigenous' is predicated on a dispute over land. In the context of my research the land dispute is taking place between a minority and a State, and hence both parties are abiding by the legal system of the State in the resolution of this dispute (one enforcing it, the other trapped into it). Here I did not question the assumption that the only equitable way any group can relate to a space is to want to 'own' it. This question of 'ownership' is complicated and warrants further investigation, but unfortunately it was not within the remit of my research. Instead I was focusing on the adaptations of the indigenous relational identity with the land *vis-à-vis* the predetermined justifications of ownership that the State had previously made official in its laws, an issue I will discuss next.

Authenticity

“This is your great great grandfather’s axe. The blade has been replaced twice and the handle renewed three times, but it is still your ancestors axe.”

(Neal Ascherson)

“The ghosts of the ancestors keep talking”

(Tristan Platt)

The above two quotes epitomise the two poles of authenticity debates. These debates are somewhat obsolete if it is accepted that indigenous people establish their own authenticity through self-determination. However, self-determination does not fall in line with the argument of sovereignty based on proof of descent. The argument that people are ‘authentically’ indigenous because of their descent arose while I was working with the Ese’eja and I discuss that aspect later within the Ese’eja chapter. Here I address another aspect of authenticity, one which directly relates to the logistics of indigenous land rights claims, which has to do with the authenticity of the claim to the ownership of land, territory or resources.

Within the State there are some inherent features to the concept of land ownership and these are concerned with time and the rules of descent. As Ingold (2000: 151) says “The genealogical model is deeply implicated in the discourse of the State: indeed it is the principal source of legitimation for the State’s sovereign entitlement to defend and administer its territory in the name of the nation”.

In every case the minority group has no recourse to their own relationship to the land as witness. In order for them not to be driven off the land they must conform to the State’s proofs of their authenticity, using the State’s system of establishing ownership and identity as the original inhabitants and thereby ‘proving’ that they are indigenous to that place. This works for, as well as against, the indigenous group, as the State’s system for legitimating sovereignty over the land is reliant on rules of descendancy, ownership and a history of colonisation. Therefore, it follows that the State can not

disenfranchise itself from those it has attributed with 'indigenous' status and so can not abrogate any land that it demarcates for those who it classifies as 'indigenous'.

Ingold (1986a, 1986b, 2000) argues that indigenous peoples have a relational identity in the land. The question then arises as to whether they are reinterpreting this relationship to fit with the State's legal discourse in order to obtain land rights, and in so doing adopting these new perspectives and abandoning their traditional relationship to the land? Ingold (2000: 150) says "It is in the attempt to recover a lost or threatened sense of relational identity in attributional terms that people come to define themselves, and to be defined by others, as 'indigenous'". But are they recovering and revitalising this perspective or adopting the State's perspective as the later fits better with the concept of bounded territories?

Although indigenous people may well adapt their auto-denomination to conform to the State, how do they adapt their relational identity to the proofs by which indigenous claimants can support their association to the land in law? They are caught in a paradox as on the one hand they are invoking their difference from the State, in that they are claiming to be indigenous, but at the same time conforming to it, in that they want to be identified as 'indigenous'. This paradox is made even more problematic since self-determination does not fall in line with a doctrine of sovereignty based on rules of descent and the State's generational model. It is further complicated if the concept of self-determination and a relational identity to the land are seen in the context of land claims, because both are out with the State's rules of sovereignty over land.

This paradox is pertinent simply because indigenous people are claiming land rights. Therefore, what is the resulting relationship between these juxtaposed discourses on land and how is indigenous relational identity evolving?

One significant influence on this discourse is the International Labour Organisation's convention 169. The Convention states that indigenous people have to

determine ‘traditional occupancy’ as a prerequisite for their claim to land rights. This concept of a traditional occupancy encapsulates many of the issues of authenticity and indigenous relational identities that came out of my background research. It can also be seen to cross the disciplinary divide when looking at issues of land rights and so I will now discuss how it relates to my research.

Tradition and Occupancy

I began with the intention of looking at the use of Geomatics within an indigenous land rights context. However, Geomatics and anthropology do not share many common issues and so I ran the risk of investigating the topics independently through each field. Then during a discussion with the anthropologist Stephen Kidd, who has worked for many years on land rights issues in Paraguay, the issue of this indefinite phrase “traditional occupancy” was raised. It quickly became clear that those issues surrounding this notion were dealt with by both Geomatics and anthropology. This topic was then the common ground of the two subjects, that meant it became a fundamental aspect of my thesis, which is why I will briefly go into the background of its origin in the United Nations.

The United Nations (UN) & The International Labour Organisation (ILO)

Indigenous people have fought for the international recognition of their plight since 1928, when an indigenous coalition lobbied the League of Nations, unfortunately with little effect. Little was achieved until, in 1966, the ‘right of peoples to self-determination’ was included in both the ‘International Covenant on Economic, Social and Cultural Rights’ and the ‘International Covenant on Civil and Political Rights’. This led to the official consideration of the rights of indigenous peoples on an international level. In 1970, the UN mandated that a study needed to be carried out to

examine the 'violations of indigenous rights'. In 1971, José Martínez Cobo was appointed Special Rapporteur for the study on the 'problem of discrimination against indigenous populations'. The study was completed in 1984 and this prompted the UN to form the Working Group for Indigenous Populations (WGIP), so that the indigenous voice could be heard.

The International Labour Organisation (ILO) is a United Nations (UN) specialised agency that is concerned with the promotion of social justice and establishing internationally recognised human and labour rights. It was founded in 1919, and is the only surviving major creation of the Treaty of Versailles.

The primary purpose of the ILO, in 1919, was to form international standards, which could cope with the problems of poor labour conditions throughout the world. These standards were later augmented in 1944⁴, during the twenty-sixth general conference of the ILO, in Philadelphia. They also included more general social policy, and also human and civil rights matters.

These international labour standards take the form of 'Conventions' and 'recommendations' and are essentially international treaties, subject to ratification by the organisation's member States (currently 175 member States). Once ratified by a State they are effectively legally enforceable agreements or guidelines that set minimum standards for human and labour rights. They are intended to orientate national policy and have a cogent effect on the working conditions, working practices, human rights, etc, of the country that ratifies the labour standard. The ILO has produced around 180 Conventions and 185 recommendations. Out of these the most relevant to indigenous land rights issues are Conventions 107 and 169.

⁴ See International Labour Organisation (ILO) web site (www.ilo.org) for a full version of the ILO constitution, and see appendix two on page 232 for reprint of the ILO's declaration of its aims and purposes.

ILO Conventions 107 & 169

The International Labour Organisation (ILO) has been concerned with the abuse of indigenous people's rights since the 1920's. After world war two (around 1957) it drew up 'The Indigenous and Tribal Populations Convention (Number 107)'. This was the first attempt to support indigenous people's rights by an internationally influential organisation. Convention Number 107 covered a wide range of issues, from the working conditions and recruitment of indigenous and tribal peoples, to land rights, health and education. Between 1958 and 1986 it was ratified by twenty-seven nations from around the world (See appendix four on page 235).

As indigenous groups and advocate non-governmental organisations (NGOs) began to implement the Convention between the late 50's and early 80s, it came to light that there were significant shortcomings in some of its assumptions. In particular there was its assumption that integration into the larger society was the only possible future for indigenous and tribal peoples, and that all decisions regarding development were the concern of the State rather than of the people most affected. This patronising and integrationist slant was a consequence of the ILO's progressionist assumption that the problem of indigenous and tribal populations was one that would disappear with the gradual integration of these peoples into the societies in which they lived (Tomei & Swepston 1996).

Over this same period indigenous groups, with the help of outside NGOs, had formed federations that worked on local, national and international levels. The combined influence of these federations along with the support of the United Nations' (UN) Working Group on Indigenous Populations (WGIP), instigated the revising of Convention 107, in 1989. The WGIP was able to represent all these disparate indigenous federations, advising the ILO on the indigenous concerns and legal debates not addressed in the old Convention. Convention 169 has subsequently been ratified by

27 countries (Ratified by Perú on 2nd February 1994, see appendix four on page 235). The important thing about the structure of the new Convention is that it gives indigenous peoples the right to choose whether or not to change, to what extent, and how. The new Convention 169 presumes that the indigenous structures and ways of life have a value that needs to be protected and that they will not necessarily be absorbed into the national society as previously assumed. Instead they should continue to exist as parts of their national societies but with their own identity; their own structures; and their own traditions. It also presumes that these peoples are in most cases able to speak for themselves and to take part in the decision-making process as it affects them. It recognises that the indigenous contribution will be a valuable one in the country in which they live, and that their traditional organisations should be closely involved in the planning and implementation of the development projects that affect them (Tomei & Swepston 1996).

As a personal observation, out of the twenty seven countries which ratified Convention 107 only ten have denounced it and ratified the newer Convention 169 (See appendix four on page 235). Although the circumstances of ratification for each of these countries are radically different, it may not be too cynical to suggest that the countries that did not change to the new Convention may favour the integrationist nature of the old one.

Convention 169 gives indigenous leaders, indigenous federation, NGOs and those alike an opportunity to refer to the arbitration of international justice in their land title negotiations with their respective nation State (See note ten on page 218). However, the Convention is still only designed as a multinational mandate and so the document is written with a measure of semantic generality to make it applicable to all countries. This generality is evident in the following extract (taken from ILO Convention 169 Part

II – Land) which relies heavily on the terms ‘traditional’ and ‘occupy’ in reference to the determination of land rights.

The rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognised. In addition, measures shall be taken in appropriate cases to safeguard the right of the peoples concerned to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities. Particular attention shall be paid to the situation of nomadic peoples and shifting cultivators in this respect.

Governments shall take steps as necessary to identify the lands which the peoples concerned traditionally occupy, and to guarantee effective protection of their rights of ownership and possession.

(1989: Part II, Article 14 (subsections 1 and 2) See appendix one on page 219)

As I mentioned earlier the phrase ‘traditional occupancy’ is an important medium through which I was able to balance the polemical nature of my research. It thus needs a brief discussion to highlight the link it affords between Geomatics and anthropological discourse. Firstly “traditional occupancy” needs a short discussion as it consists of two hazy terms. Because they form an indefinite condition and only infer a temporal relationship to the land, it leaves the definition of “rights of ownership and possession” open to interpretation. The recognition of such rights is then left within a political and social framework, where the balance of power is rarely favourable to the indigenous plight. The result is that a seemingly simple phrase becomes a platform for political, legal and social dispute.

It is crucial to note that the term ‘occupy’ (from the occidental perspective within which they were written) does not imply any relationship with the land, nor any form of dwelling on that land. In this context it is conceived within a narrative of colonial conquest and State formation (See Ingold 2000: 151). It locates the discourse of land ownership in the present, but when put in conjunction with the term ‘traditionally’ it has a definite temporal reference to the past, but with no specified time period. A tradition has a very indefinite time frame, as it is a relative reference. For instance, “it has been a tradition ever since you where born”, or “it is a thousand year old tradition”, or “Tradition is the traditional reason given for the unaccountable”. In these cases it may well be used with certain adjectives to give it importance or a more specific time

context. Similarly it has no stringent documentation, or formal definition associated with it. A tradition is more social or moral than formal or inscribed, as for instance a law would imply. Although it does have an authoritative approximating meaning it is still sufficiently general to be open to interpretation and a multiplicity of definitions.

This term is therefore problematic when being used in a legal context and thus it can be a double-edged sword. In the case of land rights the two interested parties are generally the nation State and indigenous peoples. The State, when dealing with indigenous land rights, will have a mixed agenda. This agenda is determined by such factors as a) the resources (or potential resources) within an area; b) population pressures within an area; or c) the communication routes through an area. Therefore, it can be in their interests not to grant indigenous people rights to such lands, which is where the unspecific term 'traditional occupancy' can be manipulated to suit their needs.

The indigenous people's agenda is relatively simple, the pressure on their land has compelled them to operate within a culture that constructs 'indigenous' status on the principle of descent and time. They have thus entered an equitable homogenous discourse in which they now have to authenticate their difference in order to further enter an alien system of socio-economics which dictates rules of ownership, whereby they can then gain virtually exclusive rights to the land from which they obtain their livelihood. Hence the broad term 'traditional' suits their indigenous needs as they see that through the jurisdiction of the State their lived experience of inhabiting the land is within the axiom of 'traditional occupancy'.

I was only with each indigenous group for a relatively short period of time, as I had not planned to be with any one group for an extended period, principally because my focus was not an ethnographic account of one group. For this reason I spent some

of the first year searching the literature to give me greater insight into the indigenous representations and perceptions of geography.

Landscape, Space and Place

Geomatic technologies principally portray geography, or to put it another way occidental spatial philosophies concerning landscape, space and place can be represented within Geomatic technologies. Geomatic technologies can thus be used to shed light on the conception of 'traditional occupancy' within indigenous communities. However, to utilise Geomatic technologies effectively within such a context it is essential to try to understand the indigenous conception of the physical space around them, their spatial philosophy. I use this term 'spatial philosophy' to refer to the notion of what we would understand as "our landscape" or "geographical space". Since 'culture' is often described in terms of a relative knowledge or social philosophy then it is appropriate to use the term 'philosophy', and since 'spatial' encompasses geography then I shall use the concatenation of these two as 'spatial philosophy' to refer to general notions of landscape, space & place, environment, earth, territory, land, etc.

Over the past decade anthropologists have been addressing such notions through the concepts of landscape, space and place, within numerous cultural contexts. They have focused on various spatial conceptions in order to elucidate such themes, as linguistics or toponyms (Basso 1984, 1988, 1990, 1996; Hunn 1994, 1996; Weiner 1991; Viveiros de Castro 1992), landscape, space and place (Baker & Biger 1992; Bender 1993; Cosgrove & Daniels 1988; Hirsch & O'Hanlon, 1995; Morphy 1993; Tuan, 1977; Tilley 1994, Jiménez 2003), boundary markers (Berndt, 1976; Rappaport, 1989), myth and ritual (Santos-Granero, 1998), ownership and territoriality (Oldham, Overing, & Masterman, 1997; Arvelo-Jimenez 1992; Pedro Garcia & Smith 1992).

The most frequently debated concepts are 'landscape', 'space' and 'place'. These notions, within the occidental sphere, are, as Morphy describes, "free from fixed positions, having meanings which are elusive, yet whose potential ranges are all-encompassing" (1993: 205). The result is that they can be employed across disciplines and time. However, they do not mean the same thing to a geographer, anthropologist or South American Indians. For a geographer these terms are taking on new meaning as the discipline enters a revolution in spatial thinking. The assimilation of computers and dynamic representations of geography has led to the incorporation of a temporal dimension and hence a new ontology of perspective. This is particularly prevalent in cartography and now computer cartography where social spaces and human agency are integral to the geographical landscape.

Within anthropology, the term 'landscape' is employed to encapsulate the means by which people convey histories and knowledge. Its traditional position in Anthropology was as a framing Convention, most likely from the etymon of the word. The use of the term by European scholars has been traced back to the renaissance era (Hirsch 1995) where it was used to describe paintings portraying geographical panorama or scenery. The Oxford English Dictionary defines it as: picture representing, art reproducing, or an actual piece of inland scenery. The term in the anthropological sciences is semantically ambiguous, multivalent like many other of its terms. Hirsch identifies it being employed in two ways: firstly, to describe the setting, and secondly "to refer to the meaning imputed by local people to their cultural and physical surroundings (i.e. how a particular landscape 'looks' to its inhabitants)" (Hirsch 1995: 1). The second is built on the premise that indigenous peoples are thought to perceive a 'landscape', a concept that is now being discussed and debated within current literature.

To escape preconceptions and reduce some of the notion of 'landscapes' semantic ambiguity, most authors have begun with the supposition that 'landscape' is a cultural

process or cultural construct. Hirsch, in his edited volume “The Anthropology of Landscape: Perspective on Place and Space” (Hirsch & O’Hanlon, 1995), defines ‘landscape’ as part of a social construct whereby the “concrete actuality of everyday social life (‘the way we now are’)” becomes the foreground which pushes “the perceived potentiality (‘the way we might be’)” into the background (Hirsch 1995:3). This he assumes to be a cross-cultural feature and he attempts to explain cross-cultural spatial philosophies in terms of this dialectical relationship between foreground actuality and background potentiality, where people strive “to realise in the foreground what can only be a potentiality and, for the most part, in the background” (Hirsch 1995:5). This is a reasonable theoretical explanation of the occidental ‘landscape’. However, it is based on the notion that ‘land’ is ultimately perceived as a separate entity from the social actor. Even though Hirsch concludes that “There is not one absolute landscape here, but a series of related, if contradictory, moments - perspectives - which cohere in what can be recognised as a singular form: landscape as a cultural process” (Hirsch 1995:23), it is still an interpretation of ‘landscape’ from the slant of visualist ethnocentrism, that presumes a conceptual path from place to space.

Baker (1992) identifies landscape as a social construction, he says “A place (like a person) needs to be recognised in terms not only of individuality but also of contextuality, as a product both of nature and of nurture” (Baker & Biger 1992: 2). He then identifies how the State of a culture at any particular time in history has a very specific morphology, which is implicit rather than explicit. Where its implicit nature enables it to create and recreate itself, a process by which the narrative of culture creates culture and culture creates the narrative, the relationship is reciprocal. “The product is a dialectical landscape which is a resolution of nature and culture, of practice and philosophy, of reason and imagination, of ‘real’ and ‘symbolic’” (Baker & Biger 1992: 7). This interpretation is derived from the geographical disciplines which “usually

employ 'landscape' to refer to the impression conveyed by an area, to the objects producing that impression, and to the area itself" (Baker & Biger 1992: 6).

The geographical disciplines entertain a very materialistic view of landscape, as Baker and Biger identify: "Geographers focussed their attentions upon landscape expressions of material culture and tended to ignore, or at least to neglect, the *mentalité* of the people who created them" (Baker & Biger 1992: 7). They take the first logical step in analysing landscape, looking at the structural and functionalist relationship between humans and their environment.

Barbara Bender, in her edited volume "Landscape: Politics and Perspective" (1993), tries to escape the visualist approach to landscape as she says "In the contemporary Western world we 'perceive' landscapes, we are the point from which the 'seeing' occurs ... In other times and other places the visual may not be the most significant aspect, and the conception of the land may not be ego-centred" (ibid: 1). She says "landscape has to be contextualised", so comparable to Einstein's theory of relativity she sees each individual holding "many landscapes in tension" (ibid: 3). She attempts to create a subjective 'landscape' with contextualisation, while still seeing it as a separation of the subjective from the objective, a linear conceptualisation of the world.

In this view, each individual still sees the same physical world but perceives it and interacts with it in a radically different way, depending on their social philosophy or cultural perception. The use of 'landscape', in Bender's discourse, is the main problem, as she most frequently writes about "the way in which people ... understand and engage with their worlds" (ibid: 4). The objective world is thus subjectified, but through the bias of a visual perspective. Her use of 'landscape' in this context is to force a plethora of concepts and cultural phenomena into this one occidental paradigm.

Tilley, in "A Phenomenology of Landscape: Places, Paths and Monument" (1994), looks at 'landscape' through Heidegger's existential philosophy of 'Being'.

Tilley states that “Being-in-the-world resides in a process of objectification in which people objectify the world by setting themselves apart from it. This results in the creation of a gap, a distance in space ... While ‘dwelling’ occurs in different varieties and textures of humanly created space, this social existence is, of course, rooted in natural and non-humanly created environments”(1994: 23). Here he plays space, place and landscape against each other as a form of hierarchy in the socialisation of the physical, as he says “A concept of place privileges difference and singularity; a concept of landscape is more holistic, acting so as to encompass rather than exclude”(1994: 25). ‘Landscape’, in the cross-cultural context, is here being interpreted by working back to the ‘essence’ of ‘Being-in-the-world’ and then built-up through places to spaces and then landscapes. Each is viewed as a result of the way each culture objectifies the world.

The above authors take the terms landscape, place and space and interrelate them like a Russian doll. They have objectified them. However, Jiménez in his article “On space as a capacity” (2003) subjectifies the interpretation of these terms in respect to social relationships. He argues that these narratives on landscape are still seeing landscape as the Durkheimian region or territory. He relocates landscape as a product of the social and in that space is a capacity of social relationships: “it is what people do, not where they are” (ibid: 140). So people take their spaces with them, and thus place and landscape are activated by human relational agency. This is where some ethnographic discussions have placed the term landscape, such as those of Gow and Basso below.

Basso (1990), in his work “Western Apache Language and Culture”, describes how he could not understand a particular, seemingly clipped, conversation, in which several landscapes were implicated. He noticed that the form of speech associated with this conversation was common amongst the elders. The titles of myths were frequently

place names or descriptions of particular landscapes, and therefore these conversations seemed clipped because they referred to myths as a form of conceptual short hand. Basso says “reference to the landscape, in discourse, is imbued with socio-cultural significance, a place has dual meaning where it is both a geographical location and a social value/ philosophy” (ibid: 142). Hence the conversation may seem unintelligible if the significance of specific references within the dialogue are not understood by the cultural “outsider”. To the Indians it is “more a matter of linguistic function than linguistic form, coherence in discourse is achieved when participants put their utterances to interlocking forms of mutually recognisable work. More a matter of implicit doings than explicit sayings, coherence is what participants hear (though generally they fail to notice hearing it) when their work is going well” (ibid: 149). Here, then, is a description of how for the Indians myths embody landscape and vice versa. The landscape is thus activated through their personal knowledge of the myths.

Continuing with this theme of activated landscape, another approach to it is evident in Gow’s work amongst the Piro of the Peruvian Amazon. He begins with a comparison of Western and Indian perspectives. Each being “structured by a particular kind of visual practice”(1995: 43), exemplifying the cultural difference by comparing the two. He notes that a trained ecologist may well be able to see evidence of human activity in “what is apparently virgin forest”, just as an Indian would. However, the Indian, perceives it as more; they perceive “this knowledge as part of lived experience in the sense of ‘what is going on’”(ibid: 44). Gow describes that what the Piro see when they look at the land is kinship. Just as kinship is reproduced through production and reciprocal sharing of resources, the activities that modified the natural environment to enable this production are part of kinship or “human landscape agency”. Therefore “these zones are not a useless by-product or detritus of native people’s productive activities. They are at once important resources for local people, and loci of

kinship”(ibid: 49). As such, kinship and the land are mutually implicated just as with the Western Apache’s mutual implication of myths and the land.

A significant aspect of this research is to build upon these epistemological interrelations of land and knowledge in order to develop an understanding of how indigenous peoples relate to a wider concept of their landscape, its topographic, physiographic and pragmatic features, cultural and symbolic significance and how it relates to the means by which they live out their lives. Because Geomatic technologies, which operate primarily on the basis of incorporating the ontological perceptions of land or landscape, that is as objective categories, then this understanding that Gow and Basso provide could facilitate the translation of indigenous landscape epistemology. To put it another way, Geomatics is built on Eurocentric conceptions of the terms landscape, land and space, however, it is clear from the above that these terms need to be re-evaluated within an indigenous context. In order to impartially translate the indigenous conception of the same there has been some work which has begun to address this issue and has identified some of the problems of cross-cultural translation in these geographical categories (cf. Gray 1996c; Morphy 1993). For example, Gray (1996c) notes that it is very difficult to escape the culturally embedded meanings of words when employing them to describe another’s culture and similarly when translating words from another culture. He discusses the difficulties in deriving epistemologically neutral terms to describe the many facets of land title and land rights.

Wandari is a broad term which, when unwrapped, covers the contexts in English of world, earth, territory, land, and landscape. The spiritual, political, economic, and geographic aspects of the environment are all blended together into one word with a multifaceted series of connotations. Rather than see the terms territory, land, earth, and landscape as alternatives, we should see them as a way of building up a polythetic definition (Needham 1975) of the relationship between human beings and the environment. Territory thus refers to the political control over an area, the land to the resources contained in that area, the earth to the spirituality connected with the area, and the landscape to its historico-semantic meaning. These are not discrete entities but different ways of looking at the same relationship. Dividing the spiritual from the territorial, or resources from the meaning of activities carried out on an area, is an artificial compartmentalisation which is temporarily useful for an analysis but useless in establishing legal provisions that reflect indigenous perspectives.

This reinforces the conclusion that all these different ways of relating to the environment were, for indigenous peoples, practically and logically connected. To separate the political from the

economic or the spiritual, as happens in the non-indigenous world, is an artificial construct which divides the indivisible.

Gray (1996c: 106)

Because, as Gray describes, polythetic definitions of geography are part and parcel of our cultural perspective or our spatial philosophy, it is difficult to employ these concepts when describing indigenous spatial philosophies, as it is all too easy to eclipse any alternative conception of the world with a word or concept. Particularly when these concepts are encumbered with strong and implicit meanings from the cultural settings in which they originate. This problem of cross-cultural translation is perhaps the key issue in indigenous land rights disputes, since most of the juridical lexicon is derived from non-indigenous discourses on land and sovereignty. Similarly such compartmentalisation is visible in Geomatic technologies' representations of geography.

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This chapter highlights the importance of a fuller understanding of indigenous perceptions and representations of the geography they inhabit. This research begins with some discussions of the more pragmatic aspects of indigenous relationships to land, in terms of resources, ownership, and territory through the medium of Geomatics. However, it is clear that this study can distinctly benefit from an understanding of indigenous relationships to 'landscape' thereby making them more in touch with indigenous social and cultural imperatives.

I began the year with a broad focus that explored indigenous land rights from an international perspective. This gave me a good grounding in international treaties, laws and led me to explore more than just the Amazonian States' agendas for indigenous peoples and their land rights. Land rights in the international arena concern the United Nations, its subsidiary bodies, NGOs and indigenous federations. This provides a framework of advocates for the indigenous people on a community and even individual level, although when I began to look at issues of authenticity it became clear that the

State still has the last word. The above research did not however change any of the premises with which I started, for I still saw “*Indigenous peoples and their land claims as authentic*” and “*Globalisation and colonisation’s pressures on indigenous peoples as bad*”. The literature upon which I was focusing was anthropological and so tended to be biased toward the indigenous plight.

The next area of my research brought the focus down to the group level and more within an anthropological theory of landscape, place and space. Throughout this anthropological focus I tried to keep in mind the relation to Geomatic technologies as up until this point I had not addressed the premise that “*Technology is good in all contexts*”. The following chapter introduces Geomatics and begins to address this Western obsession with the technological imperative. Although I would say that I did not begin to question this premise until I had been working in the Amazon for some time.

CHAPTER TWO

Geomatics

My academic background is both in Geomatics and social anthropology. Thus when I first began this research it was difficult to determine which hat I was wearing. This research could have been conducted purely within the geographical disciplines; however, it would have missed some fundamental issues made clear through the anthropological perspective. Similarly I could have ignored the Geomatics perspective, but this would have just become another anthropological critique of development. For these reasons I have tried to take an interdisciplinary approach to the research, which has not been easy or clear. I have included a section that looks at the interface between the two disciplines, as it is analogous to the application of an epistemologically unique technology within an alternative knowledge system.

This chapter aims to review the technology and begins to explore some examples of its use within the indigenous context. Here, I have kept the anthropological analysis to a minimum since I discuss these issues at greater length in following chapters. In this instance, however, I will try to take a positivist approach akin to that of the practitioners of the technology, in order to disclose what might be the advantages of the introduction of Geomatics into the indigenous context. First I must introduce Geomatics (as this thesis is being conducted within the department of anthropology I presume I do not need to introduce the concepts of anthropology).

Geomatics

The term Geomatics refers to two developing technologies, which originated in the geographical sciences, Geographical Information Systems (*commonly referred to by its acronym GIS*) and Remote sensing.

A current definition of GIS is that by Aldenderfer & Maschner (1996), which states that GIS is “a sophisticated database management system designed for the acquisition, manipulation, visualisation, analysis, management, and display of spatially referenced (or geographic) data” (1996: 4). A very simple example, of a GIS could be a database compiled from historic sites across Scotland, where each site had its attributes broken down, recorded and interrelated in various columns of a database table. Thus far it would simply be a geographic database, if a graphics user interface was built on then it could become a GIS. For instance, a user wished to discover all the Pictish standing stones in Scotland. If they entered this query into the GIS database, these sites could be displayed by the system on a map of Scotland.

GIS breaks down into a) **Geographical**: This ‘spatial’ reference is the key to GIS, since GIS deals with data that has a spatial attribute. Because this is the only prerequisite for the data, a GIS can potentially incorporate our entire physical, and some of our cognitive, universe. b) **Information**: Many different data formats can be stored, linked, analysed, and then visualised. Hence, a GIS provides the facility to create new information from previously incongruent data; and c) **Systems**: The power of such an information system comes from its ability to assimilate many diverse forms of information (multiple databases) into a single information resource. The system is then the linking software, hardware and data. The information system is remarkably flexible and because the data is stored on a computer many more forms of analysis and modelling become possible.

Geographical Information Systems (GIS) developed as computers became faster and more efficient than humans at processing geographic information. Computer processing revolutionised the geographical sciences as computers began to perform previously unfeasible analytical tasks. GIS grew out of this technological revolution and took over many geographic operations that before could only be performed

manually. It also created new ways of visualising data and opened up new areas of research. Today GIS is a very powerful tool and as computers become faster and more efficient so GIS is less and less restricted by traditional data formats. The GIS can then handle more complicated and greater volumes of information more efficiently, which again opens up new areas or research in which a GIS can be utilised.

Remote sensing refers to the capturing and generation of data as the surface of the earth is scanned by a sensor, which can be anything from photographic film to advanced electronic equipment. These sensors are typically mounted on a platform that is suspended above the earth's surface. The majority of remote sensing involves the use of satellite mounted sensors, however, they can also be mounted on aeroplanes, hot air balloons or cranes. The surface can be scanned in different ways, the most common sensors are those that detect the reflection of electromagnetic radiation, from the sun, just as our eyes do. Contemporary remote sensing is a tool that generates data that can be processed and analysed in a computer. It only became a separate field of study, from GIS, because it generates vast volumes of data that involve specialised algorithms.

Remote sensing was developed primarily by the military. It began as a reconnaissance tool, as spy planes flew over enemy terrain and collected photographic montages. It is evident that most technological advances resulted from rapid research and development programmes established during wars. Remote sensing is no exception as it was during the Second World War that the most significant advances in remote sensing instrumentation were realised. For many years remote-sensing data was the sole preserve of the military, but this is no longer the case as much of the data has been declassified and the satellites have been made available to academic institutions and industry.

Later in this chapter I will expand on these basic principles of remote sensing and give some examples of how it can be adapted to the needs of indigenous land rights. For now I will return to the issue of a bi-disciplinary approach.

Geomatics & Anthropology

From the beginning of my research I noticed the indifferent attitude that each discipline had regarding the other. There is no history of overlap, so both have *sui generis* forms of jargon, theory and methodology, and conceive data in disparate ways. DeWalt & Pelto identified this issue in 1985, and said that any integration of multidisciplinary research is often ineffective due to a misalignment of their respective spatial and temporal analysis techniques. This is certainly true of these two disciplines, as I shall explain.

Geomatics have developed in the academic field of geography, and are designed to handle geographical and geometric (objective) data at a complex or abstract level. This makes it somewhat exclusive to more empirical scientific objectives (cf. Kelle 1995; Mizrach 1995a). It is for this reason that, within Anthropology, Geomatic technologies are utilised by just a couple of its sub-disciplines, and only significantly by archaeology (cf. Allen & Green & Zubrow 1990; Brown 1990). The reason for this is apparent if the subjective / objective distinction is made, with respect to the degree each incorporates a spatial data dimension (also referred to as qualitative / quantitative). The main output from the socio-cultural disciplines is of a subjective nature. They rarely use spatial data, because the research traditionally looks at social phenomena on a micro-scale, and thus any spatial or geographical references are generally not part of the analysis process or are merely visual aids (cf. Glazier & Powell 1992; Mizrach 1995b). This is not to say that these disciplines do not incorporate any spatial thinking or objective analysis into their inquiry. They simply do not have a substantial theoretical

tenet that incorporates objective spatial data. The archaeological and cultural ecology fields, on the other hand, have a significant objective and quantitative output and a substantial part of their research has a spatial data dimension making the use of many geographical analysis tools viable (cf. Marble 1990; Hodder & Orton 1976).

It is not just the data formats that limit the use of computer-based technologies within social anthropology, it is also the design of geographical information systems themselves, and the method by which they capture data. Spatially referenced data by its very nature is interrelated. These relationships are not captured by the GIS, but instead are reconstructed after the data has been separated from its original context (cf. Rundstrom 1995). Geographical information systems initially decontextualise the data and load it into relational databases. The relationships between the data are then reconstructed within these databases, linking individual pieces of data on the basis of their shared attributes. These links are called relational joins and they are determined by objectifying the relationships the data had in its original context. GIS is then only designed to manage data about the world that can be deconstructed into component parts that conform to these predetermined storage formats.

This restriction on the data comes not only from the software but also from a hardware issue. Since geographical information systems are dependent on the physics of computers, then computers are the limiting and determining factor in the application of GIS. The distinction between subjective / objective or qualitative and quantitative phenomena can again be used to examine this issue. The current design of processors means that phenomena have to be dealt with in a linear format, with an individualistic notion of cause and effect. Time in the computer is linear, sequential and evolutionary. Qualitative aspects or subjective elements of a phenomenon are presently very difficult to break down into variables that can be factored into a computer algorithm for such linear analysis. Qualitative phenomena (such as human social interaction) would need

to be analysed with a processor that could account for all the factors that are acting upon the subject simultaneously or cyclically, and hence providing a holistic result. Since real life operates in a manner akin to the phrase “the whole is greater than the sum of its parts”; Conventional computers will need to evolve before they can be used to analyse human actions. This takes us into the realms of artificial intelligence and will perhaps be a more pertinent discussion in a few years. The key point is that computers are currently restricted as to what they can effectively process and thus also with regard to what aspects of human agency they can inscribe and manipulate.

So what implications does this have for Geomatics and how compatible is it with socio-cultural applications? Some answers can be found in international development and human geography. Human populations are, and have been, modelled in human geography for a number of decades (cf. Schank & Abelson, 1977). Human geography now utilises Geomatics for this purpose. The models are crude and make some broad generalisations. They use a limited number of parameters to make approximations as to patterns of behaviour in a mass population. These crude computer models have been incorporated into commercial GIS software and are being used to guide city planning and development (cf. Martin, 1996). The issue is that these models have to ignore the micro-scale phenomena, in order to objectify human agency and manipulate it in such a way as to produce quantified analysis. Nevertheless, human geography and the anthropological field of cultural ecology have been quick to utilise these emerging technologies. The technologies effectively become an advocate for the legitimisation of their empirical studies of human behaviour (See Craig & Chagnon 2000, Chagnon 1995, and Chagnon & Mertes 1997, later in this chapter). So within human geography socio-cultural elements are incorporated as mass generalisations.

International development is similarly heavily influenced by these empirical sciences, with graphs, tables and statistics being valued over wordy documents, such as

ethnographic case studies (cf. Chambers 1983). However, it is in these wordy documents that the microscale phenomena are often detailed, and thus these technologically biases in policy design (cf. Richards 1993) are ignoring the subjective microscale phenomena. Stonich (1992) argues that excluding such aspects from development projects, especially third world development planning and policy design, leads to poor planning and design and often development project failure or unsustainability. A classic example of this is that recounted by De Waal (1989) in his book “Famine that Kills” who worked in Sudan during the famine of 1984-85. De Waal argues that when news of the famine broke in the West, relief experts predicted that, without massive food aid, millions of people would starve to death. Food aid on this scale did not arrive in time, but millions did not starve. Deaths during the famine were not in fact due to starvation, but instead were caused by outbreaks of disease which followed the social disruption brought about by famine and famine relief centres. In addition, the priority for rural people during the crisis was not to try to save every possible life, but instead to preserve their way of life for the future. Consequently the huge international famine relief was irrelevant and in fact very damaging to their survival. All that was taken into account by the policy designers was the macroscale and not the microscale indigenous famine relief techniques, which De Waal identifies as the keys to averting a famine that kills.

This example contains a key issue that is a point of contention for social scientists, the issue of time schedule. I would argue that in contemporary Western society the emphasis of time efficiency has been heightened and this is reflected in third world development practice. For instance, to gain such an understanding of indigenous famine relief techniques is not, as De Waal says, a rapid process. In this case “disaster tourists” (ibid: 195) freelance journalists, aid workers and alike were stirring up the media in the West so that the governments were pressured to respond, and respond

rapidly. Any analysis of the situation and planning of appropriate action was very brief, with the obvious results. This is an extreme example but the principle of time constraints and scales of analysis holds as the main shortcoming of third world aid and development.

Chambers (1983) would say that my standpoint was biased, as I am conforming to the stereotypical critical social scientist. He defines two 'cultures' "a negative academic culture, mainly of social scientists, engaged in unhurried analysis and criticism; and a more positive culture of practitioners, engaged in time-bounded action" (Chambers 1983: 28). If the development of scientific and computer analysis tools (e.g. GIS and Geomatics in general) are added to Chambers two cultures approach, then clearly the development practitioners will adopt the time efficient technologies. Because these new technologies offer high tech and glossy solutions then funding agencies and big aid agencies (Department for International Development (DFID), Oxfam, Red Cross, etc) will again favour their use in third world development practice. It is little wonder then that Social Anthropology has been slow to contribute to third world development practice or policy design (cf. Mizrarch 1995a, 1995b). It has also meant that there has been little development of Geomatic technologies in line with socio-cultural applications. However, in the rapidly changing landscape⁵ of the anthropologist's traditional domain of study (the third world) there has been a growth in the field of development anthropology (A field that could be said to straddle Chamber's two cultures). This field takes advantage of the Anthropologists' unique understanding of the microscale processes of change at work within the Third World domain. They are in an excellent position to mediate this change and elucidate the importance that micro-scale phenomena have in establishing equitable development. Although, as may be apparent, jargon, technological design, and interdisciplinary mismatches in the focus of,

⁵ See note two on page 216.

and products of, research (subjective / objective data), has hindered co-operative initiatives. The result is that technologies still do not adequately incorporate or have the means of incorporating micro-scale social phenomena.

Stonich (1996) addresses this problem and suggests a solution within GIS. Stonich worked among the peasant farmers of Honduras during the early 1990's. Her research, aimed to establish a "Methodology for Rural Development and Agricultural Policy Design" (1996), especially aimed at addressing this interdisciplinary mismatch of scales of analysis by utilising GIS to interrelate the research of different academic fields.

The impetus for her research was to evaluate swidden agriculture's destructive effect on environmental processes. The main point is that her methodology included the research of multiple disciplines, and successfully provided a "systematic framework which helped articulate the relevant factors and levels of analysis involved in the social and ecological processes" (Stonich 1992: 140). Since significant contributions came from both Anthropology and human geography it is beneficial to have a closer look at this methodology. The objective was to integrate, through the use of GIS technologies, a representative sample of micro-level studies (of individuals, households, and communities) into a "hierarchical structure composed of multiple, relevant, and increasingly macro-levels of analysis" (Stonich 1996: 80). Figure two below represents the framework for this methodology. The figure shows how both qualitative and quantitative data were collected, which were in many formats from written documents to satellite imagery. These disparate sources needed to be linked and the key to this was to find a set of variables that were present at all levels of analysis, working on the assumption that all levels had equal heterogeneity of data.

The variable that played a key role in tying together these levels was that of land use, since its patterns are observable at all levels. The result was that the “use of GIS ...

		Relevant Factors			
Levels of Analysis		Demography	Economy / Society	Ecology	Nutrition
	International	Community Ethnography / Government Documents Census Reports / Government Documents	Municipal Ethnography Census Reports / Government Documents Economic Development reports International Development Reports	Community Ethnography Municipal Ethnography Census Reports / Government Documents International & Governmental Agency Reports	Nutritional Surveys International / Voluntary & Government Agency Reports
	National				
	Regional				
	Municipal				
	Community				
	Household				
	Individual				
Individual	Male Interview Schedule Female Interview Schedule				

Figure 2: Relationship among various sources of data, relevant factors, and levels of analyse

provided the means to systematically move through various levels of analysis in ways that were never feasible before” (Stonich 1996: 96). For example, “land-use changes could be examined at many levels, from the study of the land-use decisions of one farmer to superhousehold and community patterns of land-use, and from those to regional, national and ultimately world-wide configurations” (Ibid: 81). Hence, she was able to integrate the research of multiple disciplines to successfully analyse a development issue. This work indicates that GIS can serve as a hub for multiple forms

of information, both subjective and objective, which brings the micro-level into the forum of the international development, moving away from the dominant top-down approach. As she says “the resulting methodology provided the means to examine the economic and agricultural decisions of peasants – to consider peasants as actors and agents of social and ecological change – rather than merely as passive recipients who are acted upon by the State or other powerful forces” (Ibid: 95)

As States expand and develop it has become very apparent that small communities and indigenous groups are generally negatively effected. In the worst scenarios they become land-poor or land-less and are forced to either appropriate and/or become impoverished by an induced integration into the State’s cash economy. Their voice is still not heard in multinational development discourse, which aims to assist peoples rather than people and so deals primarily with macro-scale concepts. Anthropologists are beginning to communicate the advantages of including multiple levels of analysis when working outside the occidental sphere. They are advocates in the promotion and inclusion of indigenous knowledge into the Western paternalistic obsession with the process of third world development (cf. Hobart 1993). Although there is still little synergy between the technological approaches and the sociological, the scope for improved development policy and practice is enormous if greater effort is made to cooperate. Projects such as those of Stonich (1992, 1996) demonstrate that jargon, technological design and interdisciplinary mismatch can be overcome when common ground is identified as a starting point and uniting theme. This point is pertinent to this research since it is analogous with the objectives of this thesis, whereby Geomatics, which originate in the geographical disciplines and deal primarily with macro-scale phenomena, is utilised within indigenous communities (the loci of study for the majority of social anthropologists).

Before I switch to my anthropologist's hat I want to look at some Geomatics projects that have been conducted within an indigenous development context. The following section takes a Geomatic bias and looks at the technology's potential advantages and disadvantages where it has been employed in development projects within indigenous communities. To further understand how Geomatics technologies are applied I first need to expand on the explanation of remote sensing. It is relevant here to explain the basic physics behind remote sensing, since an understanding of it gives some key insights as to its application within an Amazonian context.

Remote Sensing

Remote sensing is the recording, storing and processing of reflected electromagnetic-radiation (EMR) from the surface of the earth (See diagram one below).

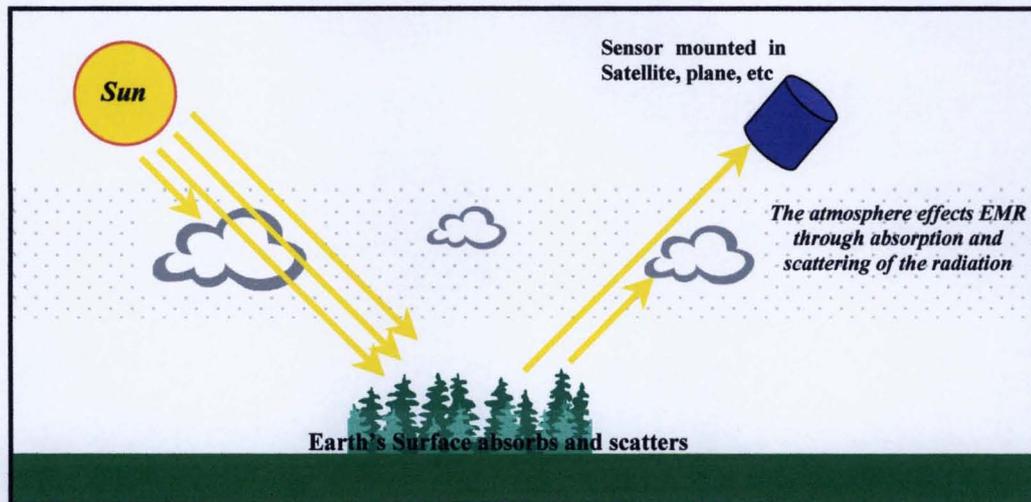


Diagram 1: Path of electromagnetic energy emitted by the sun

This is the basic principle behind human sight. The eye is a sensor that detects a specific range of electromagnetic energy, which is called the visible spectrum (wavelengths from 0.4 to 0.7 μm , see diagram 2 below).

This spectrum is broken down into red, orange, yellow, green, blue, indigo, and violet. Objects in the world around us reflect and absorb different combinations of these colours and our eye detects and processes the reflected colours. For instance, a

Combined with the living layer on its surface the earth radiates some electromagnetic energy, however, this is completely drowned out by the energy that the

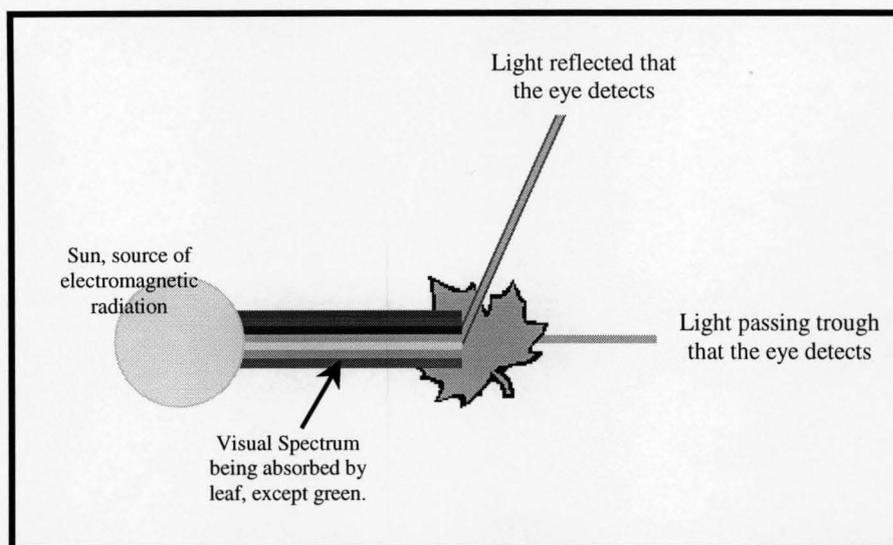


Diagram 3: More green light reflected than other parts of spectrum.

sun radiates. This is why our eyes have evolved to detect the sun's EMR that is reflected back from the earth's surface, rather than that generated by an object. As a consequence, most remote sensing systems also measure energy reflected off the earth's surface, rather than energy emitted by the earth itself.

Remote sensing initially used photographic equipment mounted on aircraft as the method for gathering data. Aerial photography was the earliest form of remote sensing technology, and the film was sensitive to the entire visible spectrum and parts of the infrared band (called panchromatic film). These films record all the visible light entering the camera lens at the instant the shutter opens. The type of camera lens (in combination with the height above ground) will dictate the area that the camera samples, and the film will dictate the range of EMR wavelengths being captured, resolution, etc. The image produced will be either greyscale (black and white) or colour. This form of remote sensing is still used, as it can be cheaper than purchasing and processing modern digital remote sensing images.

'green' leaf appears so because the chlorophyll it contains absorbs all the other colours of the visible spectrum except green, which passes through and is reflected by it (See diagram 3); large masses of ice crystal (snow fields) reflect most of the visible spectrum and so appear white.

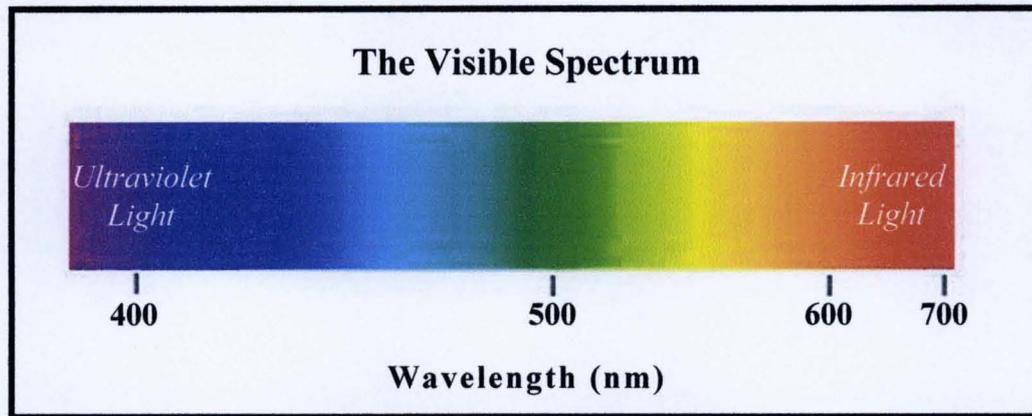


Diagram 2: Visible spectrum of electromagnetic energy

The visual spectrum is only a small part of the spectrum of electromagnetic energy reflected, and this total spectrum of energy is vast. It ranges from radio waves

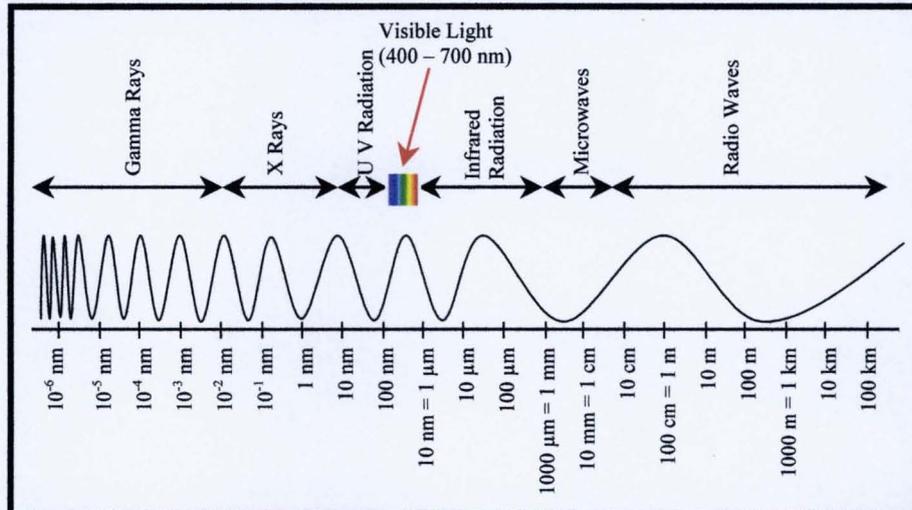


Figure 3: Electromagnetic Radiation

through microwaves, infrared rays, visible light, ultraviolet rays, X-rays to gamma radiation (See figure three above). Electromagnetic radiation (EMR) is a form of energy that is emitted by all matter above 0°Kelvin (absolute zero). Every object radiates energy in the electromagnetic spectrum, at a wavelength inversely proportional to its temperature.

Combined with the living layer on its surface the earth radiates some electromagnetic energy, however, this is completely drowned out by the energy that the

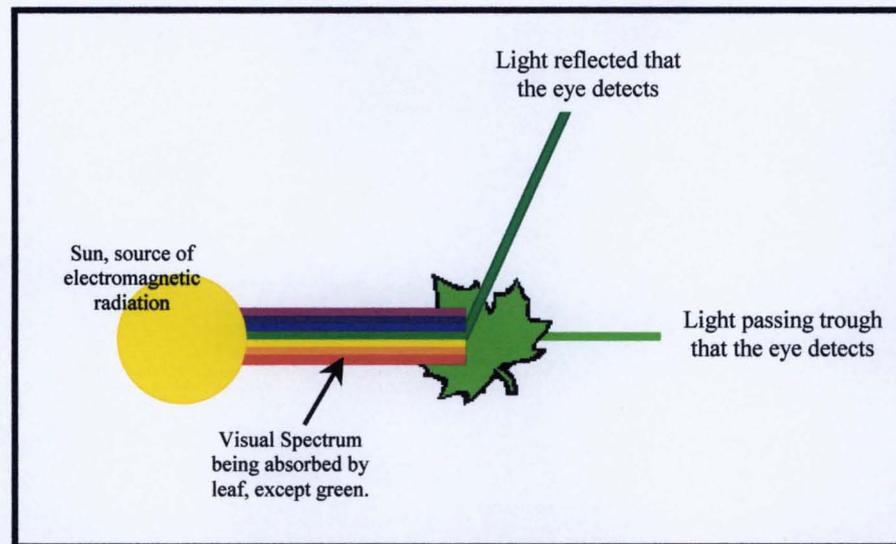


Diagram 3: More green light reflected than other parts of spectrum.

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As I mentioned earlier, it was research initiated during, and because of, the Second World War that discovered a method of gathering data without having to rely on a hard copy (photographic film). The introduction of electronic sensing equipment

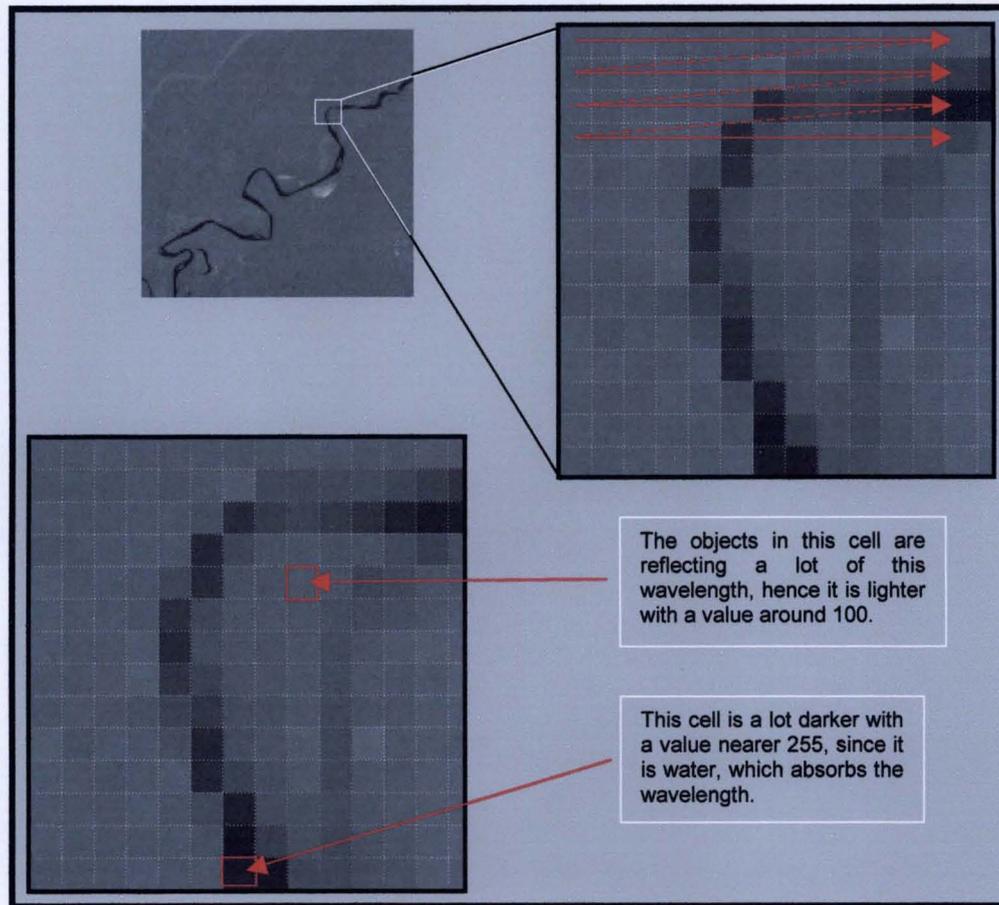


Diagram 4: Process of scanning the earth surface

produced digital image data. It meant that remotely sensed images were no longer in a physical format, as they were gathered and stored electronically. These electronic sensors can detect EMR across the entire spectrum. The data is digital and so can be transmitted, which means the sensing instruments can be mounted on satellites and the data transmitted back to earth.

These sensors function in a fundamentally different way to photographic instruments. Rather than sample a whole area in one instant, as with photographs, the area is broken down into a grid and each cell in the grid is measured individually. The sensors then scan across the grid cell by cell and line by line. Each cell is called a pixel and the sensor will measure a specific EMR wavelength reflected from that square

(pixel). This value is stored as an integer between 0 and 255, where zero represents no reflection of the specific wavelength, and 255 would be total reflection. Diagram 4, above, illustrates this method of scanning surfaces and storing the data in raster format (See appendix six on page 238 for an explanation of Raster and Vector formats). This gives an idea of *how* the modern remote sensing satellite functions, now we need to look at *what* they sense, which is referred to as resolution.

Sensor Resolution

There are four distinct measures of resolution that are used, these are spatial, spectral, radiometric, and temporal⁶. The first two have direct significance to indigenous land rights, so I will give a brief explanation of these, with some examples within the land rights context.

Spatial Resolution

The sensors will take a measurement of reflected energy from a specific unit area of the earth's surface, which are referred to as its pixel resolution. The size of the ground area covered by each pixel varies between each sensor. High-resolution sensors take measurements from pixels as small as one centimetre square. Low-resolution sensors measure energy within cells as large as 4 kilometres square and more. Instruments that produce 30 to 100 meter pixels are considered medium resolution.

Increasing spatial resolution (so that each pixel covers a smaller ground area and the detail of the image produced is much greater) increases the potential usage of remotely sensed data, but it also raises the costs of storing and processing the data. Increasing spatial resolution by one order of magnitude (say from 2 metre pixels to 1 metre pixels) can double storage requirements. The relationship between resolution and

⁶ See Geomatics Glossary on page 262 for definitions of Radiometric and Temporal resolution.

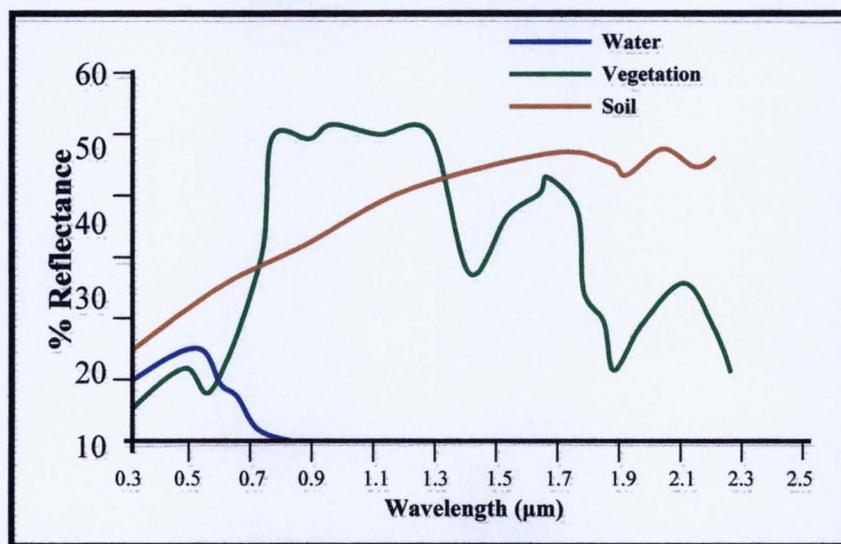
data storage is a major factor in the logistics of continental and global data sets. For example, one image of the entire Earth's surface, with 1-meter pixels, would fill 78,400 CD-ROM disks (about 51,000 Gigabytes). Although data compression techniques significantly reduce storage requirements, the costs associated with high-resolution satellite data remain a formidable obstacle. This is why very high-resolution images, such as those with enough detail so that one could read newspaper headlines from space, cost considerable sums of money to buy. A current image at 1-metre resolution runs in at around \$4000 dollars (185km²).

This considerable expense of high-resolution images is the main factor that limits the indigenous usage of such a medium. If I were to generalise about the indigenous communities and titled lands within the Amazon, then I could make some further observations about the use of such images. For instance, the communities who live close to urban centres are under greater pressure from colonising agents, such as farming colonists, miners, loggers, plantations, etc. This is in comparison to those communities who live in remote regions but still have titled lands. The difference is that the remote communities can still live a fairly nomadic existence and move the community in relation to resources. The land around their titled communities is under less pressure and so they can still exploit it. However, those living close to urban centres or areas of high colonisation are forced to subsist within their titled lands. These lands are further under threat from the colonising agents' disrespect for their title boundaries. Therefore these communities are more likely to have some of their members involved with the federations and hence are likely to be aware of the remote sensing technologies (cf. Nietschmann 1995; Jarvis & Stearman 1995). For such communities this technology would be an effective method of monitoring their lands and any encroachment by outsiders. Although for them to effectively utilise such technologies, they would need to regularly obtain satellite scans of their land. With the

high price of the images then becomes prohibitive to such a system of monitoring. That is not to say that the remote communities could not use such a system as land pressure being lower would require that they could purchase older images⁷ and less frequently.

Spectral Resolution

Spectral resolution refers to the wavelength range, in the EMR spectrum, that an instrument is designed to measure. Objects on the Earth's surface reflect and absorb more electromagnetic energy at some wavelengths than at others. The human eye only detects the visual spectrum of EMR, while objects on the earth reflect and absorb the entire EMR spectrum. To this end remote-sensing equipment can be used to determine



Graph 1: Spectral response Curve

what parts of the spectrum an object will reflect and which it absorbs. The result for a specific object is called its spectral signature or, when plotted, its spectral response curve.

Graph 1 illustrates the spectral response curves of soil, vegetation, and water over a range of wavelengths. You can see that vegetation has a small peak at 0.5µm (the green wavelength of the visual spectrum) and water has a high reflectance across the blues and greens (0.3 – 0.55, hence blue/green seas). Vegetation has its highest percentage

⁷ Older images and old remote sensing data is cheaper to buy.

reflectance in the infrared and near infrared wavelengths, which is why the eyes of pollinating insects see in these ranges. Spectral response curves vary not only between different objects, but also among similar objects depending upon a number of factors. For instance amongst plants a spectral response curve may vary due to such factors as drought, seasonality, stress and alike. If the typical response characteristics are known, it is possible to identify and evaluate the condition of forests, crops, soils, and geological formations. For example, the variation in spectral signature is such that different plant species can be identified simply by identifying their specific spectral signature. In plain English different plants reflect different patterns of electromagnetic energy, which can be used to great effect when studying the activities of humans, as I will explain.

Radar Remote Sensing

I should briefly mention radar remote sensing as I used this in my fieldwork to construct some base maps. The principle is much the same, with a sensor mounted in a satellite that scans the earth's surface. The difference is that the source of EMR is a radar transmitter mounted in the same satellite. The advantages are that radar is not affected by cloud cover, it can scan day and night, and it is able to penetrate the earth's subsoil. The disadvantage is that it is only a representation of the physical characteristics of a surface, and primarily produces greyscale images.

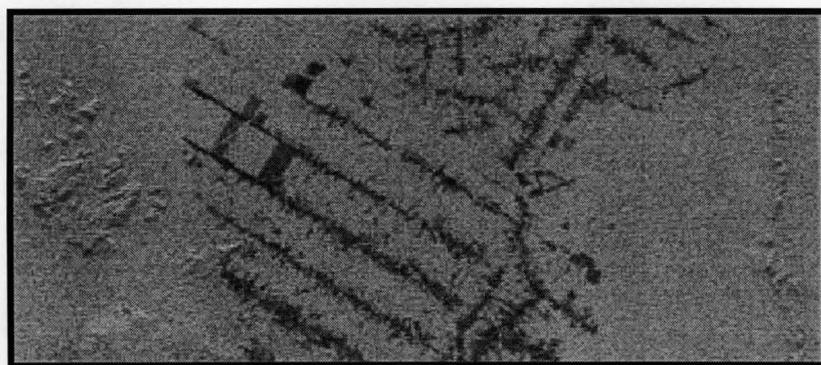
Application of Remote Sensing

Remote sensing technology within an Indigenous-Amazonian context has an enormous potential. That is not to say that some aspects would be in fact logistical or financial impossibilities, as I mentioned earlier. Nonetheless there have been a few published projects amongst Amazonian Indians that have utilised remote sensing, which I will

discuss below. First I want to propose some conceivable examples emerging within my own fieldwork, where remote sensing could have been useful.

Some of the key concerns for indigenous federations, in land rights, are monitoring titled and untitled lands, managing limited resources, and identifying new ones. Remote sensing can be used in these contexts because the majority of indigenous lands are forested and therefore provide a relatively uniform land cover.

Uniform surfaces seen from space, such as forest, also make the identification of human activities very easy to identify and monitor. Picture 1 below clearly shows the



Picture 1: Remote sensing image of logging activities in Jungle

distinct rows and lines of logging activity. If the resolution of the image is very high then even subtle human activity,

normally masked by the forest canopy, can be highlighted when a remote sensing image of the forest is analysed. This is because forest vegetation has a distinct range of spectral signatures, which indicate species, and other factors such as the state of health and growth of the plants. For instance, secondary forest growth has a significantly different spectral response curve to that of primary forest. Since the abandoned clearings of an old village will re-grow with secondary forest they can be identified through image analysis, with little extensive ground truthing⁸. During my fieldwork I saw a number cases where this form of non-intrusive survey could be very effective. For instance, there are numerous indigenous groups in the amazon who have very limited contact with the national societies of the countries in which they live. The

⁸ See Geomatic Glossary on page 262 for explanation of ground truthing.

indigenous federation *Federación Nativa del Rio Amazonas* (FEDNAA) were trying to establish a territorial reserve for the some of these groups (They refer to them as “uncontacted” or “peoples in voluntary isolation”), in particular the Yora, Yine, and Amahuaca, of the Madre de Dios region. The problem with such groups is that they do not frequently come into contact with the diseases that afflict the large national populations and so contact could result in serious or fatal illness, which makes surveys and study with them very problematic. Not to mention the fact that these groups were currently being very hostile towards outsiders, even attacking them with arrows. The federation believed them to be running a terror campaign where they were attempting to drive away loggers and miners, and with reports of them ‘fatally wounding’ one miner, with an arrow through the neck, the campaign was working. FEDNAA were trying to establish the demographics for each of these peoples, in order to conform to the bureaucracy of the application for territorial reserve status. Here my satellite survey would have been able to establish the number of settlements, number of houses, type of houses, etc. Then using anthropologically studied comparable groups a good estimate of demographic numbers could be established⁹.

A second example of this project’s possible application came from an encounter with an oil company, who could have taken up this idea and would have little problem acquiring the images as they already had them for their survey work¹⁰. The Oil Company was PeruPetro{ XE "PeruPetro" }, which was due to commence surveys in the Kugapakori-Nahua Reserve (Peru). They have a ‘public relations’ mandate, which stipulates that “if an area is populated by ‘unsurveyed’ or ‘uncontacted’ indigenous groups then they will not enter the area at the risk of spreading disease”. This satellite

⁹ The reserve was eventually established on the 19th of April 2002.

¹⁰ Through a complicated network of people I became aquatinted with the environmental management officer of PeruPetro and we talked at length about their activities and the potential use of satellite images. I was recently offered the work, but because their goal is to establish pipelines through many indigenous lands, I turned them down.

survey would have served their purpose, although I think the mandate was perhaps just a public relations exercise¹¹.

Within the literature there have been a number of papers about the use of remote sensing within indigenous groups, such as those by Behren (1996) and Loker (1996). These authors are concerned with the cultural ecological perspective on soil degradation within Amazonian regions. They both postulate that traditional methods of collecting data are slow and often inaccurate, whereas remote sensing (supported by ground truthing) can analyse vast areas accurately. Loker looks at monitoring land-degradation processes and Behren uses remote sensing and GIS to support his theory of land use intensification and deforestation among indigenous Amazonians. These researchers have mainly used the indigenous groups as examples of microscale human activity. Although their research has little impact on the indigenous groups, their methodologies are significant for future research initiatives, which involve, or are undertaken by, Amazonian communities.

A few projects have actually used remote sensing to assist with indigenous initiatives, for example, the Yuquí Ethnodevelopment Project funded by the InterAmerican Development Bank (IDB), between May 1992 and August 1993. The Yuquí are located in the central lowland jungles of Bolivia. The Yuquí were all settled in local missions and their numbers were few, when they secured funding from the IDB. With the aid of 'their' anthropologist they obtained land title and established communities away from the missions (Stearman, 1989). The Yuquí have title deeds and government maps of their own lands, which are in the main demarcated by rivers. One boundary is represented by an arbitrary line on a map, which links the river boundaries. The Yuquí established communities near this boundary, as it was the most vulnerable

¹¹ In April 2002, they were reported to have entered the reserve and contacted the Nahua and Nanti communities, in order to have them sign an agreement which would let them work in their titled land. They were also reported to have asked about other isolated groups in the test zone and sent a helicopter to seek them out to get them to sign the same document. So much for not spreading disease!

land, close to a main highway and large-scale logging activities. As part of the project it was decided that some of the funding needed to be spent on an extensive Geomatic survey and mapping of their lands, involving the use of GIS software, GPS ground truthing and high resolution satellite images from the French satellite agency's SPOT 1 (*Satellite Pour l'Observation Terre*).

The aim of this elaborate Geomatics project was to set up a database of accurate boundary and territory information. Then, from this, to produce maps and “merge satellite imagery from different time periods in order to detect environmental change, and incorporate these images into a GIS database updated by GPS to allow for the monitoring of development encroachment” (Jarvis & Stearman 1995: 58). They envisaged that in future further satellite images in combination with GPS updates from boarder guards could be used to identify the activities of those entering their lands.

This project, although successful in its preliminary goal, did encounter major problems of sustainability. The technological aspects were only of use while foreign assistants were on-hand. After this help was withdrawn the community no longer had sufficient access to the technology, or appropriate training to utilise any of the relevant technology. Other problems were on a logistical basis, for instance the maintenance and monitoring of these newly established boundaries waned. Enforcing the boundaries became problematic, as the regional and national authorities would not police any illegal extraction of their resources or other such encroachments into their titled lands, without evidence substantiated by technology (Jarvis & Stearman 1995). I would say that while Jarvis & Stearman who carried out this project had very noble intentions, they were perhaps somewhat short-sighted and paternalistic, an attitude revealed in their final sentence: “One may glimpse the meaning of an indigenous territory when Yuquí school children reverently touch their map – a map that tangibly acknowledges to them and to others their place in the world community” (Jarvis & Stearman 1995: 61).

Such problems seem to be typical of this form of project where such use of advanced technology is currently incompatible with the Amazonian indigenous community context (cf. Calla, Jason & Koett 1997; Makokis, Ralph & Buckley 1997; Poole, P. 1995b). In the above project the satellite images were too expensive to be periodically purchased for monitoring. The jungle is also a very harsh environment for such delicate technologies, and humidity will cause computers to rapidly develop mouldy terminal malfunctions. In the above project most of the data processing was carried out back in the United States suggesting that few Yuquí had become fully trained in the use of the technology, a fact born-out as Jarvis & Stearman reported that the projects were not sustainable without continued funding and technical assistance (Jarvis & Stearman 1995).

This is perhaps an area that can be improved with a different approach to the introduction of such technologies. I saw such success during my fieldwork when GIS technology was introduced to an indigenous federation, in this case, *Federación Nativa del Rio Amazonas* (FEDNAA{ XE "FEDNAA" }), in the town of Puerto Tambo{ XE "Puerto Tambo" }, Peru. Here a small geomatics workstation had been set-up with funding from DANIDA (Danish Agency for Development Assistance, department of Royal Danish Ministry of Foreign Affairs), with a few individuals being trained and thus having a good working knowledge of its operation. These federations are already assisting the individual communities to obtain and defend land title, and thus creating a centre for Geomatic technology within an institution that has permanent staff and so gives such an initiative a better chance of sustainability.

Because of the nature of the technology there are two key factors necessary to the success of projects involving remote sensing: these are trained staff and suitable, continuous funding for gathering and purchasing up-to-date data. This is where GIS

would be more appropriate in an indigenous initiative than remote sensing, as it is not so heavily dependent on expensive data.

Application of Geographical Information Systems

As I have mentioned earlier, GIS needs some adaptation for social and cultural artefacts to be extrapolated from almost purely quantitative analysis technology. Without such adaptations there are few areas in social anthropology that lend themselves to meaningful technological analysis and manipulation. That said, cultural ecology uses GIS and remote sensing technologies to analyse socio-economic human activities, and archaeology use GIS technologies to map out, manage and organise their research sites. I will look at a few examples of the cultural ecologists (or environmental determinists) research below, but first I want discuss one of the rare aspects of Social Anthropological research which ostensibly fits GIS technological analysis. Within anthropology the study of kinship has produced distinct sets of rules and categories for the analysis of community reproduction and interaction. These anthropologically derived rules can be treated as 'objective' and so a dynamic database can be designed to model them. For my Masters thesis I designed such a database which could be used to establish the residence rules and general kinship categories of an indigenous community (Menell 1998). The lineage system of kinship theory is suited to computer modelling as it follows empirical logic. However, just as kinship studies are limited in what they reveal about a community, so too was the technology in the flexibility of its analysis. This is primarily because kinship terminology in the real world does not follow rules as it is more a 'subjective' system based on politics, socio-economics and friendship, than an 'objective' system based on the rules of genetic inheritance. For this reason effective GIS modelling of kinship was limited to certain generalisations based on the analysis of spatial relationships, such as rules of residence (Menell 1998). Although I designed the

software to analyse the residence rules of a sample community, the results it generated could not be statistically significant, unless I manipulated the data based on subjective information concerning individuals residence choices outwith the theoretical rules. The point is that I was not using a sufficient number of variables to accommodate individual's residence choices.

The next examples explore a similar area of indigenous spatial relationships and GIS analysis, which has been taken further by cultural ecologists in the department of Anthropology, at the University of California (Santa Barbara). Price & Craig (1997) used census data collected by Napoleon Chagnon to explore how GIS could be used to elucidate the spatial dimensions of residential patterns among the Yanomamö. Specifically, they construct a GIS of a particular *shabono* (segmented communal huts), to display the locations of the residencies of *shabono* inhabitants, and link these locations to a database containing anthropologically relevant census data on each inhabitant. They were also interested in associations between residential distribution and kin relationships among village residents, as they presumed that locations of individual residencies in the *shabono* are determined by where people hang their hammocks. Other GIS based projects were conducted by Craig & Chagnon (2000), Chagnon (1995), and Chagnon & Mertes (1997) who used GIS tools to contrive a materialist explanation for the relationship that the Yanomamö people have with their environment. They began to explore the incorporation of smaller scale social phenomena in a GIS, based on fieldwork with the Yanomamö Indians. Chagnon gathered the majority of the census data for these studies, having worked with Yanomamö data for over thirty years. He compiled GIS databases of information ranging from genetics to cosmology, with an emphasis on data that had a distinct spatial component. He used GIS technology to manage this data and quantitatively analyse various aspects of Yanomamö society. His work describes some notable advantages to

the use of GIS in analysing political alliance and subsistence, and perhaps most notably, through analysis of residence patterns, to give insights into the bellicose relationships developing between Yanomamö villages. For example, Price & Craig (1997) and McGuire, Chagnon & Carías (1996) worked with this extensive Yanomamö census data to create maps of the village settlements and individuals' residency. Their purpose was to use the GIS to confirm this hypothesis that inter-settlement bellicose activities correlated with access to natural resources. The evidence examined using GIS supported their arguments that settlement patterns were related to ecological factors, "in that settlement distribution is related to the resource potential of the respective jungle region, and that less inter-settlement fighting occurs in regions with ample resources" (Price & Craig, 1997: 14). This research originates in the unpopular fields of cultural ecology or ecological determinism, but it does demonstrate a potential for the incorporation of socio-cultural data into an empirically biased database.

The examples above demonstrate the relative disparity between Geomatic technologies and microscale human agency (cf. Downey 1992). Projects, which have focused on such scales, have tended to incorporate only those aspects of a society that have spatial relationships and perhaps neglect other significant and influential elements, as I will discuss in later chapters. These projects do push the technology in new directions and help to adapt and develop it for social science research, but presently it is only applicable to projects that are focusing on spatial relationships (cf. Engle 2001). Within development anthropology there is one area where it is being developed, and that is in the dynamic mapping of indigenous community's lands.

GIS Mapping & Maps

The development of geographical information systems (GIS) has, in the past, paralleled the development of computer cartography, and now GIS incorporates computer

cartography as a means of visualising data. Moreover, GIS is frequently used in this capacity to create technologically dynamic map.

Maps have been in use for hundreds of years and Western societies utilise many different forms. Traditional paper maps are static, two dimensional, and can quickly become out of date, which has been a disadvantage to this medium for the effective representation of temporally dependent data. This is where GIS revolutionised cartography, as the GIS dynamic map is multidimensional and easily updated. Within a GIS map the geographical information is represented in layers or themes in two distinct formats, either raster or vector. Vector layers are formed from data represented by lines, points and polygons, and raster layers where the data is aggregated into grid cells. For instance, a raster layer may be remotely sensed data, and a vector layer may be a line map of a river network (See appendix six on page 238). It is not appropriate here to discuss the advantages and disadvantages of each format, suffice it to say that vector formats are used generally when the data's representation needs to be accurate (such as for high quality maps of boundaries, roads, etc). Raster formats are more suited to modelling, analysis and display. In the construction of GIS maps these themes or layers can represent virtually anything. Whereas the paper map was restricted to two dimensional display and representation, the GIS dynamic map can render the image in three dimensions or four (displaying a changing image over time). It is this new potential that has led to maps and conception maps being employed in original areas of research and development. One such area concerns indigenous knowledge. Here maps are being employed by and with indigenous groups for a number of different reasons and so a number of different map formats are evolving. Below I want to examine a few of these formats.

Maps for Legal and Juridical Purposes

The reasons indigenous people have begun to use maps for legal purposes is obvious, since maps have an inherent authority imbued to them from centuries of use in Western society. As Monmonier puts it “As powerful tools of persuasion in science and public affairs, maps have had a remarkable effect on our view of the world ... At the root of their power is our frequently unquestioning acceptance of cartographic messages. Even folks who are routinely suspicious of written text equate maps with fact” (1995: 1). The indigenous federations have long been aware of this authoritative nature of maps.

Bernard Nietschmann describes the advantages in indigenous territorial disputes:

“More indigenous territory can be reclaimed and defended by maps than by guns. Whereas maps, like guns, must be accurate, they have the additional advantages that they are inexpensive, don’t require a permit, can be openly carried and used, internationally neutralise the invader’s one-sided legalistic claims, and can be duplicated and transmitted electronically which defies all borders, all pretexts, and all occupations”

(Nietschmann 1995: 37)

Federations have learned that maps can endorse their relationship to the land and give legitimacy to their claims on it. Because a well-presented map has judicial authority, they are rapidly becoming the principal witnesses in indigenous land claims as the next quote exemplifies:

Hot on the heels of landmark court victory, where a village map was the key piece of evidence used to prove customary rights of the *Rumah Nor* to rivers, streams and customary forests, the Malaysian government passed a law that makes community mapping illegal. The new law is designed to undermine community-based mapping and prevent villagers from defining and defending their land rights in the courts. This new law, the Land Surveyor's Bill 2001, now requires that all map makers be certified by the Director of Lands and Surveys - a politically appointed position. Mappers without certification face steep fines and up to three years imprisonment if caught mapping without permits.

www.nativemaps.org (2002)

This highlights the legal benefits of a map – when allowed - and it is well known to the federations that indigenous communities should make maps of their lands. But what are they mapping? and how do they do it?

Indigenous Resource Maps

Over the past decade many NGOs have been making maps for indigenous people and in the majority of South American countries these have been fairly simple projects (cf. Poole *et al* 1995a). They are relatively simple because in South America the National Governments will recognise land rights where the community can show it utilises the resources of that land (cf. Smith *et al* 1991, Gray 1996) and resources are easy to map with the current technology. This form of legal recognition of land rights is perhaps now the most common world-wide, although the Australian Aboriginals are given land rights through proof that an area is a 'sacred sight' (cf. Nettheim 1994) and the American Indians through similar spiritual connections to an area.

I visited a NGO, called "World Rainforest Movement"¹², who were producing resource maps (also called land-use maps) through GIS technology for indigenous communities in South America. Their methodology was simple and fairly typical of other GIS based mapping projects I came across¹³. They began by digitising¹⁴ a government map of the specific region as a base map. Government maps are not always available or accurate and so another method is to digitise a satellite image (as I did). They then ran workshops in the communities to train the indigenous people how to use a global positioning system (GPS). Hand held GPS was used to record significant locations, such as frequent fishing or hunting locations. The GPS readings were represented on the base map as symbols that related to the locations' significance denoted by the indigenous peoples. The result is a map that portrays the regions' resource use for that group or community.

¹² The World Rainforest Movement is headed by Marcus Colchester, see bibliography for Literary References and note 3, on page 216, for further information on the World Rainforest Movement (WRM).

¹³ The *Instituto de Ayuda* (IDA) used a similar technique, which I will discuss in a later section as did a project run by *Asociación Interétnica de Desarrollo de la Selva Peruana* (AIDSESP).

¹⁴ Storing a map or shape in the computer in digital form, hence a flat map is traced into a computer so that it is stored as points, lines and polygons.

This method is fine as long as you only want to make maps of simple things like economic or comestible resources. However, there are issues this sort of mapping does not address. These resource or 'land-use maps' leave out complex local, social and political matters that cannot easily be mapped (such as local markets, social structures, political relations, identities, beliefs and livelihoods), which tend to have very strong influences on resource use (Colchester & Lohmann 1993). Indigenous people want to be the ones who determine how they claim their land, and indigenous groups do not always use resources of a certain area but will still identify with that region as traditional lands. These points have both traditional and contemporary inferences with regard to the conception of a 'traditional resource'. Posey & Dutfield (1996), in their book "Beyond Intellectual Property", discuss the contemporary issues of the changing conceptions of traditional resources. The following point about these resources addresses why these land use maps have proliferated:

“Traditional resources’ include plants, animals, and other material objects that may have sacred, ceremonial, heritage, or aesthetic qualities. “Property” for indigenous peoples frequently has intangible, spiritual manifestations, and, although worthy of protection, can belong to no human being. Privatization or commoditization of their resources is not only foreign but incomprehensible or even unthinkable. Nonetheless, indigenous and traditional communities are increasingly involved in market economics and, like it or not, are seeing an ever-growing number of their resources traded in those markets”

(Posey & Dutfield 1996: 95)

So the indigenous community will either see colonists, logging companies or other commercial resource extractors operating on their lands, or they will be themselves exploiting certain resources for cash gain. In either case the market economy has forced them to identify the importance of protecting 'their' lands from outsiders and for their own benefit. Fast and simplistic mapping techniques afford a community a nationally recognised means of protecting their resources and lands. Nevertheless, in the case where the connection to the land is not a tangible resource, then a simple paper map can be a constraint, especially when used in native land title negotiations as Andrew Turk highlights in his paper "Presenting Aboriginal Knowledge" (1996). He recognises that

traditional cartographic techniques do not best “connect with the concepts, traditions and needs of indigenous Australians” (1996: 9). For instance, Aboriginal appropriations of land are not easily represented with this format. This is highlighted in Morphy’s description of “The Politics of Landscape in the Northern Territories”

The landscape is associated with two different cultural constructions of space/ time. In the European case land is part of a historical process that leaves certain images, visions, and events behind. Place names, for example, provide a kind of scattergram of historical events with certain densities of historical focus that reflect positions in colonial time ... Land use, the attachment of people to land, and the people attached changes over time. In the Aboriginal case, place and place names are integrated within a process that acts to freeze time; that makes the past a referent for the present. The present is not so much produced by the past but reproduces itself in the form of the past. It is a process which increases the density and intensity of attachment to places where people are currently living. At the same time mechanisms exist for renewing links with places that were until recently abandoned or irregularly visited, or which were occupied by other groups. It is this flexibility in combination with the ideology of timeless continuity that has proved conceptually difficult for anthropologists to grasp and has proved so frustrating for European objectors to Aboriginal land claims. The timeless continuity in itself makes it difficult to reconcile Aboriginal interests which appear long term with European interests which appear temporary. Yet at the same time the Aboriginal past seems to be inconveniently present. It is not possible for a government to move a sacred site or the focus of Aboriginal spiritual interest a few kilometres to the south, though it is quite possible for Aborigines to extend the influence of the site in that direction.

(Morphy 1993: 240)

The problem is one of representation particularly when the object represented is not synchronic in nature nor conforming to the format of a point, line or area. For instance, an Aboriginal song line may denote that a person ‘possesses’ certain rights to disconnected areas of land and individual sites along a route through the landscape. It does not mean that they consider all the land on either side of the song line as included in the ‘possession’ of that *songline*. To represent this conception of possession is very difficult, as it does not consist of determinate areas or boundary lines, which relate to occidental referencing systems which can be plotted on a map with our own traditional symbolism.

We have seen that resource maps are perhaps the best legitimating medium for indigenous land claims because the present reality is that the State has power over them and over the land, so they must conform to the system of the State in order to make a claim on ‘its’ land. This factor tends to limit the scope for a self-determination of what constitutes ‘traditional occupancy’. However, GIS can be used to build from these basic

resource maps and add layers of information and meaning. The development of cultural mapping has given scope to the incorporation of the indigenous conception of land. Colchester & Lohmann 1993, argue that these sorts of map could be judiciously used to reclassify much larger areas of indigenous traditional lands as essentially a traditional resource (in the sense that Posey & Dutfield (1996) imply, where traditional resources are both resources and intellectual property).

Taking resource mapping one step further to include other aspects of indigenous culture has developed sporadically within GIS. GIS can offer what paper maps could not: the extra dimensions needed to incorporate less topological cultural connections to the land. This area of research in GIS is referred to as cultural mapping.

What is cultural mapping?

First, it is important to clarify the terminology since there are a number of disciplines using the term cultural mapping. 'Mapping' can signify either (a) 'the representation, scheme or example of the layout or state of something'; or (b) 'the cartographic representation, in outline, of surface features'. In this research, the 'mapping' aspect is akin to (b) and cartographic map-making. The 'cultural' part could best be described as the ethnography of space and place or the ethnography of the indigenous cultural landscape. So the definition of a cultural map would be 'the spatially referenced ethnographic representations of a culture'. The following section explains the general methodology of cultural mapping, with ethnographic examples described later in the respective chapters of the Ese'eja, and Yanesha.

Since the technology is relatively new and the scope for its application still little researched, there is no formal or standardised methodology. This means that the explanation of what it is, as well as its format and functions vary between its exponents, and within the indigenous context this variation is particularly apparent. For instance,

the Canadian First Nations are promoting a form of cultural mapping called bioregional mapping that can produce a range of map types, from those based on cartographic principles to those based on an individual's method of representing a landscape.

For the purposes of this thesis, I shall breakdown the methodology that I employed, since it plays to the strengths of the technology and the cartographic method, as well as to the legal expectations of such maps in land rights claims. In an ideal world a whole new method and technology should be developed to fall in line with the indigenous perspective. However, the limitations of time and the need to formulate the question as to exactly what the indigenous people want to develop, meant that this was impossible to achieve during my fieldwork. I entered the field with my own epistemic understanding of maps and the mapping of indigenous culture, therefore arriving into the field with a predetermined methodology, which I will explain below.

In general, cultural mapping involves the recording of basic ethnography either onto a paper map or into an electronic device. As mentioned earlier the 'mapping' part of 'cultural mapping' predominantly refers to the cartographic concept. Therefore, the information gathered needs to have a significant spatial aspect. Fundamentally, this means that the information needs to be of such a nature that it has topological reference. Working on this premise the data can be organised or grouped into layers. These layers in geographical information systems (GIS) are analogous to multiple transparencies overlaying each other. Typically each layer will consist of the same form and format of data, such as rivers in one layer, streams in another, lakes another and so on. Since GIS technology is becoming widely available then the data should be gathered in layers as standard practice, for this would then facilitate future work with the data as well as giving a logical order to the fieldwork data collection.

The first layer is a base-map. Base-maps are generally very basic and should include only the major geographical features, such as rivers, mountain peaks, and other

physical topography. They are generally the representations of that area's natural features excluding apparent human agency. The most important aspect of the base map is that it is accurate and georeferenced. This is perhaps the biggest problem for many Amazonian peoples since there are very few accurate maps available. They either have to survey their own lands or obtain a detailed satellite image. The accuracy of the base-map is particularly important if the final result is to be used for legal purposes, as in land rights.

The subsequent layers of information are determined by the purpose of the map, for example, a hypothetical indigenous community lives in the foothills between the Amazon basin and the Andes. They have lived in this area for decades and so all their cosmology is linked to the surrounding landscape. The best base-map in this case would be a georeferenced¹⁵ satellite image, since it looks like a picture and is easier for informants to identify with the features it portrays. This is particularly important when working in the community, since informants are generally not accustomed to interpreting maps.

All the subsequent layers are drawn onto the base-map. These data layers begin with the information that is most obviously spatially related (that which has the minimal temporal element), such as the topographical information¹⁶ about the surrounding traditionally used territories. The simplest form of this is their indigenous toponyms¹⁷ and the geographical nomenclature of the indigenous lands in and around the community. This includes names of mountain peaks, rivers, villages, rocks, or any distinct geographical feature that has been named. The names used for these features today may not be the traditional or the original ones used by the community. For example, the hypothetical name for mountain X, underneath which they live, is the

¹⁵ See Geomatics Glossary on page 262 for explanation.

¹⁶ This refers to any information that can be physically represented or plotted on a standard cartographic map, see Geomatics Glossary on page 262.

¹⁷ A toponym is a place name or a descriptive place name, usually derived from a geographical feature, see Geomatics Glossary on page 262.

Cerro Americana, but the people originally called it *O'nimaté bê maté*. In these cases both names are recorded but the indigenous community would have a map which utilises only their traditional toponyms.

During my fieldwork I would often hear elders lament at the rapidity with which these aspects were being lost from their peoples' knowledge¹⁸. I would surmise, from these laments, that the principle reason for this loss of knowledge was the fact that the 'new' names for these features, given to them by the colonising cultures, were becoming the norm, widely used by both indigenous and locals alike. These names are more commonly used because of the daily interactions many of the communities have with the colonists and national society. Previously this renaming or subjugation of toponyms by an invading or encroaching agent was an issue of arrogance and authority. The new name acts as a claim to that area and belittles the importance of the current occupants (Monmonier 1995, 1996, 2001). Now a revisionist tendency has led to many federations and indigenous groups around the world campaigning to have their own names reinstated. For instance, in 1985, Ayers Rock in Australia was renamed *Uluru*, the Aboriginals' original toponym, after a long campaign (cf. Layton 1986)

This part of toponymic mapping is straight forward, and with good quality base-maps, can be conducted in the community without the need to traverse their entire territory. I mentioned earlier about the use of satellite images as basemaps for plotting such toponyms, as a point of fieldwork methodology the fieldworker should walk throughout their territories many times, accompanied by different individuals each time. I found that when walking with individuals they imparted far more information, not only because they related to the physical surroundings rather than to a map, but also because of the informal atmosphere such walks created.

¹⁸ Cultural mapping in anthropology appears to have emerged from both 'rescue anthropology' and the land rights movement.

The base-maps would quickly become cluttered with information drawn on by each informant so I saw that using transparent overlays for the informants reduced this problem. Also in giving each person a blank overlay they were not then influenced by things others in the community had drawn. This method also highlighted the intra-informant differences, contradictions and alternatives in their toponymic knowledge. During my fieldwork this stage of the process acted as an ice breaker and often lead to enthusiastic offers of field trips to the lands around for further explanations of myths and proud demonstrations of their wayfinding knowledge, such as hunting trips to *colpas*¹⁹, and alike.

These first layers are straight forward as the information refers to a localised feature that can be drawn as a point on the map. The next few layers are not so simple to portray as they include a significant temporal element. They also refer more to areas, and are 'subjective'. This data comes under such categories as seasonal (*resource gathering, temporary settlements, hunting encampments etc*), historical practice (*disused paths, old settlement sites, location of historical event, etc*) and religious or cosmological knowledge (*sacred sites, areas mentioned in myths, etc*). Such data can be plotted onto a map because it still has a spatial element, such as the locations where various resources are traditionally gathered or hunted, as for example, the location of medicinal plants, or trees bearing marketable fruits such as the Brazil Nut. In addition, areas can be mapped such as those where an abundance of leaves for roofing grow or certain animals can be found due to a specific habitat, and so on. The main problem with these layers is one of representation and symbolisation. A map can quickly become cluttered; thus it is important to create individual layers for categories of information, for instance, areas can be represented with shading, and seasonal or historical features can be portrayed on separate layers.

¹⁹ See Spanish Glossary on page 261.

Within Peruvian State law, proof of traditional occupancy only relates to resource use, which means that a cultural map for this purpose would not need to include any more information than the above layers. However, with the use of GIS, cultural maps can go a lot further and be used to record much more detail relating to an indigenous community's relationship to its lands. This information takes many forms, most of which is incompatible with such two or three-dimensional data formats in standard cartography. They do nonetheless have a tie with the land if not in a specific location, at least in relation to an area, as for instance, with songs or stories about significant mountains, or personal perceptions of places and spaces that indigenous people often use to wayfind (Ingold 2000: 219). All these formats can be recorded, documented or photographed, and can then be stored on a database with hyperlinks²⁰ to the map.

The GIS then can lead to an indigenous historical and cultural multimedia database. Andrew Turk (1996) has helped to guide several groups of Australian Aboriginals through the technology enabling them to incorporate and dynamically link disparate types of information in a GIS computer database. These include such items as films of ceremonies, oral stories, still photographs, maps, ethnographic accounts, records of language, and the like. The GIS database is a particularly appropriate hub because Aboriginal mythology is heavily dependent on space and place and because the key link between all these data sources is spatial (cf. Peterson & Langton 1983; Turk 1996, 1994; Turk & Mackaness & Tinlin 1994; Turk & Mackaness 1995).

Cultural mapping is still being developed, and much of the impetus for these mapping projects is coming from indigenous communities. Virtually every community I visited expressed a keen interest in such a project. The two main motivations for cultural mapping amongst the indigenous community are cultural preservation and self-determination. There is also an initiative to make cultural maps a key witness in land

²⁰ See Geomatic Glossary on page 262.

rights (Colchester 2002), but until national governments agree to ratify their judicial worth then resource or land-use maps remain the main witness in that respect. The second motivation is that of cultural preservation, but the current means of recording indigenous intellectual property is neither accessible nor ideally suited to the indigenous perspective, although it is a beginning.

*

Geomatics is a combination of two technologies that can acquire, manipulate and analyse earth images and related data. As the technology becomes more efficient and processors get faster the scope for this technology broadens. Indigenous people around the world have realised that this technology can afford them greater autonomy and power over their lands. Geomatics in combination with mapping has been used to defend land rights and traditional resources. The maps act as a translation of microscale community perspectives of the land into a cartographic representation. With the aide of GPS and satellite images these community level maps can be converted into judicial maps which are acknowledged or at least not easily dismissed by government bodies. As Poole (1995a) suggests, “The utility of Geomatics needs to be judged within a pragmatic framework. The most urgent problems facing indigenous peoples are how to get others to respect their land rights, how to demarcate those lands, and how to monitor and protect them” (Poole 1995a: 1). Geomatics can be used to assist in this plight and go further to assist in the management and planning of their resources and land use, while at the same time they can be a start in the task of conserving traditional knowledge and resources. However, is it a passive technology and just as tool? I will look at this issue in following chapters.

CHAPTER THREE

Going to the Field

“The anthropological point is this: it clearly makes an enormous difference to the results of an anthropological study - on all kinds of grounds, but certainly in its success in grasping key aspects of Amazonian sociality and experience when from start to finish attention is focused upon indigenous voices and points of view, rather than upon grand structures of mind, culture or society, unconscious or otherwise”

(Overing & Passes 2000: 2)

I had a year in which to investigate the background literature of my topic and establish some field contacts. Above I have discussed the evolution of my ideas and the path I took through the theory. Now I want to look at the contacts I made and how they guided and shaped my initial research. Since my research is not focusing on the ethnographic description of one group of people, as do so many anthropological theses, I feel it important not to veil the people and organisations that I encountered. Personal relationships and first impressions are little discussed in anthropology, which (I would argue) gains all its insights from this ‘unmentioned’ side to personal interactions. I worked with many different people and did manage to establish some friendships (or as people disingenuously refer to them - ‘informants’), and build good working relationships with other people and organisations.

The late Dr Andrew Gray was the key to the final direction of my work, we corresponded via email and were due to meet, when he was tragically killed in a plane crash. Before he died he had given me a number of names and groups I should get in touch with, as well as details of how and why they could help. The first of these names was Alejandro Palleyada from the non-governmental organisation, International Working Group for Indigenous Affairs (IWGIA). He was running or perhaps co-ordinating a number of GIS projects in Peru with indigenous federations. Two projects seemed particularly significant, which were the “*Campana de Defensa por la vida de los hermanos Indigenas en Aislamiento Voluntario del Alto Piedras, Madre de Dios*”

and “*Proyecto de Pucallpa*”, where the *Federación Nativa del Rio Amazonas* (FEDNAA) in conjunction with the *Asociación Interétnica de Desarrollo de la Selva Peruana* (AIDSESEP), were compiling maps and a GIS database of the indigenous territories in the central Peruvian Amazon. This project was based in Pucallpa and although I never met Alejandro he happily organised that I could work with the project. Alejandro contacted the project manager (Reynaldo Tuesta) and advised me to contact him when I arrived in Peru, the outcome of which I describe in a later chapter.

Contacts made in the initial stages of fieldwork

Just like the voyages of discovery of ancient explorers, beginning fieldwork is a metaphorical version of these voyages. It is a personal journey where we try to leave behind our ethnocentric social and cultural understandings of human behaviour in order to gain a clear and objective perspective upon this New World we are entering. Leaving the UK and taking myself to South America made this cognitive journey that bit simpler as I was radically changing my physical and cultural surroundings. My first port of call was Lima, which initially did not satiate my desire to take myself into what I perceived as a remote and wondrous location, such as an indigenous community in a ‘remote’ jungle region, being stimulated by this desire to make the metaphorical disconnection from the familiar in order to study Alterity. I was armed with a lot of theory and preconceptions of the world of Geomatics and indigenous land rights, but after a couple of weeks in Lima I was to quickly realise the level of my naïvety and that although Lima was an urban centre it was not a familiar unexciting place. I was definitely on a voyage of discovery.

I spent the first few weeks trying to set-up contacts and establish some bureaucratic credibility. I was given the telephone number of Reynaldo Tuesta and so phoned him to set-up a meeting, but his office answer phone was the only one home for

many days. In the mean time, I had been given a letter of introduction to Juan Ossio, a professor in the Department of Anthropology at the *Universidad Pontificia Católica del Perú* (PUCP). I knew that if I affiliated with them then it would make travel around non-tourist parts of Peru that much easier. Juan was on sabbatical so I met with Dr Catalina Romero (the current *Jefe del Departamento de Ciencias Sociales*), this was my first interaction with a Peruvian directly related to my fieldwork and Dr Romero was somewhat discouraging. If I had taken at face value everything she told me about the work I was trying to do I would have got straight back on the plane and headed home. I encountered this despondent attitude many time during my fieldwork and it seems to come from the incredible difficulty most people have in getting permission, documents, or things done within the country. For example, it took me twenty visits to the university and I think I was sent to every office, just to affiliate and it cost \$200. However, this did allow me to use the library and even though I never showed my letter of affiliation once while travelling around in Peru I was able to revisit the university and have further conversations with Dr Romero, and meet a couple of students working on land rights projects with indigenous groups around Cuzco.

It was toward the end of the second week that I finally contacted Reynaldo's office only to be told by the gardener that he was in the jungle and would not be back for several weeks. So I put plan B into action and contacted some of the people Andrew Gray had said could prove useful contacts. Edwin Long was the first on my list and he was based in Lima. He answered the phone straight away, so I arranged to meet him for lunch the next day. Edwin Long works for USAID²¹, and has been living in Perú for the past twenty-five years. He is a portly man with a shy demeanour. We did not go to his office but instead went round to his favourite café for a sumptuous lunch. He quickly relaxed when he found out that I had just arrived in Peru to begin my fieldwork. He

²¹ United States government overseas aid organisation.

then entered into a diatribe of advice about the way I should conduct my fieldwork. He alluded to the politics of being associated with any one group or organisation, since there are many rivalries between the numerous organisations that represent or are run by indigenous people. Most he said were vying for power and influence and so any competition would reduce the number of indigenous individuals and groups that they could effectively represent. For instance, *Asociación Interétnica de Desarrollo de la Selva Peruana* (AIDSESP) is associated with *The International Work Group for Indigenous Affairs* (IWGIA) amongst others and the opposing organisation is *Confederation de Nacionalidades Amazonicas del Perú* (CONAP), but they do not do so much work with land titling. However, he suggested that I contact them and let them know what I was doing so as not to show allegiance to any one particular group. The lunch was long and by the end I realised that I had said but two words and not got any of the information I set out to discover from Dr Edwin Long.

USAID were presently not running any land demarcation projects, although they had set-up a programme of land titling and demarcation in Puerto Tambo through an NGO they had funded called *Centro Eori*, Dr Long suggested that the titling process was complete although I was welcome to contact them using his name.

On the whole Dr Edwin Long was what I would classify as a classic expatriate, someone who hates and loves Perú and Peruvians and has effectively become institutionalised in Perú and so can not comfortably return home. This meeting was in fact excellent and the following day he gave me many photocopies of USAID documents concerning land titling in Perú. He had also given me my next contact in Lima, that of Dr Michael Jones who ran an NGO called the *Instituto de Ayuda*.

Instituto de Ayuda (IDA)

IDA declares that they are a non-profit making Peruvian civil association, whose main aim is the cultivation of the common good. At the present time, IDA is carrying out three initiatives toward the cultivation of this common good. One project looked at community-based resource management (project called “*Arc*”); another project looking at river networks and another building an information system of native communities (project called “*Native GIS*”). The two projects I became involved with were *Arc* and *Native GIS*.

Arc is a joint project with NGOs from Brazil, The United States and Peru. This multidisciplinary initiative aims to aid socio-economic development in rural communities and to conserve the Amazonia ecosystems through the greater understanding of the factors involved in community based management of natural resources. In the first stage, the investigation is focusing on the traditional communities of the Peruvian and Brazilian Amazon. *Arc* combines four case studies RRA (*Rapid Rural Appraisal*) of eight community management initiatives, with a continuous dialogue between the investigators and the members of an Advisory Committee. *Arc* will use the results to strengthen the community management of natural resources by two means: firstly, through the dissemination and discussion of the results with the base communities, NGOs, financial agencies and government officials; and secondly, through the legal profession to gain a juridical and political framework more favourable to the community management of natural resources.

Native GIS is building a georeferential database of the native communities in the Peruvian Amazon. *Native GIS* is a consortium of several Peruvian NGOs and Indigenous Federations, headed by *Instituto de Ayuda* (IDA). The primary purpose of this consortium is to put systemised information at the disposal of Indigenous and other concerned organisations, which can be used for the defence and management of

Amazonian indigenous territories. *Instituto de Ayuda* (IDA) acts as the executive secretary in this endeavour.

The database contains information about each community's location, legal aspects of the title, demographics, social organisation, education, health, cultivation activities and products, products of hunting, gathering and fishing. The database for titled communities contains 230 data fields and the database for non-titled communities contains 30 fields. This database is associated with a geographical information system (GIS) that links in the digital maps of the communities' boundaries. *Native GIS* plans to incorporate, into the database, all the 1495 known indigenous communities of the Peruvian Amazon.

First Meeting

Before Dr Edwin Long mentioned the *Instituto de Ayuda* (IDA), I did not know they existed, I did know of Dr Michael Jones since I had read a couple of his papers written for the Environmental Systems Research Institute (ESRI) user conference²² and an article he wrote in the American journal *Cultural Survival Quarterly*. These papers spoke of work he had carried out applying GIS in indigenous land rights, so I was very keen to speak to him. The afternoon after meeting with Dr Edwin Long I called Dr Jones's office and we arranged a meeting for the following week.

Instituto de Ayuda (IDA)²³, is located in a plush office just on the edge one of Lima's wealthy suburbs, Miraflores. Dr Jones had arranged a formal appointment for 2pm, I had the impression he was looking to be interviewed so I prepared a few questions just in case. I got a *colectivo* to his office and after wandering up and down the street a few times and asking in a nearby shop eventually found the door to the office. Some disharmony with Peruvian legislation meant that they had no sign or

²² This is one of the biggest GIS software developers in the United States and United Kingdom.

²³ IDA were to feature heavily in my research due to the range of Geomatics related projects they were involved with.

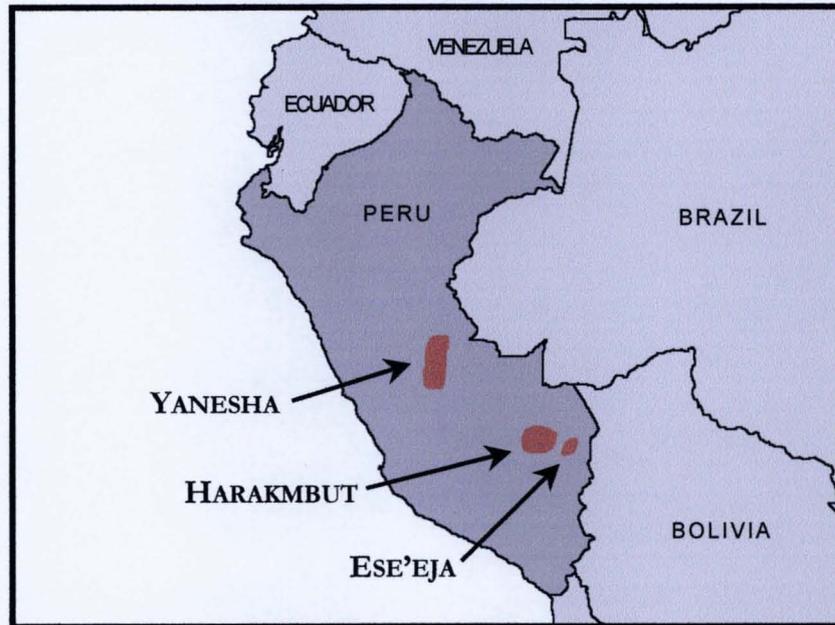
plaque to indicate that it was the dedicated office of IDA. I was buzzed in by a really friendly secretary and shown to a small waiting room then given a cup of very strong coffee. Dr Jones came in with a very official air about him and he showed me into his office. He assumed a classic interview position behind his desk and we spoke about my interest in IDA. Dr Jones is an American in his late forties, who has chosen to live in Peru. He first lived in the small town of Oxapampa in the *selva central*, close to the area that he conducted his fieldwork for his doctoral thesis, for which he studied the Yanesha people.

The meeting was more like a job interview than an informal chat, although I did discover much about the activities of the NGO and we agreed a second meeting where I could talk to his project co-ordinator and arrange some sort of collaborative work. I spent a couple of weeks at this office helping with some GIS database construction and becoming acquainted with the NGO and its staff.

During these first few weeks I also visited a number of other NGOs, indigenous organisations and individuals related to my research. Some of these meetings are recounted in later chapters so I will not expand on them at this point, suffice to say that many of them were unproductive in the short term but all helped to develop my understanding of the context within which my research was evolving.

My assistance at the IDA office soon paid off when Dr Jones offered me the opportunity to accompany one of his field staff to the central jungles. This was an opportunity to meet the Yanesha people so I accepted the offer without hesitation. I begin the following case studies chapters with a description of this work with the Yanesha people.

THE CASE STUDIES



I have to stress from the outset that these case studies do not take the form of ethnographic analyses as is traditional in an anthropological thesis. Instead I am using ethnographic accounts to elucidate an issue of development within the application of geomatic technology. There are a number of issues that certainly need to be addressed from an ethnographic context and where possible I have tried to use the following case studies as platforms for the discussion of the issues. There are some reoccurring themes and some areas I was not able to study, but where relevant I have used the literature as substitute and supplement to the ethnographic data that I myself gathered. My understanding of the issues and concepts involved in this research unfolded throughout my fieldwork and so I have used a progressive framework throughout the text, or to put it another way through my experience I became less naïve as my knowledge and understanding grew. I build the arguments and scope of the analysis from chapter to chapter to reflect this process.

CHAPTER FOUR

The Yanesha

Auto-denomination: Yanesha.

Local Name: Amuesha.

Linguistic Family: Arahuaca.

Location: Department of *Huánuco*, *Junín* and *Pasco*.

Rivers: *Palcazú*, *Pichis*, *Pachitea*, *Huancabamba*, *Cacazú*, *Chozobamba* and *Yurinaqui*.

Population: Estimated at 6980 individuals (Mora, 1994, based on 1981 census).

Indigenous Organisation: *Federación de Comunidades Nativas Yanesha (FECONAYA)*
Unión Nativa Ashéninka – Yanesha (UNAY).

The Amuesha were the first group of indigenous people with whom I spent an extended period of time. I was therefore bursting with curiosity, but at the same time uneasy about living uninvited within their community. This chapter explores my introduction to indigenous peoples and also introduces some of the key topics of this research. I examine the role of the indigenous federation and the field activities of an NGO. This chapter also introduces some of the ethical considerations that are involved in community level technological-data gathering, and looks at the epistemological diversity and comparative values involved.

History of Occidental Contact & Influence

The following history section has been compiled from the works of Salick, 1989; Santos Granero, 1986, 1987, 1994; and Smith, 1977, 1982. The first documented contact with the Yanesha occurred just after the Spanish Conquest, between 1553 and 1576, by the friar Diego de Torres of the religious order the *Militar de la Merced*. After this order had established contact the Dominicans and Franciscans tried to establish missions in the region, but without much success. The missionaries achieved a more continuous control over the Yanesha people in the 18th Century. This was because the colonial administration had decided to support their efforts, with armed men and money, and

they had the guidance of an experienced missionary P. Fransico de San Joseph. In 1707, this missionary entered the Yanesha territory from the city of Huánuco. Between 1707 and 1715, he founded five missions in this area. Once the Franciscans had insured control between these missions and the city of Huánuco, they sought to extend their domain even further and took over the nearby access routes, used annually by the Asháninka, the Piro, the Shipibos and the Conibos, neighbours of the Yanesha. This was the beginning of colonial control over indigenous societies of the Central Andes.

These Europeans brought disease and then numerous epidemics swept through the area decimating the indigenous populations. This reduced the mission's numbers and gave rise to numerous revolts that eventually culminated in the great rebellion of 1742, led by Juan Santos Atahualpa. This meant that for a short time the central Andes was not under colonial rule. This rebellion was happening just as the national and international demand for tropical products such as *sarsaparilla*, quinine, tobacco, coffee and coca, was taking off. The governments, of the following decades, stimulated the re-colonisation of the region because of its potential for the production of these cash crops. Their aim was the complete control and integration of the territory into the nascent State and throughout the following centuries the region was heavily colonised. One settlement in particular flourished in the north of Yanesha territory, along the Pozuzo river, comprised of German peasants from the Tyrol.

Toward 1880, the international price of coffee increased, attracting a great number of colonists to these central highlands. In spite of having been decimated by new epidemics, between 1879 and 1880, the Yanesha put up an armed defence against this fresh encroachment of colonists. However, the recurrent epidemics decimated the Yanesha communities and they misinterpreted them as vengeance from the settlers, so they laid down their arms. Many of the remaining Yanesha migrated to the mission stations.

In the late 1800s, before the rubber boom, the State financed the opening of the *Via Central*, a horseshoe route that connected the city of Tarma with the banks of the Rio Pichis. This carried half of the communication between the city of Lima and Iquitos, which at that time was the economic centre of industry. Building these huge rail networks brought the Peruvian State to near bankruptcy. As a means of generating income, it granted a British coffee importer a concession of 500,000 hectares for the production of coffee, in the territories of the Yanesha and the Asháninka peoples.

This gradual appropriation and fragmentation of the Yanesha territory continued throughout the first half of the 20th century, as colonists migrated in to these rich growing regions. In the early sixties the Yanesha and the Shuar of Ecuador united to form some of the first federations, to try to stem the impact of the invading national populations and to get the government to recognise their rights. In 1974, the Law of Native Communities was passed and a few fragments of traditional land were given to the remaining communities. This was the first governmental recognition of the indigenous habitation of the Peruvian Amazon and within a few years a Yanesha Congress was convened, shortly followed by the formation of the Yanesha federation.

During the 1980's, the Yanesha were affected by the political violence that resulted from the *Sendero Luminoso* rebellion, although in smaller measure than the Asháninka. The Yanesha peoples of today occupy virtually the entire lowland region of the Pasco department. Many of the communities have land title and the federation is actively gaining further titles and territorial expansion with the aid of NGOs. However, this region is still experiencing a significant influx of colonisation, logging and oil exploration. This heavy colonisation, in and around Yanesha territory, in combination with missionary indoctrination, is evident in their appropriation of aspects of alien social philosophies. Even with land title, the Yanesha people and their territory are under constant pressure from these encroaching aspects of the rapidly growing nation

State. This is reflected in their economic activity which is drawn further into the State's cash-economy, as the lands from which they subsist are degraded and / or appropriated by the State, colonists, or those undertaking resource extraction.

Economic Activity

Agriculture constitutes the most important economic activity among the Yanesha; they particularly cultivate, yuca, banana, *pituca*, *sachapapa*, yam, corn, rice and fruits. Hunting is practised less and less due to the depletion of wild animals in their territories, a consequence of colonisation and overhunting. Fishing is not very frequent and fish are scarce for these same reasons. In some areas of the traditional territories, hunting, fishing and gathering are no longer carried out as the resources are so depleted that it would be futile. As an alternative source of animal protein, many families raise hens and other small animals.

Commercial agriculture has developed, especially in the communities of Oxapampa and Villa Rica, which are dedicated to the cultivation of coffee, *achiote*, fruits, corn and rice. Cattle rearing has developed into a viable means of subsistence among the communities situated along the Palcazu River. Timber exploitation is also an important activity and during the 1980's, the Yanesha created a forest co-operative for the extraction, transformation and commercialisation of their forests. Another important project for this group has been the *Comité de Artesanos*, based in the Tsachopén community, through which they have successfully fabricated ceramics for the tourist and home markets (cf. Salick, J. 1989).

In the last few years, the national and international demand for *Uña de gato*, has seen some Yanesha communities opting to extract and grow this product. *Uña de gato* is a medicinal plant, which is best known as a boost to the immune system. It is sold as an infusion in bundles of the stalks, and commercially marketed as a pre-packaged

herbal tea. Also in many of the Yanesha territories cocaine is grown and processed, although the federation has been working to try to quash these activities in the communities it represents, and there is also a general negative attitude towards its production amongst those Yanesha, with whom I spoke. These attitudes may have been expressed because I was a white man, but I saw further evidence in their disapproving behaviour towards those who were known to grow and process cocaine, whilst travelling through the region.

Getting to the field

I spoke above about the work I did with the *Instituto de Ayuda* (IDA) co-ordinated by Dr Michael Jones. He conducted his own PhD work amongst the Yanesha and hence developed some lasting relationships with these people. One of his Yanesha friends was a shaman called *Nacio* and together they had spent some years planning a database of the Yanesha cultural and geographical history. Dr Jones's work with GIS had influenced the initial design of this project and they aimed to begin by compiling a spatial database. Dr Jones had arranged that this project coincide with a territorial mapping project run by *Native GIS* who were collaborating with the *Federación de Comunidades Nativas Yanesha* (FECONAYA). Since Yanesha communities are spread over such a large area both these projects were going to require much time in the field collecting data. This fieldwork was to be divided into three stages and three respective areas. The first were the Jungle zones of the *selva central*, the next were the cloud forest regions and then there were finally the Andean foothills. The first section of the two projects was going to be carried out by Silvia Flores²⁴ and *Nacio* respectively, and timed so that they began immediately after the Yanesha annual congress. Because it was such a large area, *Nacio* would be travelling with Silvia, to save on transport costs.

²⁴ An Anthropologist with general experience in development work in NGOs and government agencies. At present she is working as an IT professional for the *Native GIS* project with the *Instituto de Ayuda*.

It is through the nature of chance events that I came to work with the Yanasha. I realised early on in my fieldwork that entering into the research situation is not the most organised of activities, for much of its progress is down to luck and chance meetings. I happened to turn up at the office in Lima just as they were organising this fieldwork, and I was able to organise with Dr Jones and *Nacio* that I could help conduct the cultural mapping aspects. So instead of assisting one project with AIDSESEP, in Pucallpa, I was now on a bus travelling over the Andes on route to Chanchamayo.

In actuality it would be virtually impossible to change this chance aspect of fieldwork, if you are planning to work in a cultural setting other than your own. The rules by which we organise our lives do not translate across cultures and in an Amazonian context any attempt to impose different values such as timetables, appointments and agendas would end in frustration, disappointment and culture shock²⁵ of a negative kind. There is a system in the Amazon which takes time to learn, just as it takes time to adjust to any new set of values, social conduct, reciprocity and other new forms of socialisation. I was learning it fast and would soon be dropped in at the deep end as I went to observe a NGO's field methods, and attend an indigenous federation's annual congress.

Participant Observation or Traveller's Anecdote

The next section is in narrative form, with the aim of creating a picture of how I experienced entering the field, it also attempts to unfold the events through which I shed one layer, at least, of my own naivety. Thus this section could equally be called 'the evolution of an anthropologist'.

The journey from Lima was not the most comfortable, but I was still enjoying the novelty of the South American transport network. I tried to sleep as best I could on the

²⁵ Culture Shock is now a medically recognised behavioural change when a persons attitude towards the new situation become hostile after a long term immersion in an alien setting.

bus but the rapid ascent to altitude had given me a dizzy head. Added to this the extreme cold and seats designed for small people, had made sleep almost impossible. The sun was just rising as we dropped down into the Amazon basin where the scenery changed rapidly from barren mountains to lush vegetation. We were travelling through what was once the main region for cash-crop production in old colonial Perú. Now there were only a few big haciendas still operating, for the rest had been broken up into small farms. These large plantations became less profitable, when the price dropped out of the coffee market. I was heading for La Merced (The local name for the combination of the two towns of La Merced and San Ramon is Chanchamayo).

I had travelled this far alone and was due to meet Silvia, in the Conquistador hotel. Silvia had long black hair, dark skin and a slender but well fed appearance. She had classic good looks of the Latin American rich, but was relatively shy compared to the usual outgoing nature of a rich *limeño*²⁶. I did not know Silvia from the Lima office, but rapidly discovered her character, when we left the comfort of the Hotel. I realised that she was not overly happy with the whole roughing it idea. As a rich Peruvian she had a life sheltered from rural Peru, and so to suddenly have to deal with a whole bunch of class and comfort issues was rapidly dissolving her calm exterior. I have to add, before I completely assassinate her character, that I honestly liked Silvia. I am rather painting a picture of the type of person who becomes involved with development work, in all good faith, but who baulks at the stark realities of fieldwork, the sort of person Chambers refers to as a “rural development tourist” (Chambers 1983: 10). I met a number of similar individuals during my fieldwork and rather than describe them all I have used Silvia’s worst traits as classic examples. I must therefore note that she had many positive qualities as well, none of which I describe in the following chapter. Rural development tourists, Chambers says, have three things in common. They are

²⁶ See Spanish Glossary on page 261.

typically 'core' (urban-based, professional, powerful) individuals who come to areas in need of development and try to assist or find something out about 'peripheral' (rural, uneducated, weak) individuals, and are very short on time (Chambers 1983: 11).

Silvia was now getting cross at the local disorganisation, and we had only just left the hotel and got into a *colectivo*²⁷. The locals judged Silvia very quickly, and labelled her as a rich snob from Lima. Many of them went out of their way to be unhelpful. I, however, was simply labelled 'a gringo' and could enjoy this generalisation, where nobody really looked at you or cared too much about what you were doing. They just observe you as some sort of oddity and ask odd questions, as an excuse to talk to the gringo. Silvia quickly realised that if she let me do the talking, people became helpful, and getting to our destination would be less hassle.

From La Merced we were to get a *colectivo* to the small town of Villa Rica. Villa Rica is in the heart of Yanesha territories and it was here we were due to meet a representative of the *Federación de Comunidades Nativas Yanesha* (FECONAYA), called Chimay. When we arrived, Chimay was nowhere to be found. I had assumed that the officials would live in Yanesha communities but they too were coming from Chanchamayo. The federation was to organise and pay for our transport from here on, so we had to wait for them to arrive. Chimay eventually turned up the next evening, accompanied by ten other delegates, all quite drunk. All the respective federation officials I ever met were on the whole young males who have left their respective communities and gravitated towards the urban centres of their area. Being involved in the management of a federation gives them some extra income and a degree of political influence. This money and power does add an element of corruption to their characters, but the majority of them are motivated by a desire to find equitable rights for their communities. Although when it comes to interacting with those perceived to be

²⁷ See Spanish Glossary on page 261.

wealthy, such as Westerners, rich NGO field staff and business men, they tend to show their crass entrepreneurial side. They were happy to be associated with you, to bolster their image of authenticity, but also try to make you pay for everything.

We were to travel down to the Hauswald community, which is located on the *Pozuzo* River, as they were hosting the congress. This was some eleven hours away, by four-wheel drive²⁸, plus a one-hour boat ride, and so it was not going to be a cheap journey. This is where Chimay began to show this wheeler dealer nature, as he did his best to confuse the travel arrangements, and engineer it so that we would pay for our own transport, which would mean he could pocket the transport funds he had from the federation. However, the federation had made an agreement with Dr Michael Jones, whereby *Instituto de Ayuda* (IDA) would conduct the mapping and data collection work for the Yanesha, if they provided all the transport for the field workers (Myself and Silvia). Dr Jones had called this a “relationship of reciprocity” to make them, as he put it “appreciate and value the work a little more”. I understood this point as in any development situation free handouts are at best abused, and at worst become inconsequential to the recipients (See De Waal 1989 and Chambers 1983). Silvia very quickly got tired of Chimay’s shenanigans and so commandeered a four-wheel drive truck and loaded all our bags onto it. Then, in no uncertain terms, told Chimay to pay the driver. In the end this cost him more than it might have done.

It actually took two days and not eleven hours to get to the Pozuzo river and the small truckstop-town called *Constitucion Palcazú*. From here we only had a short canoe trip to the Hauswald community. I was in the last canoe heading upriver, the light was fading as we prepared to set-off. In this canoe was a group of Yanesha men I had not met before. As we pushed off to motor up river, the man in front turned to me and said:

²⁸ There were two modes of transport in this area, four-wheel drive *colectivos* and two-wheel drive low-clearance minibuses. Since the roads are frequently washed away, waterlogged and heavily rutted, you are a hopeful passenger if you opt for the cheaper minibus option.

“You know we are going to kill you and throw your body into the river”.

It took a couple of minutes to register exactly what he had just said, and I translated the Spanish in my head, just to be sure. For a few seconds I froze, I had not really registered my surroundings, or taken any measure of the dangers, as you would normally do when travelling in unfamiliar country. I had blindly followed Chimay and Silvia. Now I suddenly realised where I was, rapidly recalling all the scare stories I had ever heard, about travellers going missing. He looked right into my eyes and waited until fear swept across my face. Then, he laughed, joined by all the others in the boat: the power plays had begun.

This experience gave me pause to question the validity of the fieldwork exercise. The last time I had conducted fieldwork was six years previously, in 1994, in the Andean highlands. Although this previous experience had taught me about the importance of keeping an open mind and not to make too many presumptions, it was carried out in the relative comfort of a city, with some metropolitan Indians. I was quickly learning that fieldwork in the Andes was very different from fieldwork in the jungle and I saw a steep learning curve ahead of me. I was to stay with some of the ‘remotest’ communities I would encounter during my entire fieldwork, and had virtually no experience of jungle living. I’m sure few would admit to being such a novice, but it was very apparent to me, as I was like a monkey in a river²⁹, especially when I could be blindsided by such cruel jokes. I also felt that I could hardly study the social intricacies of a community, if I was having trouble with the simplest of things: in these first few days I even wondered if I really knew what I was doing having a crap. Jakob Meløe remarks that “we are poor observers of whatever activities we are not ourselves familiar with as agents. This has to do with the way our activities in the world shape our concepts of the world and with the way our concepts of the world shape our perception

²⁹ Evon, aged six, used this expression to describe blonde people in the jungle. (See on page 88 for description).

of it” (Meløe 1988: 89). My ‘activities’ were that of a Westerner used to a completely different culture, so is the data I collected in this time simply anecdote or worthy participant observation?

There are many hesitant aspects to anthropological fieldwork that should be recounted, as they are testaments to the ‘way our concepts shape our perception of the world’. I now believe my naïvety was an essential element, without which I would not have been able to eventually gain such a clear perspective. It forced me to maintain an open mind and at the same time scrutinise an alien social philosophy. For example, aspects of the everyday Yanéscha world were unfamiliar and so I did not automatically overlook them. Similarly, this backdrop acted to highlight any activities that I recognised as familiar, particularly in the behaviours of the federation delegate. This flood of information has taken me a while to absorb, but by remembering my experiences and pondering my fieldnotes I have hopefully established a narrative closer to that which would come from, what Meløe calls, a “skilled observer” (1988: 90). For this reason, I have not edited all my fieldnotes and empirical discourse into a neutral format, but have kept in some personal and descriptive aspects. As I mentioned earlier I want to continue to show how I built my experience, at the same time as I constructed a picture of the Yanéscha, in relation to my thesis. These descriptive sections should also give substance to my explanations of individuals’ actions, such as those of Silvia, Chimay and other federation officials.

FECONAYA Congress

The federations are a requisite part of the communication between the community and the outside world. It is important then to examine the relationship between the federations and the communities as this has a significant influence on the processes of appropriation that govern the effect of new external phenomena entering Yanéscha

community culture. The next section examines this and looks further at federations as a whole.

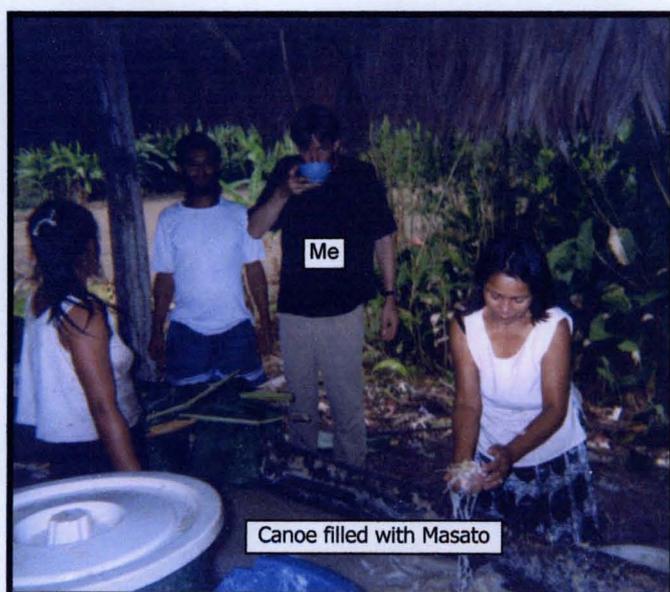
I eventually discovered that the vindictive joker in the canoe was the head or chairman of FECONAYA. These federation officials called themselves '*jefes*' (the bosses) and acted as if they were some ancient village chiefs. Chimay was also one of these *jefes*, although not in that canoe with me, though I'm sure he would have laughed along with the others and myself.

I believe that the joke was a result of my jeopardising presence, the joker saw me as a threat to his authority and power. Throughout the congress this official was very antagonistic towards me, to the extent that Chimay ended up apologising for his behaviour. He was the only official and the only person at the congress who was not incredibly convivial. Perhaps, this particular federation representative wanted to be the ultimate symbol of authority and power present at the congress. My attendance (a symbol of the West) could overshadow his authoritative presence and act as a distraction to the congress participants.

During the official sessions of the congress I was continuously being dragged away by small groups of children wanting to play games. This was because one morning I had unwittingly set-up a competition for the kids involving skimming stones, canoe races and biggest-bug hunts for the wee ones. I had put up some chocolate as a prize, so ever since I was the 'games master', as long as I had chocolate. This turned out to be of amazing benefit and it broke the ice with many people, who would come over to talk to me about the games I had played with their kids. Two children, in particular adopted me on the first day; they were both blonde, Evon (age 6) and Kevin (age 4). The other participants would often tease them, and me, saying "I had brought my children with me"³⁰. They rarely left my side throughout the congress and even

³⁰ See note four on page 217.

came to wake me in the morning and help Silvia and me prepare breakfast. It was only in the evening of the second day that I eventually met their father, called Abraham. He became a good friend, and was a renowned figure amongst the Yanেশa peoples because of his story telling prowess. Abraham, being one of the principle hosts, spent most of the time in the cooking hut, and subsequently so did I, which is where I learnt about community life. I spent the evenings talking to these congress hosts and helping prepare food, as well as testing the *Masato*³¹. Fuelled by a number of bowls of *Masato* a small discussion group developed and we would deliberate numerous issues, from social and economic troubles in the communities, to 'what it was like where I came from'. We initially discussed the congress and the federation, which is where I encountered a real mixture of emotions and opinions with regard to the federation and towards those who became actively involved in running it. One recurrent grievance was



Picture 2: Expert taster tests the latest batch of Masato

that the federation officials were prone to corruption. During my fieldwork I have personally observed some serious theft and corruption within federations, as well as recognising individuals corrupted by power. What I saw was apparent from a relatively short period of study with indigenous federations. So

presumably this community must be aware of some far more untoward activities that have occurred within their federation. These types of indigenous federation are, however, one of the only avenues for the recognition of equitable indigenous rights, and

³¹ See note eleven on page 218.

they act as an advocate and intermediary between communities and national governments. To this end the communities know that they are an essential organisation. Nonetheless, this reliance on the federations does not lead to total compliance by the communities. Throughout my fieldwork I was witness to many interactions between communities and federation officials. In all of these I saw a growing divide between them. I encountered a recalcitrant attitude towards them, and a provocative relationship between them. Such a relationship was clear during the congress, so through the description of a few key incidences I hope to elucidate this relationship as I saw it evolving.

The congress assembly was held in a large open-sided barn filled with rows of benches and two large tables at the front (See picture 3 below). The officials sat at the tables facing the participants and other delegates. Behind the officials were two large banners with the FECONAYA logos (See Picture 4 on next page), the whole set-up looked like some American political rally, not, I'm sure, simply a coincidence. The



Picture 3: View from back of congress seating

atmosphere during the meetings was not, as I expected, one of camaraderie, but instead very similar to that of a boring class in school. The officials were dictating and lecturing the participants in a format that they imposed on the proceedings,

which went as follows. The congress began with all the participants sitting in the main building. One by one the officials introduced themselves and said a little bit about who they were. This then became the norm, and each person who spoke, whether a participant asking a question or other speaker, would have to formally introduce

themselves. The congress consisted of a number of debates and some guest speakers, who came in to present projects or the work of other organisations (both NGO and governmental). All the speakers were asked to follow the same format. However, this format had a peculiar aspect. Any participant who wished to ask a question could not directly address the speaker, but had to ask the officials their question. The officials would then decide if it could be put to, and answered by, the speaker. On the first day I enquired if this was the traditional way to ask a question and was told in no uncertain terms that it was not and that they did not understand why the federation insisted on this



Picture 4: Jefes at the FECONAYA congress.

The Banners read as follows

Green Banner "*Federacion de Cuminidades Nativas Yaneshas: Unidos Prosperos Soberanos*"

Large White Banner "*Bienvenidos FECONAYA: Valles Chmyo, Oxapampa, Palcazu, Pichis, Pachitea, Villa Rica*"

Small White Banner "*Concierto Tropical: Los Charapitas Ameniza Hoy el Gran Fieston: Por Primera Vez en la Republica de Hauswald: Reserve su boleto*" (Tropical Concert, The Turtles, Entertaining today in the grand festival for the first time in the republic of Hauswald, Reserve your tickets). This was a group of young boys who provided the music that night, at the after congress fiesta. They only had one tin drum and some improvised flutes, maracas, washboard and other jangly instruments, but they were excellent. They played non-stop from eight at night until eight in the morning.

format. In a later conversation about this format, it was described to me that it had evolved from inter-community meetings back when the federations first began operating. Now, however, everyone at these meetings knows each other very well,

which makes the formality uncomfortable. They did not understand the reason for the questioning procedure either. The answer I think is clear, the federation use the unfamiliar format to hobble the participants and reinforce their authority³². Those who broke with the format were silently reprimanded if they did not ask questions in the proper manner, or if they did not use the proper procedures and interrupted a speaker, the officials just ignored them.

The following incidents should help to elucidate these power relationships and give further insight into the attitudes of these federation officials. On one occasion Silvia and myself were seated at the back of the congress when we were asked by two of the officials to leave, as they were about to talk about private Yanasha issues. I did not have a problem with that, but a number of the participants later commented on it, seemingly ashamed of “these rude young Yanasha”, as one older lady put it. I got the distinct impression that the chairman simply wanted to demonstrate his authority over Silvia and myself since the request came from him.

A more general event rather than incident was the official’s interaction with the children. Naturally no child in the world will sit quietly or allow their parents to ignore them, by also sitting quietly, and so there was a constant ‘disturbance’ as the children played, screamed and ran about. The only people to try to stop them were the officials, who shouted at them to be quiet and tried to make them leave. The other participants did not seem to understand the problem and I saw many perturbed facial expressions, directed at the officials. On one occasion a woman angrily remarked that the children should not leave, as it was their future that they were talking about, which is a very strongly held view within indigenous communities as the following quote exemplifies.

“These are the forests and the rivers that allow my people to live; this is the inheritance that we have received from our grandparents, and I will spill my blood before suffering the shame of looking into the eyes of our children when we have lost it”.

³² I saw this method of augmenting their authority on a number of other occasions, as I will discuss later in this section. I also witnessed the same procedure amongst the Federación Nativa del Rio Amazonas (FEDNAA) officials (See Harakmbut Section on page 148).

This quote is from an indigenous elder of the Aguaruna, Damián Tibijam, explaining that the territory had produced their people and it should be allowed to continue to reproduce their people.

The three-day congress involved numerous presentations by different communities and the federation brought in speakers from various agencies (such as IDA) and government bodies. One such government body was *Contra Drogas*, who were looking for ways to eradicate cocaine production in the region. Many of the NGOs and larger agencies did have a tendency to patronise the participants, but *Contra Drogas* were incredibly patronising and talked at them like they were naughty little children. During these presentations the officials sat, arms folded, and nodded in agreement with some of the issues the *Contra Drogas* speaker was raising. It was apparent from their behaviour that the officials saw this agency as yet another route to their own authentication and seemed to be casting accusing glances at the audience. From this presentation onwards the congress changed, and at the time I believed them to be deeply insulted at these insinuations of impropriety. I thought that such an affront to their moral standing pushed them over the edge. Now after some contemplation and a review of the literature on Amazon society, I see that their reaction was one of revolt at these audacious displays of power. Especially when traditionally they have no real chiefs who dispense such obtuse power and authority. My first impression comes from my own preconceived ideas about social hierarchy; I assumed they were organised into some sort of hierarchy with notions of power, authority, influence and rule, as in the West. However, as Campbell notes this is because “we’re sodden with notions of patriarchies, of kings, of dynastic power and inheritance, of status, classes, castes, races and of all manner of hierarchies. We’re therefore baffled when we come across a political set-up which is mostly concisely summed up in the description: ‘The chief speaks, and everyone does as they please’” (Campbell 1995: 115). For the indigenous people one’s behaviour is based on an ideal of what engenders social life, for instance your skills and the way you relate to others are more important values than your

physical appearance. These ideals are reassessed and reinforced on a day to day basis. The federations by using the white man's brute force are effectively – and offensively – destroying the social and thus deeply frustrating the participants (cf. Overing 1993; Overing & Passes 2000).

What happened next was I believe partly a result of this abhorrence for displays of power and partly out of frustration, as I will discuss below. Throughout the subsequent presentations the participants would stand up and shout, argue amongst themselves and generally be, in the official's eyes, very unruly. The last day virtually broke down when one man stood up and shouted at the officials. I was later told that he had shouted and ranted to the effect that the officials did nothing but talk and lord over the communities, stealing aid money and not helping with any simple things like medical outposts, teachers, seeds, etc. His diatribe was met with a round of applause. Then the elders followed with further harangues directed at the '*jefes*', and some individuals in the audience. At one point one of the officials tried to silence these outbursts and was virtually beaten down by an old woman sitting near the front. As more and more of the elders joined the haranguing the language shifted more to Yanesha that I did not understand, so I quietly slipped away to the safety of the cooking hut, just in case someone needed to have a go at the West.

At the congress there was a general desire to initiate change and find solutions to the socio-economic problems that all the communities were suffering. Working with the federation is the best means by which they can achieve these goals. They are perhaps the only means, as the federation scrutinises all activities and projects that involve any of the Yanesha communities. They are in effect the gatekeepers and I would imagine it to be almost impossible to start any serious project with a Yanesha community without the federation hearing about it. This is another issue of control, for

the federations need to be seen to, and be, in control of all the Yanesha peoples' affairs, and without this control they would have no authority among their own people.

The outbursts, described above, also came from a more general frustration and growing disgruntled attitude towards the federation. Although people may normally have no regard for those who try to wield power, they are unfortunately dependant on the federations for any contact or dealings they need with the State or outside world. The elders resent and distrust the State and see the federations as becoming puppets for it. The federations have to conform to the rules and bureaucratic methods of the State, otherwise realistically they could not affect change or procure rights. These federations are relatively small, with a small voice, so need to enrol the help of NGOs, national and international federations and other international organisations in order to achieve their primary goal: "equitable rights" for indigenous peoples. This gives them little option other than to lobby the system³³, and thus conform to its rules of practice. The federation's officials, and hence the federations themselves, seem to have become embroiled in these agendas of local government and so have lost sight of the agendas of their people at community level. As the federation becomes more politically active so it distances itself from the community, ideologically as well as philosophically (cf. Kidd 1997; Oldham 1996). An example of this was told to me during my cookhouse conversations where they detailed one of the federation's misadventures. An international NGO approached FECONAYA with a proposal to install concrete toilets in each community. They actively went ahead with this project and apparently made a song and dance about their achievements as a federation for bringing in such developments to community infrastructure. I saw these toilets in each community and today they serve as "good rain traps", as water is collected from the guttering into water butts, but they are used for little else. They are not used as toilets, and I never came

³³ Later in the Harakmbut section I will give my interpretation of the events that followed a federation that sought to effect change outwith the state's system.

across one that had been, other than by Silvia and myself. The people traditionally go into the jungle each morning for a sociable-motion, reported to be the best chance to catch up on the gossip with a friend. The federation officials, were accustomed to their urban toilets, and so thought this an excellent development to relieve community hardship. They were out of touch with the community's daily life and therefore are perpetuating the problems of the top-down approach in development. "For example, those running indigenous organisations often express a strong conviction that indigenous people should 'progress' in line with the Western myth of cultural evolution and economic development" (Kidd 1997).

I am not going to launch into a full analysis of top-down development since this has already been extensively discussed in the literature (cf. Poitter 1993; Chambers 1983, Richards 1985, 1993; Phillips 1994; Sillitoe 1998). I will cite the following example, as I should support my claim that, in this context, the top down approach is untenable. Richards (1985) explains that such misguided development occurs because the people at the 'top' presume they are the 'top' and that their "principles are true for all times and places" (Richards 1985:10). Richards examined the relationship between science and development and studied development projects that were working with West African rural farmers. One of the perplexities he came across was the application of the top-down approach, which Western scientific initiatives and development projects took. For instance, one of the policy initiatives he studied looked at using Western scientific agricultural principles to improve production on local farms in West Africa. However, the project's fieldworkers discovered that they were returning having learnt some incredibly ingenious agricultural techniques and also having discovered that their scientific techniques could not be applied to this smallholder-farming sector. He argues that throughout history the most effective innovations in food-crop production have had indigenous roots. For example "Yoruba freed slaves returning to Lagos from

Brazil, brought back the indigenous technique for making the type of cassava meal known as *gari*. This latter was one of the most important innovations in African food-producing techniques in the nineteenth century, since it permitted the widespread cultivation of high-yielding ‘bitter’ varieties of cassava, hitherto unfit for human consumption because of a high content of hydrocyanic acid” (Agboola 1968). Despite this and many other indigenous initiatives impacting on food production Richards goes on to argue that the agricultural research sector will always favour its Western scientific initiatives, as they stubbornly presume them to be universally effective and universally applicable (Richards 1985).

Here I want to see where the federations fit into this top-down development process and the effect they have on each other and the effect this process has on the communities, which goes back to my point about their role as gate keepers. In Richards’ example the NGO worked directly at the community level. Whereas NGOs that work with federations are experiencing what Chambers calls “person biases” (Chambers 1983: 18). They develop a project with the federation, because the NGO effectively envisage federations as the end-user instead of developing projects in and around the community. In the case of the concrete toilets, the project was wholly inappropriate. However, the NGO (and the whole development system) would not get this feedback because the federation provides the feedback and they were satisfied to be associated with a project that effected such visible change. The federation then becomes an accomplice in the perpetuation of the erroneous top-down approach of international development. This could be seen as a further unintentional assimilation of the federations into the State system. Effectively, these outside agencies and projects (formed and initiated within a Western ontology) have assimilated the agendas of the indigenous federations and those federation representatives, through their continued exposure to what is essentially beguiling marketing by Western NGOs.

This affect on the federations can be seen through the appropriation of the technology. For example in the United States over the last decade the Bureau of Indian Affairs has promoted the use of GIS technologies within Indian reservations. They successfully established a system of GIS co-ordinators who taught representatives on the reservation how to utilise the technology and catalogue their geography. This information is feed back into a central database held at the Bureau. I would suggest that the Bureau of Indian affair was able to establish this network with relatively few dissenting voices³⁴ for the same reason that the federations so quickly align themselves with external organisations and projects such as those co-ordinated by the *Instituto de Ayuda* (IDA). The reasons being a perception that such technology will give them greater sovereignty over their entrusted territories and subjectively more power and autonomy, a theme well illustrated in the following quote.

“There are many ways to be poor, but in today's world not having the right kind information represents a certain kind of poverty. As long as outsiders decide what is important and are in a position to ask all of the questions, we will never be able to solve our own problems. Without information we are nothing at all and have no power to understand things or to change our life. If Inuit society is to develop we must be able to collect and use information according to our own terms”

a Nunavik Inuk, 1978

The question arises as to whether this perception is true or false, if it is false then is the above quote naïve? Naïve in that it buys into an ontology that stipulates that information is power.

Geomatics technologies are fed into the indigenous federations by similarly well-funded and enthusiastic organisations. If the federations do not appropriate this technology in line with the community level agendas for change and appropriation of external phenomena, but instead adopt it and try to integrate it into the community with all its conceptual baggage it could become just one more concrete toilet.

³⁴ There are numerous web sites depicting these GIS projects within North American Indian reservations and many others published by First Nations organisations that prompt the use of GIS as a means of managing and mapping Indian lands. The only articles raising doubts as to the wisdom of such a rapid and general adoption of GIS were referring to South America (See www.nativemaps.com).

Technology in the community

There are not many situations where technology or the use of geomatics is apparent within the individual communities. I saw plenty of examples of its use within the federations, but wanted to see how it was appropriated at the community level. An opportunity arose while I was at the congress where I was able to introduce a piece of geomatics technology into the community and hence see first hand what issues evolved. This next section looks at my explanation of the Global Positioning System (GPS) that perhaps highlights my preconceptions rather than explains their perceptions of such technologies.

When my cookhouse conversations came round to why I had come to Peru, I explained my interest in the use of technology within indigenous land rights. Along with Abraham and his wife, there was Abraham's cousin and cousin's wife, Abraham's uncle and his uncle's brother and occasionally Abraham's father and mother all of whom would regularly join in our conversations and they were all very interested and eager to learn more about computers in general. Abraham even insisted I show his kids how my little palm-top-computer worked, as he was very keen that they might work in computers since he, and many others, believed that such employment was very well paid³⁵.

It was this group who also became fascinated by my GPS and insisted that I explain how it worked. So, it was one hot afternoon, after the congress had finished for the day, when I began an impromptu mini-theatre to explain the concept of my GPS.

I was down by the river teaching 'my kids' how to skim stones and I myself being taught how to fish. After a couple of hours the heat drove me to seek shade and refreshment. So I left the children to it and went up to the cooking hut. Abraham and

³⁵ During my time in Lima I noticed that virtually every street in the down town area had a centre where you could learn how to use a computer. This was obviously a sign that the computer industry was booming, news that must have filtered down to Palcazu.

the others were sitting around the table talking, and since I had my GPS with me, they decided I should try to explain how it worked.

The play began quite simply by showing them the screen, which displayed a simple map of where we were. However, this was met with some fairly blank faces. Then I showed them that it tracked me moving around, as it was talking to the satellites overhead, again blank faces. You have to remember I was a novice as well, and did not really know what they already knew about what I was attempting to describe. I had a lot to explain and so decided to use the children who had now gathered around us. We all went down to the football pitch. I made the kids into satellites, the adults into the earth, and I would be the GPS (See appendix five on page 236 for basic principles of GPS operation). As I started to explain, it dawned on me that this was not going to work: I would have to use an analogy with jungle navigation. I knew that whilst walking in the jungle they would call out to each other and from the replies would know how far and where the others were in relation to themselves. If they were lost these shouts could be used to reorientate themselves (or in the case that they were completely disorientated, they would be ridiculed and given directions). This was a perfect analogy and so I started again. I sent the kids off in different directions, some far away and others close by. Then by calling to each of them I used the analogy to explain how the GPS got its bearings. This strategy worked fantastically. When it got dark, I was even able to show them the satellites tracking across the sky lit-up by the sun on the other side of the world.

I am sure the majority understood the basic principles of the GPS concept. It is a complex subject to explain beyond these basic principles, and I learnt about the problems of trying to convey too much information too soon. The use of the analogy worked wonderfully and if nothing else it was enjoyable and did create some more friendships.

The main point emerging from this exercise was a visible change in most of the group's attitude, from enchanted fascination to disenchanting disinterest. I did not explain all the functions of the device since this would have been a mammoth task, so most only perceived that it told you where you were and I presume they saw no use for it in their livelihoods, and thus became disinterested. This opinion was reinforced when I explained to Abraham how I used it to make maps, navigate along small rivers and find my way in the dark. Two of the group who had become disinterested in the device overheard this conversation and suddenly showed a significantly renewed interest in it. They already knew the power of maps within lands rights claims and so could now see the power of such a device, which could add further legitimacy to such inscriptive forms of representation as maps.

Introducing these communities to such tools was only part of the issue, for the data a GPS produces feeds into the maze of software and hardware, which is the next level of the technology that requires considerable and expensive training if it is to be used effectively. Thus I do argue that the true application of the technology becomes more complicated and therefore less applicable to the indigenous context, given the present resources they have at hand in their communities. The technology needs a specific infrastructure and set of resources to be maintained and used not to mention a minefield of jargon and praxis.

The Yanésa have been appropriating technology from outside agents for centuries. Many examples of such technologies can be seen in everyday use by the Yanésa, such as chainsaws, boat engines, radios, machetes and alike. These technologies, I would argue, are neutral. Neutral because in order to appropriate them into their social philosophy, they do not need to replace it with the epistemology of the culture in which the tool was developed. Geomatic tools may then appear to be neutral, but because they are dependent on geomatic software they are just the tip of the

epistemological icebergs of geomatic conceptions of the world, as with the GPS. I will discuss later on how this affects those who use geomatics and will discuss how it is not a neutral tool. Now I want to turn to technologies associated with geomatics and examine their role in developing technological databases of Yanesha culture. In doing so I shall examine their advantages and disadvantages as tools the Yanesha may wish to adopt to document their culture.

Giving cultural information freely

Over the three days of the congress, word got around that I was not just a tourist or Silvia's husband or yet another anthropologist, but instead I was there to record Yanesha culture. This was particularly interesting to the elders, who often cornered me to ask more about this project.

At the post-congress fiesta, I brought out a tape recorder, as one of the Yanesha elders, Felix, had said he had lots of old stories he would like to record. Silvia had decided to sit out the fiesta in her tent, because she was not willing to fend off unwanted drunken male Yanesha advances. It was dark and there were already campfires beside the main building, around which some of the elders were chatting. Here I found Felix and presented him with the tape recorder. He looked at it, handed it back and asked, "right, you can record these stories?" I nodded, he stood and clapped his hands and started to chant a phrase in Yanesha. This must have been the opening theme tune to a story telling session as lots of people began to gather round. The rest of the group went silent. Felix looked at me and smiled and then began an epic story. It had animal mimics and sounds of the jungle all accompanied by plenty of excellent acting. This was received with great laughter and frequent applause. Some of the story was in Spanish but a lot of it was in *Yanesha*, though I could interpret the gist of the story from the acting. After this he told a couple more stories, which was how everyone

discovered I was recording him, as he would pause while I changed the tapes. Later that evening the repercussions of this discovery and the recognition that I had the trust of Felix started an outpouring of stories, myths and old tales from the other elders. I showed Felix how the tape recorder worked and he did all the recordings. He came back a few times to make sure he was operating the tape properly, but for a few hours he went around recording stories. The point that struck me was that I have been told, many times, and read and listened to accounts by anthropologist about the difficulty of gaining trust, and the time spent trying to get such things on tape. All I did was show up tell them I wanted to record some tradition, and suddenly I was privilege to all their 'secrets', and perhaps a form of trust. I saw this time and again throughout my fieldwork, but not quite to the same extent as with this group. Their desire to save these stories was intense. Many of the elders were very worried that the younger generations were simply not interested in remembering the myths. They expressed the concern that if they were not recorded now they would be lost. They say that many such oral histories, myths, stories and tales have already been forgotten. In the next decade many more will be forgotten or die with the last generation of elders who grew up in a time when these aspects of everyday life were important. This is an area where technology can solve part of the problem.

I say part of the problem because, as Rundstrom (1995) expresses it "Salient features communicated through speech and behaviour simply cannot be captured by Western technology without undergoing radical transformation" (1995: 52). In the above example Felix's stories were only captured on tape, but these stories had more than just a sound component. There were multiple features, most of which are hard to capture no matter what technological instrument are available, as the following quote should help to illustrate.

"With the pitch-dark backdrop to the flickering firelight, the storyteller can intrigue and entertain their audience ... With the practice of years they conjure images of heroes, legends, and mythical

beasts from the fire's smoke. The spirits of the forest sit there too, obscured by the shadows, tickling the listeners spines"

(Mears 1992, 228).

The storyteller can only produce such a response from his audience if he uses images, animals and experiences that they have all had and encountered in their daily lives. This life times worth of experiences make the story that much more poignant to the listener. A simple story involves a specific situation (night, campfire, humid jungle, large audience), the experience of the audience (a story relevant to jungle based livelihood), the storyteller (respected elder, excellent actor and mimic), and many other nuances (cf. Hymes 1981 and his discussions on the performative). The tape if played to someone who was present when it was recorded can revitalise their memory. But for those new audiences the recording technologies can provide only sound and vision, not touch, smell, taste and the general bodily sensation provided by the situation, location, history, etc. The real performance is missed. However, technologies should not be ignored as one avenue to solving the problem expressed by the elders: that perhaps without such a recording the story will just disappear into the jungle.

It is important to note here that the advocates for the storage of this knowledge were the Yanasha elders themselves. This was not a new idea that I had introduced and it was clear from discussions with Felix that the desire to capture their knowledge had been deliberated upon for a number of years.

In the literature Andrew Turk (1998) makes another point about the capturing of this form of knowledge. He was working with the Ieramugadu community (Western Australia), and exploiting a greater range of Information Systems. He was employed to develop a cultural heritage system utilising a plethora of multimedia, GIS and database technologies. The focus of the project was on the development of a culturally appropriate information system for the storage of Injibarndi, Banjima and Ngarluma peoples heritage information. He makes it very clear that the system was being

developed with, rather than for, its users (Turk & Trees, 1998). When Turk & Trees began this project their main concern was how they were going to guard the intellectual property rights of the Aboriginals once the information had been taken out of the individual's control. By this I am referring to the inscription of knowledge, knowledge which would have been previously stored only in an individual's head. An inscribed copy is stored in a non-exclusive medium. Although Turk & Trees were principally concerned with the protection of this Intellectual property, it also raises a number of other ethical issues, most of which had not been addressed in information systems before. Through the rest of this section I shall introduce these issues through comparable examples within my work with the Yaneshas.

First I want to look a bit further at the issue Turk & Trees have raised: the possible misuse of sensitive information or intellectual property. Two examples of this came to light just after the congress. One follows on from the recording of Yaneshas "culture". In this first example the misuse of this information could have serious consequences for the Yaneshas people, since it involved the killing of a jaguar, as I shall describe in the following account. The whole episode had an incredible impact on me and changed many of my perceptions about the indigenous people of the Amazon, and their current state of transition. The other example raises issues of the misrepresentation of sensitive information.

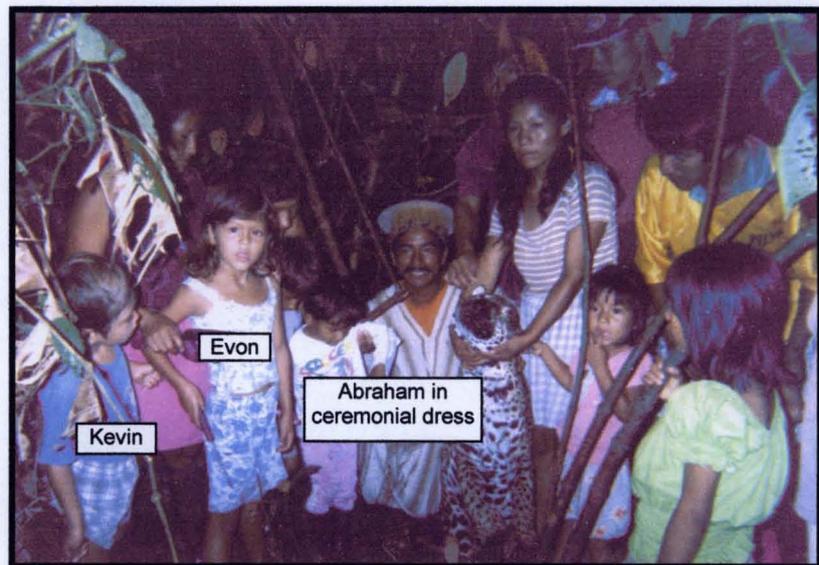
Jaguar Kill

It was a few days after the congress and we were awaiting transport up river. It was a hot, dry afternoon and I was wandering through the Cocoa plantations with Renzo (Abraham's Uncle) discussing the problems of Brown spot, a viral disease which affects the crops, lowering their yield. I had read, by chance, about the use of a copper sulphate spray to control this virus and we were just talking about the likelihood of Renzo getting

hold of any when a shout came from the village. It was Abraham, he had run all the way from his brother, Enith's house to find me. We could just hear him calling, so Renzo answered with a blast of "oooww-eeeeé", a cry that carries for great distances through the jungle. When we got back Abraham had rounded up nearly everyone and there was a lot of excited conversation. Abraham wanted me to bring my camera, as they 'had a jaguar', he also wanted Silvia to bring her video camera so that we could document the whole episode, recording it just as I had done with Felix's stories. It was a fair way to Enith's house, at least an hours walk and a hour's paddle by canoe. So along the way I got the full story of the jaguar, which they had not caught, as I thought, but had in fact shot. Over the last month, the jaguar had been eating its way through their pigs and goats. Right after the congress Enith had built a hide on one of the jaguar's tracks and waited. He had been there day and night until the jaguar again used that route, to its misfortune.

We had gathered many more families along the way, as Abraham was the Pied Piper leading a flotilla of canoes and calling to every home we passed. We arrived at Abraham's house where

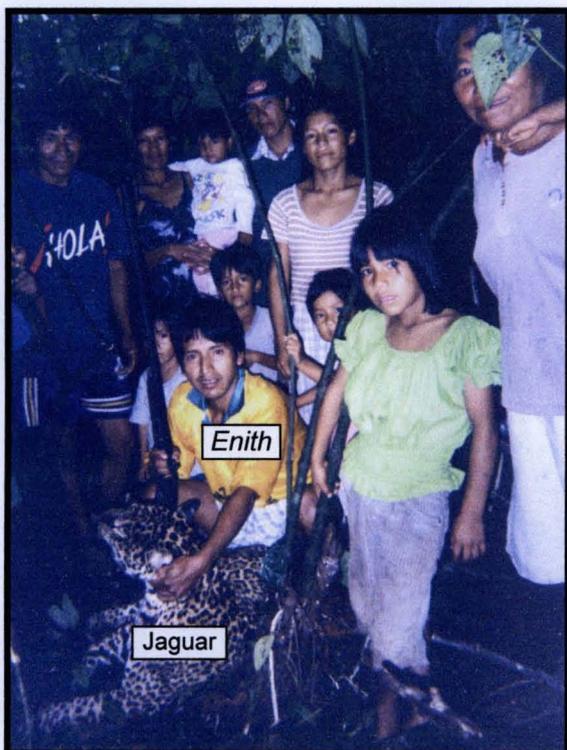
Evon and grandma busied themselves making everyone refreshments of tea and coconut milk. We would now have to walk to the site of the shooting. Abraham was getting dressed in his



Picture 5: Abraham's wife hold up Jaguar for group photo

ceremonial costume (See picture 5) so that he could tell the tale as we walked. He was

a great storyteller and he certainly made the most of this opportunity, especially with such a big audience. He led us along the paths to Enith's fields and the site of the first dead pig, which had been eaten by the jaguar. All that was left were the putrid remains of a pig. We were led past several more of these rotting heaps and at each one Abraham re-enacted the events with a dramatic narrative. Each animal had its own story, who had found it, who heard the jaguar that night and alike. He even sang a couple of songs, one in Yanesha (which I was told was about jaguars) and another which was more of a musical adaptation of the previously told stories about each kill. The trail led through some more clearings to the edge of the forest where we came upon the high-hide. Now Abraham's voice softened as he built the tension. We all quietly crept over to where I could see the shape of an animal. Evon and Kevin took my hands and led me silently through the undergrowth. Suddenly Abraham let out a roar just about as realistic as any



Picture 6: Enith showing off his kill

Jaguar. I jumped out of my skin, which made Evon and Kevin scream. This in turn made everyone else jump and we all fell about laughing, especially Abraham. At this point my services with the camera came into play, and I took pictures of everyone with the dead jaguar (See picture 5 and 6). The pictures do not portray the massive size of this female jaguar, which was an impressive beast. It obviously had cubs since it was producing milk from its teats. So I tried to see whether they would

track a path back to try and find its cubs, but I found that we had differing perspectives on this matter.

I had not challenged my viewpoint as I had presumed that there was nothing to challenge. For a Westerner, such as myself, Jaguar cubs were harmless and should, if properly cared for, grow into adults and so help bolster the species numbers. However, to Yanesha with livestock they are a pest. Just as rats are to a culture that stores grain. In this instance a rat-catcher would dig up the nest and stamp on all the young so they could not grow into adults. Similarly, the Yanesha just left the cubs, knowing they would die without their mother and in the future there would be fewer pests eating their livestock. This was not the only reason they abandoned the cubs, but I did not discover this other reason until later.

The *Instituto Nacional de Recursos Naturales* (INRENA – part of Ministry of Agriculture)³⁶, has banned the killing of jaguars with heavy fines for anyone found trading in skins or found killing them. This fact would have provided another reason for them not wanting to find the cubs. More importantly, there are certain ethical dilemmas and issues of misrepresentation, which come about because of the INRENA legislation. Silvia had recorded some footage while I took pictures with my camera (it is currently stored by the *Instituto de Ayuda*), because of the current laws imposed by INRENA, this data could potentially be used by officials to prosecute these people.

The second example deals with this issue of misrepresentation and comes from the *Instituto de Ayuda* (IDA) territorial mapping project. Silvia had two tasks in the field, the main task I shall explain below. The other task Silvia had was to plot the boundaries of each community's territory, recording the positions with the GPS. Land titles given to riverine communities either incorporated the river or used it as one of the boundaries. Because of this the boundary limits could be plotted along the course of the river (See diagram 5 below).

³⁶ See General Glossary on page 257 for description of this organisation.

Silvia would take the boat to the upper and lower limits on the river and record them by using the GPS. From these points and incorporating the registered territorial area a polygon could be generated using the GIS software. This method may and may not be an issue, as I will explain. When, in the 1970's, SINAMOS (National System to Support Social Mobilisation) undertook the land title process it was crude at best. They allocated indigenous plots depending on the number of households. Then using any distinct natural features as a guide laid down boundary lines. If the river was the only distinct feature then a length of river was allocated and a polygon randomly plotted back

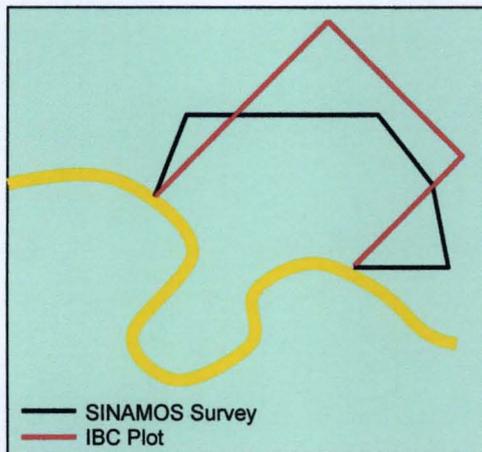


Diagram 5: The black line represents a hypothetical community boundary, with the vertices positioned on some significant features in the jungle, and the river as the final boundary. The red line represents how IBC would plot the boundary using their GIS software and field data. Both represent the same physical area but not the same bounded lands

into the jungle representing their territorial area. The *Instituto de Ayuda* (IDA) were only taking the river markers and plotting areas back into the jungles, but not plotting, with GPS, the other markers that may have been used in the original survey. The result is that the polygons that the computer generates are inaccurate, in terms of the actual areas that they encompass (See diagram 5). This may later lead to misinterpretations, and in the worst case these

polygons may be used as the legal representative of the community's boundaries. These plots that IDA made are published on their website as representative of the community's territories, with no indication that they may well not be accurate.

Both are examples of the potential misuse of data by removing it from its source and the context from which it was gathered (cf. Posey & Dutfield 1996, and their discussions on intellectual property rights). Andrew Turk makes specific note of these generic ethical considerations. He notes: "They may be heightened or brought into sharper focus when the system users may be especially vulnerable to exploitation,

breaches of confidentiality and misrepresentation of concepts (e.g. Information Systems for indigenous communities). The activities of Information Systems analysts, and those who assist them, must therefore be subject to careful ethical review at an individual, project team, organisational and discipline level” (Turk 1998).

Since, as Pickles (1995) asserts, the application of geomatics is an example of technological determinism, the practitioners will not recognise any need to address ethical and social questions. Geomatics is viewed by its users as good technology in a positivistic manner, which was an attitude I encountered in me, the federations and NGOs alike. In a project such as that by Trees & Turk, whereby a massive volume of sensitive aboriginal information is being collected and the project is being driven by the Aboriginals themselves, then ethics will be addressed. The problem with projects run from a geomatics bias is that they practitioners do not see data as something that can be considered culturally sensitive. An attitude exacerbated when indigenous elders are desperately trying to save their knowledge, because such ethical issues are less likely to be considered when the data collector is freely entrusted with the cultural information.

This attitude was visible from the design of *Instituto de Ayuda* (IDA's) territorial mapping project, which I will discuss below. The absence of ethical consideration for the Yanasha intellectual property rights should become apparent from the implementation of the project within the communities.

***Instituto de Ayuda* (IDA) Territorial Mapping Project**

Silvia was happier with jungle daily life, but she remained impatient with Chimay and his protracted organisation of the transport. The problem was that Chimay was still desperately trying to avoid paying for a canoe to take us further up river to the first community on our list. The federation had also promised numerous delegates that they would be ferried too and from the congress. Chimay had the funds from FECONAYA

to pay for all these canoes, but did not want to use them for their intended purpose. He hung around and waited for as long as possible so that fewer people would be left, so that maybe he would be able to keep some cash for himself, rather than pay for their canoes. His prevarication was working and many people had already found their own way home. Nevertheless, and unfortunately for Chimay, some of the members of other Yanesha communities, who were also waiting to go home, knew he had federation funds and they were beginning to kick up a fuss. So on the fourth day he gave in, organising motorised canoes to take everyone up river.

We travelled to Yanesha communities along the Palcazú, Pichis, Pachitea and Pozuzo rivers. The project focused on those communities with land titles and involved a survey of 220 questions (See appendices Ten and Eleven on page 242 and 255). Not all the communities had land title so visits to these just involved a short interview and a brief survey with the head family.

Silvia, as I have mentioned earlier, wanted to spend as little time as was possible in the jungle and she was displaying classic signs of culture shock, which caused her to offend a number of our hosts. It is perhaps an instance of field staff not really being appropriate for the task. For example, She had a tent with her, which she insisted on sleeping in regardless of other alternatives. I initially thought it was a good idea to bring a tent, so that the host village would not have to be inconvenienced finding us space and it was a good mosquito net. However, one of the most common expressions I heard was “*aqui no hay sancudos*”, which translates to “there are no biting insects (mosquitoes) here”. I would hear this each time we arrived at a new community just as I began the elaborate process of finding somewhere to hang my Mosquito net. The conversation would be almost predictable and typically went as follows:

“what are you doing” *asks host*

“I’m hanging my mosquito net” *I reply*

“*no hay sancudos aqui*, where have you come from”

At this point I would tell them of how I was just at their neighbouring village and the standard response would be:

“*ohh* yes they have lots of biting insects but don’t worry we have none here”.

Initially, I believed them and would not put up my mosquito net, but quickly learnt that in fact they always had lots and lots of biting insects and mosquitoes, which were particularly fond of gringo blood. What struck me about this phrase, and the conversations and commentaries that followed, were the parallels with Arens (1979) discussion about Cannibalism. He describes encountering the phrase “oh yes they are cannibals over there” which was not actually stating that the next tribe were in fact cannibals but it was simply a device used to insult the neighbouring tribe. The comment about *sancudos* was then one of pride and a teasing or belittling of the neighbouring community.

I did sleep without my mosquito net a few times and saw that I was treated far better for not offending their pride. Although I managed to find a way round it and joke about bringing the mosquitoes with me, as they were addicted to gringo blood, which enabled me to put my net up again without offence. On a couple of occasions they agreed and jokingly suggested I sleep well away from the community. I was just putting up a mosquito net, but Silvia was erecting a tent and made no effort to accommodate the host’s hospitality.

This is perhaps a small example but it was a part of the obvious fatigue poor Silvia was suffering from, she had no real interest in the work she was doing, for it was simply a part of the job she had to endure. The laborious and inappropriate questionnaire stood even less chance of being filled-in correctly, as Silvia wanted to tick as many boxes as possible in the shortest time. One particular interview stood out as a good example of this, which perhaps justifies my criticisms and one that will have damaged any future projects with this particular community.

We arrived around midday at a small community, along the Pozuzo River. A young boy showed us to the newly constructed house of the community's head family. However, the person Silvia needed to interview was not at home, as he had gone off to work in his *chacra*³⁷. Chimay and the young son of the man went off to find him. Silvia had planned that we only stay a short time here as she wanted to head further upriver to a small port. This port was the meeting place of the Pachitea and Pozuzo rivers, and over time a large village had built up, with small stores and a guesthouse of sorts. Thus Silvia was looking forward to a hot shower to recharge her batteries. So understandably she was a little agitated when several hours passed and Chimay had not returned. When Chimay and the headman eventually turned up time was pushing on, and Silvia was getting concerned that we would not be able to make it up river before dark. This would result in another night in a tent, so she was rushing the questions. However, her haste did not fit with Chimay's prior explanation of the interview. Chimay, whilst walking back with the headman, had explained to him that he should answer the questions honestly and with some detail. Chimay also led him to believe that the project could later be used to get funding from outside agencies, who would come in and help deal with numerous problems, such as soil degradation. This was in fact not true, as *Instituto de Ayuda* (IDA) project was just a token fact finding and mapping exercise.

Because the questions only require a yes or no answer, Silvia only wanted a yes or no answer. The questions, however, were such that many of them stimulate anything but yes or no answers, particularly when asking about these people's livelihoods. For example, there are two hundred questions and over a hundred questions about economic production alone, such as those in figure four below (See appendix nine on page 242 for full list of questions and appendix ten on page 255):

³⁷ See General Glossary on page 257 for explanation.

Supposedly these require simply a tick in any of the four boxes, with no room for relevant comments. This was very badly thought out because to simply ask a headman, whose livelihood for the past years has been the production of plantains (type of banana) to just answer ‘yes’ or ‘no’, when he has just had a poor crop and for the first year may not be able to get a good price at the market, would be an insult. This is along with his suspicion that soil degradation was the cause and he had just been told (by

122	Producen Plátano?.	Sí para consumo	<input type="checkbox"/>	Sí para venta	<input type="checkbox"/>
		Si para consumo y venta	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
123	Producen Maíz?.	Sí para consumo	<input checked="" type="checkbox"/>	Sí para venta	<input type="checkbox"/>
		Si para consumo y venta	<input type="checkbox"/>	No	<input type="checkbox"/>
124	Producen Frijol?.	Sí para consumo	<input type="checkbox"/>	Sí para venta	<input type="checkbox"/>
		Si para consumo y venta	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Figure 4: Samples from questionnaire, see appendix nine on page 242

Chimay) that answering such questions in full detail may lead to some sort of aid. Well, obviously he would not just give a ‘yes’ or ‘no’ answer. Unfortunately, the combination of Chimay’s lies and Silvia’s desire to have a deserved rest-bit from jungle life, effectively sabotaged the meeting. So when the headman started explaining his problems in detail, Silvia snapped at him, tutting and asked sternly “YES or NO”. Almost ignoring his answer she moved on to the next question. This happened on several more questions. So by the end the headman was irritated with Silvia and went over to Chimay, where a shouting match ensued, which is how I heard about the promises Chimay had made in his prior explanation. Chimay became annoyed with Silvia, because he had lost face. Not surprisingly there was a very frosty atmosphere in the canoe as we headed up river, travelling in the dark, as any chance of hospitality had been wrecked. As a result of this simplistic questionnaire, Silvia was made to appear

unsympathetic, when all she was able to do was follow the project guidelines, and the headman will now also be even more reticent to deal with outside projects.

The other aspect to such simplistic questioning, about such an essential part of their everyday lives, is that they can not always give the answer that fits the box. The boxes just ask if they grow, eat or sell a crop. The people would frequently reply with such answers as “we would sell it but can not get it to market fresh”, “we plan to grow it in the future”, “we used to grow it but now it will not grow in the soil” and “we do not produce enough to sell but would if had more land to grow it on”. These sorts of answers are very important as they shed light on the real economic production problems and activities of the people. Such answers were short enough to be noted down and far more relevant than a ticked box. For instance, one answer gave a real insight into the changes happening in the resource use of all the communities. The plant *Oje*, was traditionally used for medicinal purposes. Today it is not used, as the knowledge for its preparation has become scarce, forced out by the influx of biomedicine and medical outposts discouraging the preparation of such jungle remedies. I was told how a family came close to death when they made a mistake in its preparation. The question as to whether they grew *Oje* and used it was in the questionnaire. Silvia was given the same answer and explanation (as outlined above) as to why they do not use it every time she asked the question. However, she never made a note of these answers. This sort of information was never gathered as the project had a time constraint and as Chambers puts it: “Lack of time drives out the open-ended question” (1983:12).

Lastly, the classic problem of questionnaire misinformation was clearly observed by myself on a number of occasions. In one case, for example, the problem would have been easily overcome with a short tour of the community. In the Hauswald interview one of the questions Silvia asked the headman was whether he grew *Cedro*³⁸. He

³⁸ *Cedro* is a valuable hard wood that fetches a good price at market.

answered plainly “no”³⁹. I had been with him in the *charca* that afternoon where he was proudly showing me the *Cedro* he was growing.

This IDA project was a very good opportunity to gather some simple but useful information about the communities. Instead all that was achieved was that a few boxes were ticked, so that numbers could be generated and neat statistics analysed. The data collected is in effect inaccurate and can, at a later date, easily be misinterpreted; I would even go so far as to say that it was useless and unrepresentative. Another perhaps more damaging aspect was that the people are now even less interested and less hopeful that useful aid may come from the outside agents.

I described earlier a development organisation that had carried out a project blinded by its own assumptions that its notion of a ‘good standard of living’ was universal, and they inappropriately built concrete toilets. This same “inflexible commitment to universalist assumptions” (Richards 1985:10) is behind the incompatibility problems the *Instituto de Ayuda*’s territorial mapping project was having in the field. Although I have implicated Silvia as the main antagonist, perhaps it would be more reasonable to question the project design itself.

The first point to note is one I raised earlier, about the federations as a mediator between the NGO and the community. Here the project was endorsed by the federation with no consultation with the communities. The communities learnt of the project at the congress and were simply presented with the programme of what was going to happen. This could account for some of the misinformation issues.

The next point deals with the design issues. Not only is the technology shaped by the epistemology of the people who developed it, as I mentioned in an earlier section, but the same happens in reverse, the technology shapes the conceptions of the people

³⁹ I could not say exactly why he said “no”, but he was not overly willing to cooperate in this questionnaire.

using it. To contextualise and so explain this point I need to briefly review some of the basic doctrine behind geomatics.

When geomatics constructs the world it does it by first deconstructing it and then reconstructing it, both processes are regulated by preconceived concepts emanating from the designer's ontology that it uses as culturally derived categories.

Although Rooney (1992) and Rundstrom (1995) demonstrate that most philosophers of science no longer argue that science is 'objective', these philosophers still do not question the legitimating values behind science or its universalist assumptions. They are also quick to disregard what they perceive to be subjective data. Data in the GIS community is treated simply as emanating from a value-neutral empirical world, open to analysis, and not from the value-laden nonmaterial reality, which becomes disregarded as uncatergorial and overlooked as simply aesthetic or religious experience. This implies that the empirical sciences classify data by splitting it into a dichotomy of objective / subjective, a split that could also be defined as that of fact / value or material / nonmaterial conceptions. The value is taken out of the 'fact' as the data is taken out of its context and thereby depersonalised, becoming metaphorically 'neutral', which reflects the 'techno-scientists' epistemological approach to all data.

This has two significant influences on the Geomatics practitioner. First, Geomatic technologies will only function with data that is placed into these existing categories or data that conforms to a particular format (principally quantitative data / facts), and secondly, the very nature of Geomatics storing information in a computing medium inevitably demands that it be analysed with, or defined by, algorithms. The information that comes from an indigenous source is often of a 'subjective' nature (sometimes referred to as qualitative) that does not readily fit these existing categories and is not easily computed. This changes the value that is put on it and so reduces the desire to include many forms of indigenous data. Geomatics is shaping the project because

practitioners will look around for the sort of information that can be inscribed into geomatics and then they build a project around this sort of data. They begin to value only the quantitative aspects of a society and so change their focus away from value-laden, 'subjective' aspects of societies as they can not easily be stored, manipulated and analysed.

The above example of the territorial mapping project by *Instituto de Ayuda* (IDA) is an example of such a project. Even though Dr Michael Jones has an in-depth knowledge of the Yanesha people's daily lives he chose to build a project that was technology-driven and not content-driven. The result was that the questionnaire, which I described above, encountered numerous compatibility issues. The project did collect data that will be fed into a database. However, the data is denied the qualitative value of the reality from which it was taken. This should be evident in the fieldwork data collection. This data will be viewed, by the NGO, as fact, when to me it is evident that it is a partial extraction of an aspect of Yanesha culture, which was conceived to be representative of a phenomenon and used as a representation of the whole phenomenon, a representation born out of geomatics epistemologies.

This technological influence on project design became even more apparent within the design of IDA's cultural geography database.

The *Instituto de Ayuda* (IDA) Cultural Mapping Project

Dr Michael Jones, founder of IDA, wanted to build a database of the Yanesha cultural geography and then develop this into a map of their history, geography and culture. Effectively this was cultural mapping, although he only intended to collect information that had a specific spatial reference. The original data sheets can be found in appendix eight on page 240, they show the sorts of information Dr Jones had intended to gather, which I will briefly examine here.

The project was to begin with toponymic data collection. This data is perhaps disappearing faster than other types of information as it becomes increasingly replaced with Spanish nomenclature. The list of features included, hills or mountains, boulders or crags, streams and rivers, pools, water falls or rapids, lakes, historic locations, sites with religious significance, locations of important resources (historic and current), ancient trails, routes or paths. These features can be plotted and position fixed using a GPS and GIS software, which provide a base map for future data. The project is intended to be continuous as they added more layers of data.

As earlier mentioned, Dr Jones had collaborated with a shaman of the Yanasha peoples, who was also a friend from his fieldwork days, as noted, this was Nacio, from the *Loma Linda* community located in the central Yanasha territories. *Nacio* was well known throughout the Yanasha population, as he was a successful spiritual healer, and a reputable practitioner of traditional plant medicine. I first met *Nacio* in Lima, he was a very small, shy man, probably in his late forties. Dr Jones was very fond of formal meetings and decided that we should have a meeting about the project. So we all sat round a table in Dr Jones's office and he talked. He was very enthusiastic about the project and went into considerable detail about the various types of data we could collect and the places we could go and collect it. The entire time *Nacio* sat quietly as if a little bemused at the situation. He did not in fact say anything the entire time he was in the office, or at least I did not hear him speak. The next time we met, he was a very different character, far more outspoken with a definite charismatic presence.

The fieldwork for this project was supposed to begin during and after the FECONAYA congress. However, *Nacio* did not join us until a few weeks after its occurrence. Meanwhile we were racing through the communities, filling in Silvia's survey forms. I had begun collecting a few stories and plotting a few significant places, but I was always hurried along by Silvia. Then Chimay decided to try to run this

project since he had no say in what Silvia was doing. However, Chimay too wanted the whole territorial mapping project to be quickly finished and so was not impressed when I suggested we stay a little longer in the occasional village to collect more data from more people. Not only was he bored but the boat and *motorista* that he had hired were eating into any funds he may otherwise have been able to skim off. Silvia did not go out of her way to support me as she was only too pleased to go quickly through each community. She would remark that she did not think it was worth beginning the project until *Nacio* arrived. Happily everything changed as soon as *Nacio* turned up, although it was short lived. It was clear from the outset that *Nacio* had a different picture of the mapping project than that envisaged by Dr Michael Jones, which should be evident below. *Nacio*, although collecting and plotting some toponyms, spent most of the time talking at length with the elders about the whole idea of such a project and what should be included in it. In so doing, he was acting as an indigenous leader. Many thought the mapping was a good idea, but they only gave it their brief attention. Instead they spoke for hours about the development of a “*Albergue de Anciano*” (cultural centre), which I now presume was something more important to them than this relatively intangible project of the *Instituto de Ayuda*.

Reflecting on my fieldnotes, I see I was blinded by one key aspect of this cultural mapping process, and that was the emphasis on ‘salvage’ or ‘rescue anthropology’. I had incorporated into my own thinking the elders desire to capture their disappearing knowledge which for them was the only important goal. Thus while in the communities, I only focused my efforts on the task of recording and recovering knowledge. The elders on the other hand were more interested in the revitalisation of the knowledge and achieving a respect for its worth as living knowledge: they had no wish to ‘save’ it as fixed objects in a machine, or for placing it within a museum. I now see why *Nacio* would spend most of his time ‘reminiscing’ with the other elders and

less time trudging round with a GPS and recording data. I also suspect that *Nacio* was rather offended with this activity by the very nature of its method and the format for collection. Once or twice *Nacio* would ask where, on the data sheet, I thought a particular piece of information would best be recorded. When we could not find an appropriate category in which to record the items he would be left somewhat disorientated and I would be left pondering the bias of geomatic praxis.

Soon *Nacio* had to return to his village, as his wife was still ill, so I was not able to investigate his agenda further and our paths did not cross again. As soon as *Nacio* left, my companions resumed the rapid rural appraisal tempo and we whizzed through the rest of the communities in that area. *Nacio* had taken the recording devices with him so I was only left with my GPS and a few data sheets. I resigned myself to observing Silvia's work in each community. Occasionally I was able to discuss the cultural mapping project with elders who I recognised from the congress, I could sometimes accompany them to map a few locations, if we were staying overnight. However, it was not long before we were back on a bus and heading back to Lima to discuss the events with Dr Michael Jones at *Instituto de Ayuda* (IDA).

Misalignments with the ontology of the peoples and the inscriptive focus of the technology are issues that became apparent when I tried to integrate some of the field data into the database. Although Dr Jones was just interested in acquiring a few general toponyms, much of the toponymic data collected did not lend itself even to that basic task. For example, one simple location on a river could not be so simply recorded, for I was given two very different accounts of the same place by two different people. The location was a small bay cut back into the river bank with a sandy beach on one side and steep bank, overhung by tree roots and branches, on the other. It was a very beautiful spot. I first came down to it one morning with one of my hosts, to have a morning wash. He had a Yanesha name for it, which apparently translates as "Pozo

Pánico” (Panic Pool) and he told me how it got its name in a story about a game they once played there as kids: On the far side underneath the branches live some electric eels. On that day they hung from the branches and dropped into the water, scrambling out as fast as they could and climbing back into the trees to drop again. The game was that the first one to be shocked by the eels lost. They were discovered and severely reprimanded when one small boy was badly injured by the eels, as he received multiple shocks. So his name for this place, as well as those who played the game, related to that past activity. The next time I came to this spot was in a boat and with a different, and younger man, who was showing me how to fish for catfish. He told me about a time when he had been fishing for catfish in this pool and caught one of these electric eels by mistake. The young man with him had just about reached down to pull it out, thinking it was a catfish, when he recognised it, but not soon enough to avoid getting a shock, which made him fly backwards and out the other side of the boat, tipping the boat over and dropping the engine into the river. So his name⁴⁰ for it reflected that episode. The place also had a Spanish name “Pozo Chico” (Small Pool), and everyone knew it by all these names as they had heard both these stories. This data was only collected from two people out of a community numbering well over a hundred. Therefore many more names must exist for this place. So which one is the definitive toponym, or can there be one?

All these stories, histories and memories are all aspects of traditional knowledge that make this space a location. The desire to collect this sort of knowledge and put it into a geographical database would only bring it into line with Western mapping concepts and make it accessible to Geomatic practitioners. However, it should be clear that plotting one such location in this restrictive medium would strip it of its identity as a place within the Yanesha social geography or as Rundstrom puts it “the power or

⁴⁰ My field notes have it as ‘piycheé’ but I was not able to get a translation of it.

Energy residing in that information, from an incorporator's viewpoint, now has been diminished and brought out of its essential context. It has become fixed and static: an object" (1995: 52). He goes on to imply that:

"each time the information is used it becomes more distant from its original intent and context. It starts losing layers of meaning almost immediately. This is especially relevant to the aesthetic, ceremonial, and spiritual character of human existence. In contemporary GIS technology, 're-presentation' retains only the form of the knowledge, not its full content. The information becomes a mere shadow of what it used to be. If this occurs widely in many aspects of the culture, the indigenous society's own geographic information system is rendered a powerless shell"

(Rundstrom 1995: 52)

If we go back to the issue of keeping the information in the same locality as the people (which the elders expressed through their desire to build a cultural centre), then placing the information in a GIS separates the source from the knowledge in space and time. For the GIS community this is not an issue because they have easy access to the technology and mass communications possibilities over the Internet. To separate the data and the source by such a large degree also diminishes the immediacy of the recipient's moral obligation to respect the intellectual property rights of the source.

To put the final nail in IDA's coffin I would tend to suggest that although they may have had some obligation to preserve the cultural data since the project had a Yanesha champion, Dr Jones did not express the same respect for the territorial mapping data. He said, and I quote, "what are they possibly going to do with such technology or the data we collect?" Dr Jones seemed to live in two worlds. The world of his fieldwork, where he values the opinions of indigenous friends and the world of geomatics where he treats the indigenous communities only as a source of data for him to exploit. The trouble with such paternalistic attitudes is that they do not accredit the indigenous peoples with any epistemological tenet that would give them the ability to utilise such a medium. More than this it is their indigenous 'alternative' ontology – epistemology that is not compatible with the technology which was not developed with the Yanesha relationship between space and use in mind, something geomatics needs to

adapt to, to be able to capture it. Now, however, I run the risk of painting a paternalistic picture of a people who can not comprehend this technology and would not be able to adapt it themselves to fit to their agendas for representations of their environment.

*

This chapter begins with a background that shows the Yanésya peoples occupying an area that is heavily colonised with large population centres in the heart of their territory. This has affected their federation as the representatives are those who have been raised and schooled in these urban centres with livelihoods based on urban commerce. This has resulted in an exaggerated ontological drift in their social philosophy compared to the community level of society. This was apparent at the congress as I described above. I would argue that this drift of ontology (even epistemology) is a general trend in indigenous federations, as they become more encumbered with State legislation and bureaucracy, as will be further exemplified in later chapters.

This chapter also discussed the role federations have as intermediaries between the NGOs and communities. This role is not as beneficial for the communities as might be expected. This is because the NGOs' projects and agendas carry with them a good deal of 'Western' baggage such as a very 'Western' understanding of society. This contrast in social philosophy between the NGOs and the indigenous people is an aspect that is not appraised by the federations. Thus the projects of the NGOs' are often ineffective or inappropriate. The persuasive power of State born and occidental organisations contribute to this incongruity, which was perhaps evident in *Nacio's* alternative agenda to the cultural mapping project. *Nacio* seemed indifferent towards the project because of its design that had been so heavily influenced by the technology itself. I argue that this technology carries a heavy burden of epistemological baggage, which is attributed to it by the nature of its development within the occidental paradigm.

CHAPTER FIVE

The Harakmbut

Auto-denomination:	Harakmbut (as a nation), Arakmbut (as a people)
Alternative-denomination:	Amarakaeri
Linguistic Family:	Harakmbet ⁴¹ .
Location:	Departments of <i>Madre de Dios</i> & <i>Cuzco</i> , Districts of <i>Kosñipata</i> , <i>Camanti</i> , <i>Madre de Dios</i> , <i>Iñambari</i> & <i>Tabuamani</i> .
Rivers:	<i>Rio Made de Dios</i> , <i>Rio Colorado</i> , <i>Rio Iñambari</i> , <i>Rio Yshiri</i> , <i>Rio Punkuri</i> , <i>Rio Malinowski</i> .
Population:	Estimated at 2000 individuals (Gray, A. 1992).
Indigenous Organisations:	<i>Federación Nativa del Rio Amazonas (FEDNAA)</i> <i>Consejo Harakmbut</i> , <i>Yine y Matsigenka (COHARYIMA)</i> .

This chapter is in two sections, the first focuses on the changing face of the indigenous community's social philosophy and how external pressures are effecting this change. Here I look briefly at the impact of commercial agents, missions and State legislation. Also examined in this first section are issues of territory and the role of indigenous federations. The next section looks at some cross cultural aesthetics of landscape and how this relates to an indigenous perspective of land.

Crossing Paths with the Harakmbut

One of the most inspiring ethnographies I read during my first year's research was about the Arakmbut people, written by Dr Andrew Gray. I began some productive correspondence with Dr Gray as he was involved with a number of projects of significant relevance to my research. He had suggested that he could help establish some key fieldwork contacts and set me up in a few ongoing projects amongst the Harakmbut. However, he was tragically killed and I lost a mentor and invaluable guide to the lands rights arena. Following this my links to the Harakmbut were seriously

⁴¹ See note five on page 217 for information on linguistic background.

diminished, and other pre-fieldwork contacts directed me yet further from the Harakmbut. Similarly, when I followed up one of Dr Gray's suggested contacts, I made arrangements to work with an unrelated confederation⁴² in the *Selva Central* (central jungles). As far as the Harakmbut were concerned it did not seem likely that our paths would cross, until some months later when I went to Oxford to meet Andrew Gray's widow, Sheila Aikman. She suggested numerous people and organisations that could help, and encouraged me to use her name as an introduction, if I ever went to the Madre de Dios region. As I recounted earlier my work with AIDSESEP, in the *Selva Central*, did not materialise as my only contact with the project had 'gone to the jungle' and was not due back for several weeks. I did not want to wait in Lima as I was very eager to get to the jungle, any jungle, and so I headed down to Puerto Tambo. Dr Aikman and Dr Long had given me a number of contacts there, so I decided to follow them up. One of the people Dr Aikman mentioned was Javier, who had been a close friend of Dr Gray. He is a member of the *Boca del Iñambari* community and was one of the key representatives of FEDNAA. He also taught at one of the further education colleges in Puerto Tambo. As chance would have it, he was the first person I spoke to at the FEDNAA headquarters, in Puerto Tambo. So through a complicated series of event I ended up working with the Harakmbut. Through Javier and FEDNAA I made several trips to Harakmbut communities and had various other encounters with different Harakmbut encampments. Some of these collaborations and meetings are recounted in the following chapter.

⁴² Andrew put me in touch with Alejandro Parellada of the NGO the International Work Group for Indigenous Affairs (IWGIA), he was assisting with a mapping project in the Ucayali region. The project was co-ordinated by Reynaldo Tuesta who represented the *Asociación Interétnica de Desarrollo de la Selva Peruana* (AIDSESEP) See General Glossary on page 257 for further details.

Brief Harakmbut History

I will not attempt to give an in-depth account into the Harakmbut people, as this can be found in great detail in Volume One of Dr Andrew Gray's trilogy (Gray 1996a). Instead, I have summarised the key historical factors which affect the aspects of Harakmbut culture, particularly those of contact with outside agents. This history has been taken from two historical accounts Gray (1996a) and Egg (1997).

In the period before any contact with Europeans the Incas are purported to have reached the headwaters of the Madre de Dios and the Iñambari and built several forts in the area. During the later post Inca contact phase (around the mid-fourteenth century) the Inca State mounted a full-scale expedition into the area to look for coca. They entered from the headwaters of the Madre de Dios, Iñambari and Beni, respectively. These areas were occupied by Harakmbut Indians and so undoubtedly there would have been contact at this time. This is supported with references to the Incas in Harakmbut mythology. For instance, "Manco Inca lived in a cave in the upper Ishiriwe, where he was thought to have been responsible for the origin of several cultural features such as maize, chicha and axes" (Gray 1996a). Inca axes are reported to have been found in Wachipaeri territory along the Pukiri River, and also found by Dr Gray in San José.

The next 'empire' – 'indigenous' contact was with the Europeans, probably in the mid to late 16th Century, when the region bordering the highlands was exploited to grow coca. During the following century there are records that talk of expeditions to the Alto Madre de Dios region in search of valuable resources, such as those by Pedro de Candia (1538) and Alvarez Tambo (1567-1568) and that of Tunas to the Río Beni (1538-39). Although all ended in tragedy, each would have reached areas occupied by Harakmbut peoples. There was also a tentative expedition by the *Convento de Santo Domingo del Cusco* around 1768, also unsuccessful. The first documented reports of contact between the Harakmbut and the European colonists was in 1768 and then a few years later, in

1807, by a Dominican missionary. These missionaries maintained contact over the next century and would have paved the way for many of the later scientific expeditions which were mounted to ascertain the resources of the surrounding areas.

The next significant phase of contact was during the rubber boom, when the Harakmbut suffered greatly from forced labour, slavery and warfare. Fitzcarrald entered the area from Manu and fought the Toyeri, because they would not co-operate with him. Thousands of Harakmbut are thought to have died by his hand in the late 1890s. In future years, the Arasaeri were decimated by slave raids from Bolivia by the Hacienda owners. Those who escaped fled to the interior of the forest, where warfare with those groups already there escalated (Gray 1996a).

Less murderous encounters with the Harakmbut began in the first decade of the twentieth century when the *Junta de Vias Fluviales*, commissioned by the Peruvian government, sought ways of exploiting the area and securing the boundary with Bolivia. From 1902 the Dominicans worked in the Madre de Dios, first with the Matsigenka and later with the Ese'ejá. They gradually moved into the Harakmbut homeland, converting Toyeri and Arasaeri in the 1930s, the Sapiteri and Wachipaeri in the 1940s, and the Arakmbut and Kisambaeri in the 1950s. Their policy was to bring the Harakmbut into a mission and teach them 'civilised behaviour' such as literacy and husbandry. The largest mission station was Shintuya, which during the 1960s held most of the Arakmbut and Wachipaeri. Between 1969 and 1973, several waves of Arakmbut escaped from the mission to establish the Native Communities of Barranco Chico, San José del Karene, and *Boca del Iñambari* (Mora 1997: 62).

In the decade of 1970-1979, the Cusco - Madre de Dios road was built that terminated at the Mission of Shintuya. At the same time began the immigration of colonists to the area, stimulated by the State, as a part of the agrarian reformation. This coincided with a period of oil exploitation in the area between 1973 and 1976.

In the last few decades the Harakmbut have been seriously threatened by gold and timber extraction. A number of factors have affected the areas gold extraction activities, the most significant of which were (a) The announcement, in 1978, by the Peruvian Ministry of Energy and Mines, that there is potentially upwards of 50,000,000 Troy ounces⁴³ in the Madre de Dios basin; (b) the construction of a road giving ease of access to miners; (c) the ease with which mining concessions could be obtained and the ease of mining without any legal concession (cf. Gray 1996c); and (d) a massive, very lucrative, gold rush in an area called La Fortuna, along the Madre de Dios. These factors among others have meant that the Madre de Dios basin has been flooded with gold miners, working on all scales, from the small *artisanal* workings⁴⁴ to the massive-scale water cannon extractions. The extraction of timber is affecting the entire Madre de Dios region and is causing irreversible depletion of Harakmbut resources.

As a result of these pressures the Harakmbut have united through two confederations. They initially became part of *Federación Nativa del Rio Amazonas* (FEDNAA), which represents a large number of different indigenous communities. Then after a few years they formed their own confederation to better represent their own needs, called *Consejo Harakmbut* (COHAR now called *Consejo Harakmbut, Yine y Matsigenka* COHARYIMA) under the umbrella of FEDNAA. As a direct influence of this unification into confederations, all the current Harakmbut communities have titles lands. The NGOs, FEDNAA and COHARYIMA, were also the principle force behind a successful campaign to establish the Amarakaeri Communal Reserve, a campaign that began in 1990, which the government official sanctioned on the 19th of April 2002. Nevertheless, there are still thousands of loggers operating illegally in the territory. Removing them or perhaps persuading them to leave will be a huge task and one that may take another ten years.

⁴³ See note six on page 217 for information on gold.

⁴⁴ See appendix seven on page 239.

The impact of this later history of contact has only become blatantly negative in the last few decades, with a drastic increase in land disputes and the encroachment of resource extractors, who irreversibly change or damage the lands, such as colonist's gold mining and logging. The other significant influence has been that of the Missions, which have shaped the current location and nature of current Harakmbut communities (Wahl 1987). The fragmentation of traditional communities and traditional lands, caused by the missions, has put extra strain on the community's ability to sustain many economic activities. This next section looks at the influences of resource and mineral exploitation on the livelihoods and perspectives of the Harakmbut people.

Economic Activities

The subsistence of the Harakmbut people depends on slash and burn horticulture, hunting, gathering, and fishing. The main garden cultivation is yuca (manioc), sugar cane, bananas, corn, peanuts and pineapple. In previous decades, when the oil companies operated in the area, the Indians sold them corn, yuca and bananas. Today some people still sell to the gold miners but most of the agricultural production is for auto-consumption.

The communities located along *Río Colorado* and the *Río Madre de Dios* have dedicated the majority of their cash economic activity to the extraction of gold. They either have a small artisanal operation themselves, work for a community member who has set-up a larger extraction operation, or work for one of the outside operators. In general only the owners of the mining operation gain a significant income, workers on good wages getting 20 soles a day (worth about £3.50 at time of writing, with a mining boss clearing in the region of US\$500 a day). Others gain cash from lumber or cash crops either grown or collected in the forests, such as *Castaña* (Brazil Nuts). A trend can be seen in most of the contemporary economic activities that the location of the

community, in relation to towns, lumber extraction, or gold mining operations will determine the economic activities of the community.

External Pressures and Economic Changes

The titled and surrounding lands of the Harakmbut are under constant pressure from expanding towns, spontaneous invasions from opportunist resource extractors, and the spread of colonist farmers, logging companies and gold miners. These pressures are becoming more and more significant as the State's infrastructure and communication networks expand. The imminent completion of the Trans-Oceanic highway, which will connect on their doorstep, has given the whole region an air of anticipated change. The Harakmbut livelihoods will undoubtedly change as an artefact of this massive new communications route. They will need to maintain control over their territory in order to stand any chance of weathering these changes, becoming autonomous and self-sufficient. They also need to be able to produce enough excess with which to bring in goods and services from the outside, things that are now an integral part of their everyday lives, like beer, manufactured mining tools, boat engine parts, etc. These goods and services are a part of the cash economy and for the Harakmbut the best way of generating cash is through gold extraction (wood extraction has been an option but the distance to market often means that transport is a prohibitive factor) (Gray 1996c).

Along with these economic changes have come an impossible mix of political influences, which have created innumerable legal obstacles, the majority of which are the result of three different governments each with a varying regard for the indigenous plight.

President Belaúnde's Ley de Reforma Agraria (15037) from 1964 promoted the colonisation of the jungles and caused mass migrations into indigenous territories. This was countered when General Velasco, in 1974, passed the Ley de Comunidades Nativas

y de Promoción Agropecuaria de las Regiones de Selva y Ceja de Selva (20 653) which introduced the Comunidades Nativas and so legal indigenous land rights and land title. The next law of significance to be passed was a revised version of Velasco's law which was presented during the government of General Bermudez and called Ley de Comunidades Nativas y de Desarrollo Agrario de las Regiones de Selva y Ceja de Selva with the number 22 175, which was promulgated in 1978 (Mora 1997: 20). However, Fujimori's government had a very different agenda and passed numerous legislative decrees, some of which directly contradicted those beneficial laws and decrees already in place: such as Legislative Decree 708 in 1991 and Ley de Tierras (26505) in 1995 which both caused a stop in the land titling process.

Fujimori's government put up several bureaucratic obstacles to indigenous land rights, which started in 1989, with the deregulation of the national gold market, opening up free market. This reduction in regulations and controls lead to an influx of opportunist miners, who came down from the highlands, and whose last concern was the indigenous land title.

The Harakmbut do have legal right to all the resources above ground within their territory, which means that they can legally eject loggers or other colonising farmers from their lands. However, the government has always withheld all the rights to the subsurface minerals. The 'Ministry of Energy and Mines' can effectively sell a mining concession to anyone wishing to extract these minerals. Previously this was not a problem, as all concessions were regulated through the State's *Banco Minero* and concessions were not sold within titled lands. However, in 1991, with the deregulation of gold trade and the passing of the new legislative decree 708, the *Ley General de Minería*, the possibility arose for mining concessions to be granted even if they were located within native titled territories (*See Gray 1996c: chapter 2 for more detailed explanation*). The solution would have been for the indigenous community to obtain

the permits for gold extraction on their territory; however, these permits have always been extremely hard for indigenous people to obtain. Not only does the legislation make it uneconomical for small operators, such as a community, to maintain the mining quota and pay the taxes required for such a permit, but also the system is corrupt. According to FEDNAA representatives, officials from the Ministry of energy and mines were reported to have given out permits to anyone who would or could have paid, even issuing multiple permits for the same concession.

This situation for indigenous communities was made worse since “permits for mining gold *were* organised by the government without any discussion with the indigenous peoples in the area. This led to the erroneous impression that all gold invasions *were* legal” (Gray 1996c: 259 *italics, update quote*). This has and does lead to numerous disputes, and further deprives them access to their own resources. Because of these decrees the Indians have no guarantee that their land is their sole preserve, because (a) at any moment, a company can pay to enter and extract gold within an indigenous territory and, of more importance, and (b) the extraction of the subsurface minerals invariably leads to the destruction of the surface vegetation resources, depleting the value of the territory for future indigenous use. The external pressure of encroaching colonists is also a major threat to their livelihoods as Gray explains:

“The effect of the increase in colonists on the Arakmbut, is such that they are unable to travel through their own territory without receiving threats passed by rumour. In addition to the fear inspired by these threats, the invasions have other consequences for the Arakmbut. The colonists indiscriminately log the trees, frighten the animals with the gold workings, plunder their gardens, and steal their gold deposits. The effect of the colonists is to reduce the potential for production within the community”.

(Gray 1996c: 124)

Territorial Expansion

“Good fences make good neighbours”
Frost (1912)

These external pressures and the resulting threat to resources have made land and territory an unavoidable concern for each community and the main focus of indigenous federations. All the indigenous communities I visited in the Peruvian amazon were, and are, looking to expand their current titled territories. Many were granted such lands on a very crude basis as I discussed in the Yanesha section. At the time when these boundaries were drawn up the external pressures from colonists and loggers were significantly lower than they are today and so the areas that they were given did not hold much significance to them. They simply carried on hunting and fishing in the same parts of the jungle that they had always fished and hunted and gathered resources, regardless of whether they were inside or outside these new boundaries. Because the jungle consumes physical boundary markers very quickly there has never been any effort made to mark out the boundaries of the titled lands. In fact marking out the boundaries is still a futile operation due to the forests rapid and constant collapse and regeneration, and because policing such a boundary is impractical (Jarvis & Stearman 1995: 58).

Perhaps it could be said that the significance of titled territories was not perceived by the indigenous peoples, back in the early 70s, because their concept of a territory was not the same as the Nation State who were granting them a territory. Andrew Gray talks about Arakmbut notions of territoriality, which manifest in their term ‘*wandari*’. It is now used as the direct translation of the Spanish term ‘*el territorio*’. However, pre-contact Arakmbut used ‘*wandari*’ with reference to an individual’s perspective. He goes on to say:

“The boundaries between the malocas (*traditional houses*) and between the Arakmbut and other neighbouring peoples were thus flexible and more social than physical. Friends could come close to the community with impunity while enemies were attacked. The word ‘*wandari*’ was therefore

relative to the person using the term. It could refer to the world as a whole or to the area around a maloca”

(Gray 1996c: 100)

The concept of an area governed by the rules of fixed boundaries was not relevant, since the domain in which any one person or community lived was fluid and moved with the seasons or the changing political alliances between groups. This fluidity of the tenuous notion of boundary is also discussed by Overing Kaplan amongst the Piaroa, she says:

“The word *Itso'fha* can be glossed as ‘a land’, ‘a Territory’; but it does not denote a land that is circumscribed once and for all. The boundaries of an *Itso'fha* fluctuate from year to year as its members re-position themselves both physically and politically”

(Overing Kaplan 1975: 57)

To say that they had boundaries or notions of bounded territories which are relevant to these communities is perhaps an attempt to impose our conceptions of communities having to conquer their surrounding area and claim the resources. These two examples show that any notion of a boundary is a social one and not a physical one that can be overlaid onto the land in the same way as a line on a map.

As soon as the missionaries arrived and a nation State began to develop, the Harakmbut would have been forcefully exposed to the concept of fixed, physical boundaries that comprised an owned territory. Gray (1996c) describes how their sense of territoriality and boundaries changed through two major developments. Firstly there were the contacts with the missionaries and the ordered life that they imposed, and secondly, the interactions with the colonists, who became a permanent feature of their landscape, and ultimately competitors for the resources of the area. The more recent governmental imposition of titled lands, mining concessions and urban development has saturated the Harakmbut world with the concept of bounded territory. The result is that now perhaps younger Arakmbut understand ‘*wandari*’ to refer to a ‘bounded territory’ along with a spatial, not social, relationship to land.

For the indigenous community the future significance of these titled boundaries were not comprehended until recently, when the communities began to feel the encroachment of colonists, loggers and miners. In all the communities I visited there

was a distinct awareness that they have a delimited area and that they have rights to that area, and no longer free access or rights to the area surrounding it.

I would argue that giving indigenous communities control over their land through a system of land ownership originating in State law and ultimately the State's ontology, gives the State social control over the Indigenous people. It is a subtle means of enforcing the State's ideological rules onto them, by making them recognise a bounded space, within which, and only within which they have control. In the long term it attempts to redefine or refocus the people's perception of what is their territory, and in effect lowers their aspirations and makes them easier to control.

The indigenous groups realise that their boundaries are very limited in relation to the size of the areas through which they would normally subsist. They are now all very eager to have the boundary lines lengthened to encompass an area of land more representative of their historical and contemporary subsistence activities and needs. For many communities these claims are becoming quite urgent as external agents lay claim to the lands immediately surrounding the indigenous titles and they look to the federations for support.

The Law of Native Communities did not allow for representation above the basic level of the community. This was to try and contain the indigenous communities at a village level and limit their ability to represent themselves legally (Gray 1996c: 81). However, from the 1970's the indigenous communities began uniting to establish organisations that could represent them at a federal level. These federations are non-governmental organisations and represent the local native communities who have land title or not.

As I mentioned earlier indigenous elders view the federations with suspicion as they suspect them to be instruments of the State. This opinion was hinted at by many indigenous elders I encountered during my fieldwork. It was not an opinion I found in

the younger community members, although they were generally very reluctant to openly express such opinions in my presence, perhaps because I was a Westerner. The point is that we accept the formation of federations as a natural development in the indigenous struggle for land and rights. However, from a society that in the last decades has been forced to envisage fixed boundaries and has been shown to abhor audacious demonstrations of power and authority, then federations have clearly not developed out of their world-view. Therefore, the principle influence on the evolution of these federations will be the State, whose unjust actions and laws regarding the indigenous populations are the reason that these federations had to form in the first instance. This all implies that federations will be consumed by the State's ontology and conform to its system for the operation and governance of such representative organisations. The next section looks at two examples of a federation's work to try and gain and maintain indigenous rights. They explore the actions and influences effecting a federation as it tries to flex its political muscles.

Federations

In the Yaneshá section I discussed how these federations work within the State systems to try to instigate changes and achieve equitable rights for the communities they represent. The following account is where a federation has tried to force a situation after they did not receive what they considered to be the just ruling on a land issue, as the following Email explains, which was circulated by the Amazon Alliance⁴⁵. I would argue that their actions were more for show than in the best interests of their communities, as may become clear.

Email published by the *Federación Nativa del Río Amazonas* (FEDNAA).

Dear friends:

First we want to express our gratitude at the continued solidarity that you have always offered us. It is to this solidarity that we now appeal in this important moment for our people and

⁴⁵ An American NGO see their web site www.amazonalliance.org

organisation. The Madre De Dios people have decided that on the 18th of July 2000 they will converge on the city of Puerto Tambo and stage a march to try and initiate direct dialogue with the Peruvian government. In this dialogue we hope to address the problems and alternatives we have already presented to the government.

Finally after 8 years of negotiations the government have recognised only as “Zona Reservada” the area that we have been fighting for as “Reserva Comunal Amarakaeri”

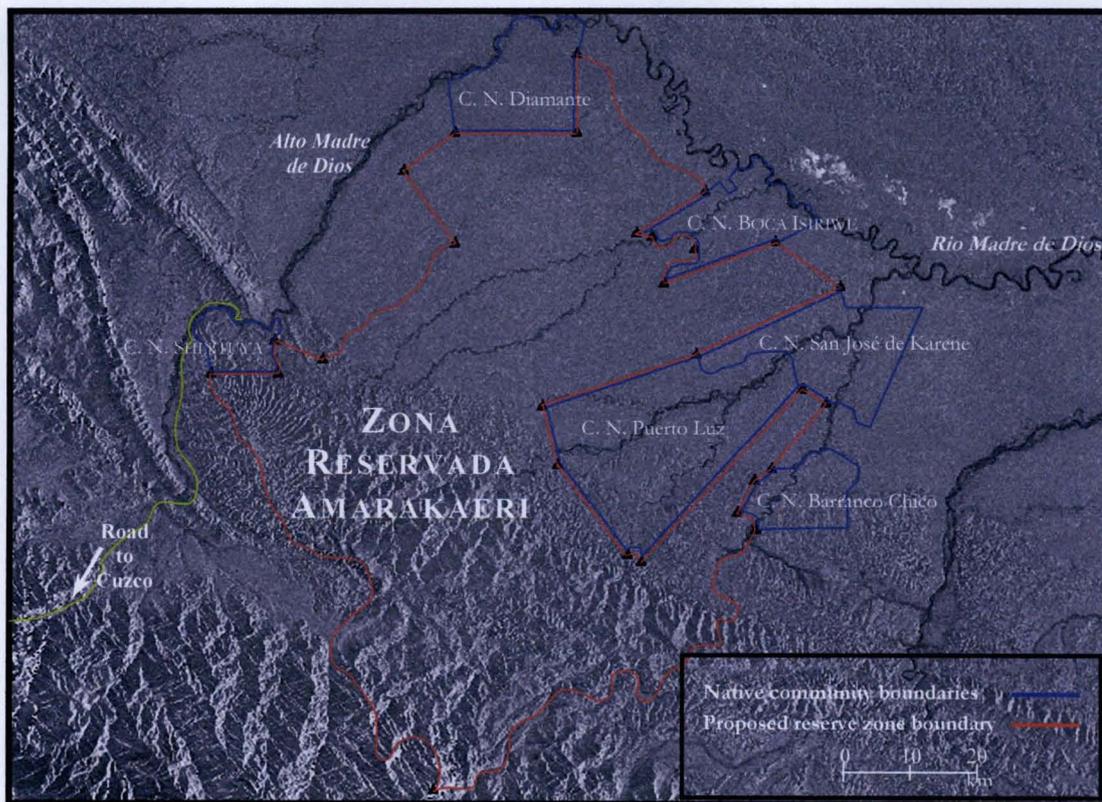
In the dialogue we will request to the government:

1. that they declare that the “Zona Reserva” be definitively declared “Reserva Comunal Amarakaeri”.
2. that neither mining or logging concessions are allocated inside indigenous territories.
3. that our traditional indigenous territories are recognised.
4. that we are allowed to fish, hunt and to gather in the indigenous territories that are inside protected natural areas.

For this march we request that you publicise our demands by means of an international campaign with a global covering of this momentous event.

Yours Sincerely
Antonio Iviche Quique
FEDNAA president

The Harakmbut have several members, from different communities, involved with the confederation FEDNAA and many members of Harakmbut communities were in Puerto Tambo to help in this demonstration. The demonstrations were initially devised to try



Map 1: Communal Reserve Zone, of the Amarakaeri (Harakmbut)

to bring about an official recognition that would legalise the status of the *Zona Reservada Amarakaeri* (See map one). However, as we shall see, it quickly got out of

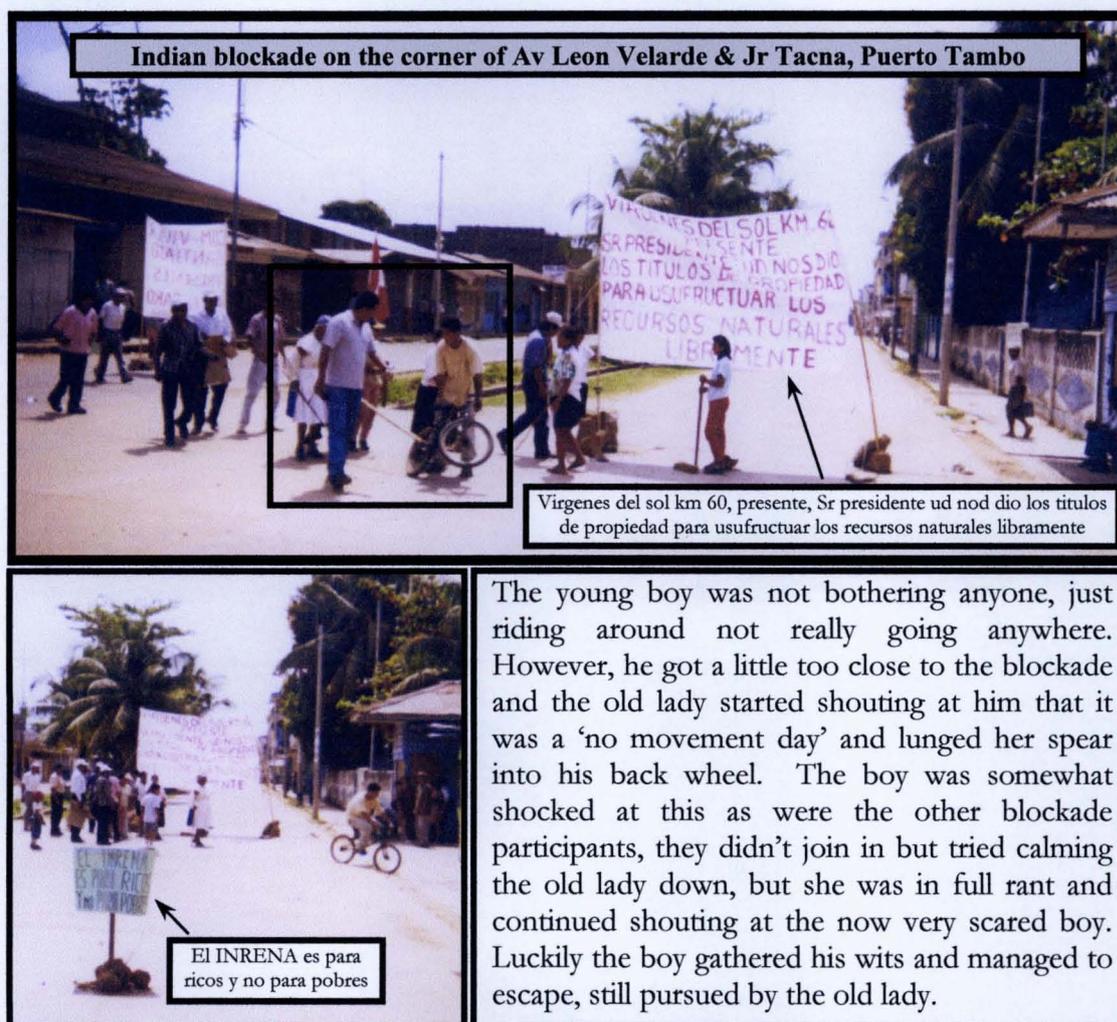
hand as the demonstration was effectively hijacked by the members of the *Federación Agraria de Madre de Dios* (FADEMAD, see general glossary on page 257) who wanted fairer regulations to grant concessions to the small scale logging associations. At the time the process was very expensive and only favoured the international companies. So FADEMAD, which represents the smaller farmers flooded the town with these farmers and turned the peaceful day into a riot. FEDNAA, has declared that it is often working with FADEMAD, as both these federations represent individuals and communities repressed by the State. However, I always found this somewhat contradictory since, on a number of occasions it was these colonists and loggers, represented by FADEMAD, that were encroaching onto indigenous titled territories and causing disputes.

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The demonstrations began, with only those indigenous people that FEDNAA was able to bring in, I counted 150. There were enough people to blockade the streets and shut down the shops and markets for a few days. They were a generally peaceful group who had the support, on the most part, of the town's folk. The idea was that all the streets would be blockaded, so that no transport could operate. There was also an attempt to shut the airport but this was guarded by the military and they quickly gave up this idea. Along with this local transport shutdown, they had all the shops and markets cease trading and they also announced that there was a ban on drinking. The reason behind the ban came from very astute observation on their part. The towns folk, when they realised that nothing much would be happening, would revert to the default activity, drinking. The Indians wanted to cause the most inconvenience possible, banning transport would be a minor inconvenience but banning drinking as well would be a serious disruption to town life. The Indians were patrolling the streets and had blockades on each major junction (See picture seven below). As regards the bars, well

none of them actually closed, the business just went clandestine, with lookouts for Indian 'patrols'.

The intended outcome of the blockades was that the government would take action on the people's long repeated demands for land title expansion and other civil



Picture 7: Street blockades in Puerto Tambo, stopping 'all' transport.

rights that they had been denied. This all began as planned and I was able to wander around the various blockades and chat to many different community members, aided by the fact that I brought large bottles of Inca-Cola for them to drink as refreshment. This first day was calm and the town's people closed all the shops and other amenities in an act of solidarity.

The following day was much the same with only small disturbances as the police forced their way through blockades, escorting tourists to and from the airport. Generally the police did not get involved, as the whole event was not a great deal

different from the normal slow pace of the town's business. The trouble was that the event had caught the attention of the *Federación Agraria de Madre de Dios* (FADEMAD), the membership of which consisted of small scale farming groups and loggers. On the third day they joined in a march around the town and increasingly became aggressive toward the police, who responded likewise with force and shut down the whole event. The following days saw no reaction from the officials concerning the indigenous desire for some recognition of their rights. In fact the only response was that of the police harassing the high profile indigenous members of FEDNAA (I did not discover if FADEMAD was investigated). The result was that the indigenous federation FEDNAA and agrarian federation FADEMAD decided to join forces and hold another "shut down", as they were now calling it, in a few weeks time.

FEDNAA could only bring a few Indians into town for the second demonstration. This was because transport is expensive and as I later began to understand most Indians did not have a great deal of faith in the effectiveness of such a demonstration. Those keenly involved with FEDNAA were obsessed by political process, young and often had a greater proportion of their livelihood involving the town.

The police found out about this second "shutdown" and because of the trouble towards the end of the last demonstration, they called in the State riot police. The event was then doomed, and sure enough the loggers began by smashing down the doors of the *Ministerio de Agraria* (those who regulate logging licences) and ransacking their offices, followed by their attempt to burn down the offices of *El Instituto Nacional de Recursos Naturales* (INRENA)⁴⁶ (those who regulate the loggers activities). The State police flew in and tear-gassed the whole town, with the rioting continued for two days. The government put a complete block on the media and nothing was seen on TV, Radio or in any newspapers outside Puerto Tambo. The general opinion on this was that if the

⁴⁶ See General Glossary on page 257 for description of this organisation.

rest of Peru was completely unaware of this unrest, Fujimori's government could happily ignore it, especially so close to the elections. A few days later the federation was promised a meeting with 'high level government officials', to discuss indigenous rights and claims. This was a bluff to keep them quiet and force them to wait peacefully, with most of the Indians having to return to their communities out of economic necessity. No 'officials' ever arrived. The organisation of further demonstrations was met with a general apathy, summed up by an elderly lady's comment "*next time someone will get hurt, maybe killed*".

Not wanting to lose face FEDNAA claimed that the demonstrations had been a great success. But these demonstrations were very badly timed as they took place when Fujimori was in trouble and unlikely to regain his presidency after the elections. A very strong competitor Toledo, was running against him. The first round of voting saw the exposure of vote rigging by Fujimori and later video evidence emerged of further corruption and bribery by the Japanese president. It was not long before Fujimori had fled back to Japan, taking with him millions of dollars in ill-gotten gains. So it was little wonder that the government did not rush to address this small town skirmish and enter into talks with FEDNAA. For many months after these demonstrations FENEMAD continued to spread propaganda that the said demonstrations had been a great success. Personally I think it just damaged relationships between indigenous people and the police, as well as with the local and regional authorities and the towns people. This is a pertinent point to consider as Kidd (1997) says "we need to take seriously the proposition that indigenous organisations may harm the interests of indigenous people". As regards to its success, it was only in the following year and because of National events outwith their influence that saw any real changes for the indigenous peoples.

The transitional government, headed by Dr Valentine Paniagua Corazao, has proved to be favourable towards the indigenous issue⁴⁷. In May 2001, under the special directive 015-2001-PCM, a special discussion group comprising of NGOs, Indigenous organisations and some government organisations concerned with indigenous affairs created a document (Comisión Especial Multisectorial de Comunidades Nativas, creada por Decreto Supremo 15-2001-PCM, Primer Reporte de las Mesas de Diálogo, Lima, 31 de Mayo de 2001), which was sent to the congress for revision and inclusion in National policy. This was the first change in the laws governing indigenous affairs since the Law of Native Communities 22175 established in 1961. Since this document was approved by congress many changes have been effected including, in April 2002, the approval of the Amarakaeri Communal Reserve (See map one above). Also the government established the Territorial Reserve for protection of the rights of the isolated indigenous peoples, the Yora, Yine, and Amahuaca, in the Department of Madre de Dios. Governments such as Fujimori's that focus on the exploitation of the national resources are rarely going to favour indigenous rights that effectively restrict access to these resources. I have my suspicions that the Territorial Reserve was only approved because PeruPetrol{ XE "PeruPetrol" } declared the area to be uneconomical for the extraction of Oil and withdrew all their test sites. The issue to be highlighted here is that demonstrations fuelled by the frustration of indigenous peoples that try to initiate change failed. They were operating outside the national system and it was only when FEDNAA was accompanied by NGOs working inside the national system of governance that anything was changed, an accomplishment aided significantly by a sympathetic government. This raises two issues regarding external influences. The new role of NGO's is highlighted here (cf. Reilly 1995; Edwards, Wallace & Hulme 1999; Hulme & Edwards 1997), since the majority of the contributors to the

⁴⁷ The new president, Toledo, has been reported to be equally sympathetic toward the indigeneous plight.

Multisectorial Commission talks were NGOs, instead of just indigenous organisations and government bodies, which shows the accepted influence of such organisations. As the discourse of rights has become more prevalent, NGOs have emerged to campaign on these issues, many of which are endorsed by the international agreements (cf. Lehmann & Bebbington 1998; Weiss & Gordenker 1996). Which raises a question as to the costs and benefits of having NGOs as major political protagonists.

The second issue is that of the unmentioned influence of the international agents and foreign individuals. Being a foreign individual and concentrating my fieldwork activities within land rights issues I was witness to this phenomena on many occasions, two good examples of which I will discuss below.

Getting to know the Harakmbut

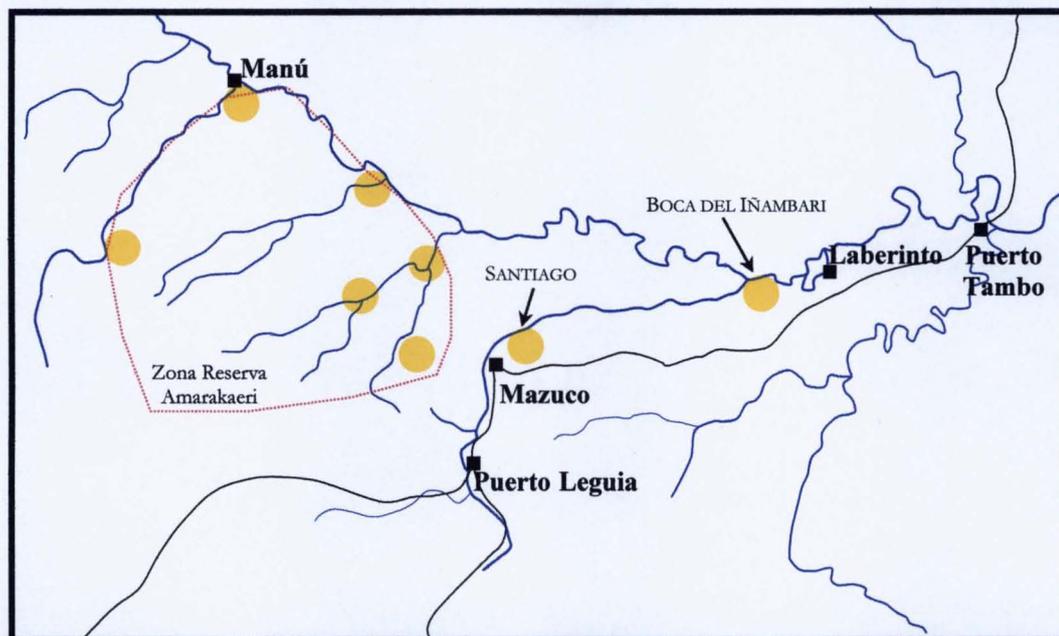
These demonstrations and small skirmishes with local town peoples had fired up FEDNAA. The main office of the confederation had an atmosphere akin to that of an army headquarters during war. People seemed to be busy planning and plotting the next strike on the oppressors, be it land snatchers, government officials, or the police. I got bullied into attending a few of these 'raids' on gold miners operating within Harakmbut lands, as I will describe below. This was also my first introduction to Harakmbut community life and an amazing opportunity to see that world unmasked. As many who have spent time in an amazon community will know, you can never be very inconspicuous, and your presence alters the behaviour of the people around you. However, during these raids I was quickly forgotten as things became frantic, due to the potential danger of the activities they were planning, and so I became a virtual fly on the wall. Added to this many people were put into a intense situation and I could observe a side to them I never saw outside such rare situations.

The following description of the gold 'raid' occurred within the Harakmbut peoples community of Santiago. The dispute which stimulated it was over a piece of

land some way away from the main community and on a particular stretch of river bank that had lucrative placer gold deposits.

Santiago Community

For the Santiago community (located in the region of the Madre de Dios, along the Iñambari river See Map 2 below) their biggest threat is from gold miners, perhaps due to their geographical location. Their village is within easy walking distance of the main highway and based along the navigable Iñambari river that also runs through the large gold mining town of Mazuco. The Santiago community particularly suffers because



Map 2: Location of Harakmbut communities in Madre de Dios Region

mining companies will try to work in a zone that is close to a good infrastructure. For instance, Mining is hard on the equipment and will require frequent repairs, many of which can not be carried out on site; hence they require quick access to engineering workshops located in towns. The Santiago communities titled lands are in such a zone and also in an area of rich placer gold deposits. They are continuously in conflict with gold miners over mining rights or the destruction of the surface forests (See appendix seven for an example of how forests are destroyed by mining on page 239), a resource that legally belongs to the indigenous peoples. I attended a number of these conflicts,

with lesser or greater involvement, but the most powerful experience I had and the most significant was the experience of my first raid.

Santiago Gold Raid

This particular dispute, between miners and the indigenous people, over land, is typical in contemporary Amazonia. This one arose because a gold miner obtained a mining concession within a Harakmbut titled territory, that of the Santiago community. The miners had been working there for a week and were stripping the landscape with heavy machinery. The Santiago community radioed FEDNAA headquarters for assistance and FEDNAA agreed to send a delegation to help remove the miners⁴⁸. The following account of this 'raid' is adapted from my field notes:

The bus ride to the house of the chief of the Santiago community was about 7 hours, from which point it would be a further 2-3 hours walk to a temporary encampment, where they themselves were gold mining (See indigenous artisan mining in appendix seven on page 239). The buses are not designed for six-foot Westerners and so the leg and headroom was somewhat sparse. As it turned out this discomfort was compensated by the fact that I was sitting next to Hector Pecha, an *Ese'ejá* shaman with whom I had been trying to meet for a couple of months. The journey turned out to be a very productive interview / rambling conversation with Hector. The rest of the FEDNAA delegates consisted of eight men from different indigenous groups, with some significant status in their respective communities.

As they were important delegates on an important mission they had appropriated considerable confederations funds to buy a considerable amount of beer and spirits, which they consumed liberally for the first half of the journey. This meant that the second half of the journey was conducted in various stages of unconsciousness. Then by the time we arrived at the chief's house, located just next to the road, it was dusk. I expected the now groggy delegates to decide to spend the night there and set out first light for the encampment, but we set out for the encampment with virtually no hesitation. I discovered whilst on route that they had planned to arrive by night so that the miners would not see them. The route was not simple or along any regular path. We had to forge three rivers, which were not shallow or slow moving, one time I was glad to be six foot tall as some delegates were nearly swept away. After three hours hard going we arrived to a very warm reception. The

⁴⁸ They would always exaggerate or boast that they were off to remove the miners as if they were a leach so easily flicked off.

Santiago community's encampment was in the gold mining style: several huts made of thick reeds and roofed with big sheets of blue plastic. The Santiago villagers were very friendly if a little apprehensive as to the following day's proceedings. Supper consisted of some 'gourmet' tinned tuna, rice and yuca, after which everyone gathered around for discussions, or battle plans as some were calling them. I was not the only non-Amarakaeri there, as two *limeños*⁴⁹ had accompanied another group of three female FEDNAA representatives. However, when it came to introductions these two girls were not presented to the group. I discovered later that they were part of a family planning project in the area. All the Indians of the encampment were gathered and Javier introduced me to everyone as someone who was "helping them with the project to expand *Amarakaeri* territories" and also a "good friend of Andrew Gray".

As I mentioned earlier Javier was one of the first people I met at the FEDNAA headquarters, and he had taken me under his wing ever since that meeting. It was during this excursion that I had the chance to have some longer conversations with Javier and came to know him a little better. After this raid we frequently met at the FEDNAA headquarters, and at his request I spoke a couple of times to his classes at the town college, and we had a few drunken evenings in Puerto Tambo. As regards to him introducing me as 'a good friend of Dr Gray', I had told him on many occasions that I had only briefly been in contact with Dr Gray. However, he would consistently introduce me as a good friend of Andrews Grays. The reference to the late Dr Gray gave me the usual stamp of approval, Dr Gray was a well-liked and well-known name amongst the Amarakaeri people. Although I was never comfortable with this somewhat deceitful association with 'Dr Gray', I now think Javier was doing it for two reasons. Firstly, to bolster his own importance and prestige within the group and give the FEDNAA delegates an extra air of authentication. They had an idea of authentication akin to 'See we come to solve your problems and we bring in Western experts'; and secondly, he knew that it would help me gain the trust of the group, and would mean fewer questions as to who this stranger was he was bringing into the community.

Later in my fieldwork whilst staying at the Boca del Iñambari community I heard my host tease Javier, referring to something called Aiwe. It was only when I reread my fieldnotes on my return to the UK that I discovered what they were talking about. Gray (1996a) tells of an Arakmbut myth called Aiwe, which is about a young boy who was stolen from his community by the Papa (white cannibal monsters who are described in similar terms to rubber barons). The boy undergoes several adventures with the Papa then manages to escape from them with the help of the bones of a dead Papa chief. On returning to his community he grinds the bones into a drink to gain the power of the Papa, but after ingesting too much he dies. This myth has several versions, in which the Papa variously appear as rubber barons, Incas, and Spanish conquistadors. It tells of the great dangers that these powerful non-indigenous people pose to the Arakmbut, yet refers also to positive effects if contact is controlled. (Gray 1996c: 32). They

⁴⁹ This is an expression used a lot to describe people from Lima, generally of Spanish descent.

were teasing Javier by inferring that he had absorbed too much of the Papa through his life in town and desire for power in his activities with the federation.

Once everyone had introduced themselves the discussions began in a very formal manner, with each person speaking in turn and thanking the last person for what they had said. Most of the villagers sat looking a little puzzled at this style of general discussion.

This way of conducting meetings was not 'traditional'. Similar to the Yanasha federation, it had been adopted by the FEDNAA delegates, who were imitating the regional bureaucrats. It became evident that they used this method as a means of demonstrating their authenticity and competence as FEDNAA representatives. This posturing and uncomfortable formality also established a pseudo-hierarchy, in that they were using a method that regular community members were ignorant of, or novices at.

The meeting did not last very long, as everyone wanted to storm over to the encampment and forcibly remove the miners. People were cracking jokes and spirits were high. One old lady had everyone in stitches as she recounted the best method for removing unwanted visitors, which was basically that they all crap into a bucket and throw the contents over the miners' boss.

The group continued to chat for a while with many heroic tales of past encounters with miners, and some incredible schemes as to what they should do about these pests. Slowly it disbanded; some went to bed while others continued to discuss the morning's plans, in secretive huddles around a bottle of spirits. The alcohol consumption was in fact remarkably low as I think people were anticipating a serious day, and they did not want hangovers.

At daybreak the camp was buzzing with anticipation. The FEDNAA representatives unpacked bows, arrows, and war paint. The delegates looked somewhat uncomfortable with these accoutrements, they looked like the politicians kissing babies scenario, only this time the bureaucrats wanted to appear as warriors, ready to go to war with the minions. It was also a great way to get the whole camp fired up as everyone became animated, they almost forgot the matter in hand as they adorned themselves with multicoloured paints and exchanged banter as to who looked the most fierce, laughing and joking at each other. But in the cold light of day the bravery of the villagers was dying fast, as they realised that they might actually have to Raid the miners' camp: miners often had shotguns and federation delegates do not turn into warriors that easily. They quickly decided that they could not do anything without Santiago's head woman, who was to arrive that morning. They also sent a young lad to fetch his father's shotgun, an idea that was met by much sabre rattling. The delay gave everyone a chance to calm down, as it became increasingly obvious to me that they were able to talk a good raid, but nobody really wanted

to risk getting hurt. Some welcome relief for me as well as I did not really want to catch a stray bullet in the name of anthropology.

The arrival of the village head woman changed everything as she had had a completely different agenda to the men, and a raiding party was not part of it. She had spent the previous day negotiating with the Fiscal (public prosecutor) and FEDNAA's lawyer, in Mazuco (the local mining town). Although she had not managed to get the miner's concession revoked, she had persuaded the Fiscal to come and inspect the miners' site to see the devastation they were causing. The delegates' role was simply to be a diplomatic show of force. The rest of the community were to be lined-up along the riverbank, painted with battle colours and carry weapons. The idea being that the Fiscal would arrive that afternoon and see the mining devastation; realise that he was dealing with FEDNAA and a war party; and so if he did not act there could be mayhem. The result would be that he would be swayed to revoke the concession.

However, the mine owner had wind of the arrival of our raiding party, despite our stealth, and had fled to the local town. Here he had intercepted the Fiscal who was on his



Picture 8: Federation Lawyer explaining that Fiscal was not leaving the safety of his boat until they sent some Indians back to the encampment.

way to see us and told him of 'a mad bunch of Indians who were threatening to kill him'. This meant that the Fiscal arrived with four armed policemen and the preconceived idea that he would be dealing with an unlawful mob, not the intended law-abiding FEDNAA delegation.

The eventual scene was very impressive: a string of half-naked Indians, covered in bright war paint, bristling with arrows and spears, strung out along the beach, with a forward party of delegates flanked by gringos. It must have been formidable because the Fiscal would not get out of the boat to talk with the chiefs, as he was afraid they would shoot him with an arrow. He was so scared that he would only agree to talk if most of the people went

back to the encampment (See picture 8 above). This is where the presence of the two students and myself became significant. So when the majority of the community had returned to the encampment the Fiscal calmed down enough to talk the delegates. It was then agreed that they should first visit the mining site. Accompanied by the Fiscal we crossed the river in three canoes. Sure enough, it was a scene of total devastation; two of the Indians I was with were close to tears, as it was once their favourite hunting and fishing spot. There were still some miners on site, who the Fiscal and the delegates began to talk with, so I and the two boat drivers went to find the camp cook. It was also the easiest way to keep a low profile since the debates were getting loud and angry. The Fiscal with all the delegates toured the site, candidly writing down notes on the state of the area. Then we all got back in the canoes and returned to the indigenous encampment. The lawyer and the head woman accompanied the Fiscal back to Mazuco. There was nothing to be done until they returned, so we had lunch. It was late afternoon by the time they returned and the news was very good. It had transpired that in a 'conversation' that I had had with the Fiscal (in actuality only a brief exchange, obscured by the noise of the boat engine) he had understood that I was an international lawyer and that the other two students were photographers for a national newspaper. I could have sworn that the only thing I said to the Fiscal was "hello nice to meet you". At first, I thought the lawyer had made this up for his advantage, but he too thought I was some sort of international legal observer and when I explained who I was he burst out laughing. The misinterpretation, by the Fiscal, of the role of the students and my involvement had worked incredibly in 'our' favour. The result was that the Fiscal there and then revoked the concession and ordered the miner to leave the site, a show to the international community that the legal system in Peru is fair and just towards the minority groups. Naturally, this outcome was followed by Indian style celebrations that continued into the night, and this time everyone would have a hangover.

Article 6 of ILO Convention 169 (ratified by Perú), clearly states that 'consultations with indigenous and tribal peoples are compulsory prior to any exploration or exploitation of mineral and/ or other natural resources within their lands'. However, as I said earlier the government owns the right to sell a mining concession to all subsoil exploitable resources. This meant that the Fiscal did not have to revoke the mining concession because the miner was well within his legal rights. It is in fact very rare that concessions are withdrawn and the majority of these disputes over land will involve some form of violent episode. The Fiscal had made a decision to withdraw the miner's

concession on the grounds that the miner was depleting the surface resources. Although the Peruvian government has ratified the ILO Convention that supports such a claim, their laws override and contradict it. This further supports the indigenous lawyer's assumption that it was a form of publicity stunt by the Fiscal for my benefit. The delegates and lawyer on this occasion were all very surprised at the reaction of the Fiscal, commenting that I should go on all subsequent 'raids'. Although made in jest their remarks had a ring of truth to them: the influence of the white man was an invisible catalyst and a vital part of the outcome. Kidd's article "The Invisible White Man" (1997) outlines this often hidden aspect of the Westerner within indigenous affairs. He describes how the white man, initiates, manages and guides many indigenous organisations and their projects and then all references to the white man either disappear or they are referred to as 'anonymous consultants'.

I did not instigate this challenge to the miners' concession but I am sure my involvement will not be mentioned when these FEDNAA representatives boast of this victory. What Kidd is discussing and what this example shows are two aspects of the same phenomena. The first aspect is the affect of the Westerner or outside agent who represents power and authenticity. The second aspect, that which Kidd is discussing, is that of the two-way exchange, i.e. the relationship between authenticity and legitimacy. For example, an occidental organisation or individual initiates a development project in collaboration with an indigenous organisation. The occidental agency obtains funding off the back of the collaboration, both augmenting their respective portrayal of power, authenticity and legitimacy to the outside world, thereby gaining access to new networks and connections. Kidd also suggests that the primary guiding force and impetus for the project comes from the occidental agent and when they leave the project becomes neglected. I saw evidence of such project neglect in the FEDNAA headquarters. When I first met Javier, and he discovered I was connected to Dr Gray,

he boasted of the great project called Plan Karena. Plan Karene was a project initiated by Dr Gray to produce resource maps and supporting documentation for the amplification of the various Harakmbut community's territories. At the FEDNAA headquarters I was ushered up to see the project room, where I found everything covered in dust, and packed away in boxes, with little sign that it had been looked at for some considerable time. All the documents I was given to read were dated 1997 or earlier. Javier told me how they still had many communities to produce these studies for, but with no Dr Gray to drive it the project had somewhat slowed down.

This is an example of Kidd's two-way relationship. However, on a less cynical note I would suggest that the project slowed down after Gray left, not because the project was just a status symbol for both parties, but instead because of another phenomena, whereby the Westerner individual has become an indigenous leader. When Gray left the direction to continue was gone, nevertheless the desire to continue was still present. This was evident in the remaining dedication to a project room, and in Javier's enthusiasm that I could reinitiate some of these community projects. A counter example of this pseudo-indigenous leader phenomena would be that of Dr Jones's territorial mapping project with the Yanasha federation. In this case he did not become an indigenous leader but maintained the distant and superior relationship akin to a rubber baron.

The second aspect is that of the political expediency with the example outlined above of my involvement in the gold raid. Here the federation officials gained an air of authenticity through my presence, not just with the Fiscal but also with the Santiago villagers themselves. The delegates could manipulate the effect of my presence on the community, leading the villagers to perceive the federation as a reputable organisation, in the sense that they could bring international representation (me) to this isolated dispute.

*

My argument in this section is that these federations are ultimately a derivation of the State system. Consequently their power is drawn from outside in the form of State recognition of their petition or litigation; or from the advocacy and assistance from external agents, such as 'the invisible white man', NGOs or other such international organisations. Therefore I would argue that the introduction of any technological tools, such as geomatics, will be conceived as part of this political process.

The beginning of this section looked at issues of territory within the context of the indigenous ontology or point of view. It is clear that their notion of territory had evolved from socially defined boundaries to a spatial territory that was physically defined, a process that occurred as the agents of the State became a significant part of indigenous world-view.

I now want to examine these perceptions further through some ethnographic examples and my personal observations within one particular community. The circumstances of my involvement with this community provided me with some interesting opportunities to meet many different members of the community and experience a wide range of their daily activities. At this point I also had the best part of a years fieldwork experience under my belt, thus I was far more relaxed and accustomed to jungle daily life. I here focus on the diversity of intercultural perceptions and expectations of spatial concepts.

BOCA DEL IÑAMBARÍ COMMUNITY



Picture 9: Harakmbut elder from Boca del Iñambarí community dressed for a fiesta

I recently attended an Amazonian workshop where someone spoke of the fieldwork experience, as one where one's mind is still back in Europe, whilst your body is sitting around an indigenous campfire. If I were to be completely honest, I would say that it was only during my stay with the Arakmbut, at *Boca del Iñambarí*, that I felt my mind had properly acclimatised. I mean this quite literally. People talk of the body taking some three weeks to acclimatise to the jungle, but what is not so often acknowledged is the time it takes for your mind and emotions to acclimatise. The older you get the more stubborn your brain tends to be, and mine took several months. By this time I was well into my apprenticeship as a field anthropologist. I was no longer the naïve Westerner who had arrived some eight months earlier, but instead I was beginning to feel as if some of what was going on around me was understandable. These issues, I came to realise, were not trivial as my own adaptations meant that the people around me reacted very differently towards my presence than previously and it became easier to create

essential fieldwork relationships. This is probably why I felt that the best and happiest time of my fieldwork was with the Arakmbut, in *Boca del Iñambari*.

Location

The Native Community of *Boca del Iñambari* was established between 1969 and 1973. It is located on the meeting point of the rivers Iñambari and Madre de Dios (See Map 2 above). Currently the main access routes to the community are the rivers Madre de Dios and Iñambari. The nearest port is on the Madre de Dios, at the town of Laberinto, which is about 2½ hours by 16hp *peque-peque*⁵⁰. From Laberinto, you can catch *collectivos*⁵¹, taxis, buses or trucks to the nearest town of Puerto Tambo. The Madre de Dios also continues on to Puerto Tambo so if you are not in a hurry it is a nice two-day drift or a very long day's *peque-peque* ride, which results in hearing loss.

On the opposite bank to the *Boca del Iñambari* community centre are numerous gold mining excavations, and these have a significant influence on the community's economy. The people of the community sell food to the gold miners and they also work for the patrons who run each operation, rent out their boats and have the occasional joint *fiesta* with the mine workers. The community itself has a large-scale mining operation on its side of the river. The principle equipment was owned by one member of the community and he took the majority share of the day's extracted gold, with the rest being shared amongst those villagers who worked the mine that day. The entire time I was there they did not seem to be getting very good rewards for the amount of terrain they were processing. They had other economic ventures in the form of small cash crop

⁵⁰ *Peque-peque* is a phonemic name for the types of engine that these boats have, it is basically a small 5hp to 25hp engine (twostroke) with a long driveshaft and simple propeller. They make a "chug chug chug" noise (very loud) or in the Castellano tongue a "*peque-peque peque-peque*" noise. These are cheap to run and maintain, but slower than the modern outboard engines.

⁵¹ This is a vehicle, usually the size of a mini-bus, which operates halfway between a bus and a taxi. It drives around until it fills up and then heads off to the destination.

plantations and were also hoping to start bringing in tourists with the help of a lodge owner in Puerto Tambo.

Arriving in Boca del Iñambari

Tourism was the reason that I went to *Boca del Iñambari* when I did. I had come to know the owner of the Wasaí jungle lodge whilst staying in Puerto Tambo. The lodge had supposedly the best restaurant in town. So one evening whilst in search of food that was not yuca and rice I went there. It was the off season, so no other gringos were staying at the lodge and I ended up eating with the lodge owner, Pedro, and his mother. Pedro was a suave looking Peruvian of colonial descent. His manner was just like that of Dell-boy from 'Only fools and Horses',⁵² and real wheeler-dealer. His mother at first glance appeared ancient and inert, but acted like a true Latin matriarch and had the staff and Pedro running around after her. Her family had a long history with Puerto Tambo, having made their money during the rubber boom. Pedro was brought up in Puerto Tambo but left to be schooled in Lima. The family money had paid for the construction of this lodge (mainly his mother's money, and she had built an extra apartment onto the lodge for herself), and they also had another lodge four hours up the Tambopata River.

I was being treated to all the best foods that their kitchen could offer and Pedro's mum kept insisting I try everything on the menu. It was not until I was full to bursting that the reason I had been invited to eat with Pedro became clear: he was looking for guides. The lodge owners, whenever they could, would employ Westerners as guides as this gave them a higher profile, in the form of favourable write-ups in the guidebooks and feedback forms to tour companies. So Pedro made me an offer of cheap to free accommodation if, when I was in town, I would take the occasional tour group up-river for him. This arrangement ended up suiting each of us very well, as each time I came

⁵² Famous television programme on the BBC see www.bbc.co.uk.

back to town for some 'rest and relaxation' I was treated to excellent food and luxurious accommodation in payment for the few hours wandering through the forest with sweaty tour groups. During my time in the Madre de Dios region, Pedro became a good friend, so when he asked me to go to the *Boca del Iñambari* community, to see if it would suit his tour groups, I was happy to oblige. The timing was also perfect, as I had been trying to arrange transport with Javier (One of the key delegates from the FEDNAA headquarters and member of the *Boca del Iñambari* community) to go and visit his community, but now Pedro would be paying for the transport and Javier would be coming along to introduce me. Javier and I had talked about the Plan Karene project in his community. It was missing a few maps of resource and hunting routes and locations, so I had agreed to go and prepare them for him.

Tourism was not coming to the *Boca del Iñambari* community on their terms; it had been manipulated by Pedro. During the FEDNAA demonstrations Pedro had offered his lodge accommodation to a large number of the indigenous demonstrators who had come into town. I did not understand this until I was party to the conversation that Pedro had with all his guests on the day they were returning to their community. Somehow Pedro had had only those members of the *Boca del Iñambari* community stay at his lodge, and during the time there had spoken to them all about bringing tourists out to stay at their village. It turned out that he had already spoken to Javier about this plan and so by the time they left to return to *Boca del Iñambari* they all had tourism fever, having been talked into it by Pedro and Javier, who sold it to them under his misguided air of veneration as a FEDNAA representative. Pedro had then seen that I knew Javier and had been talking to his 'guests' so he asked me to go to the community rather than one of his other guides, which was again the use of a Westerner to give that impression of an accredited tourism agent.

Along with Pedro's request I took a personnel agenda where I foolishly thought I could abate the tourisification process, and help prepare the indigenous folk of *Boca del Iñambari* for the agonising experience of accommodating tourists. I was seriously concerned, as the members I had already met were blinded by the idea of easy money through tourism. However, as any tour operator will tell you the logistics of tourism are far from simple. Tourists do not have open minds when it comes to toilet arrangements, washing facilities and catering. The life style and values of the community are far from the expectations and demands of tourists, so all I could see was disappointment, dispute and misunderstanding arising from tourists coming to stay with the community.

When Javier and I arrived we were greeted with a small introductory ceremony, where again Javier introduced me as a friend of Andrew Gray. This time I felt even more awkward as a couple of the older women began to cry and give me hugs as they recounted fond tales of Dr Gray. Javier told them about the plans to create some resource maps, but they completely ignored him and instead asked me about the new plans to bring in tourists. This is when I entered into a role that took two weeks to shed. The returning demonstrators had told the whole community about tourism, and Javier had told them of Pedro's request that I briefly access the community and surrounding area for potential tourist attractions, its trails and interesting sites other than just the community life. Due to some classic miscommunication many of them thought that tourists would not be coming unless I said that the place was suitable. It took me the best part of the next two weeks to persuade them that tourists would be coming regardless of what I reported and that all I was doing was to see what other features they could take tourists to, if the tourists wanted to stay longer. In the first couple of days, until the new message began to filter around the community, I was treated like some kind of VIP. In all honesty I did not mind too much as many people went out of their way to show me all kinds of wonderful places, such as macaws eating the crystallised

salts from the tops of dead palm trees, and unique areas of the forest, some of which had such specific microclimates that within ten steps you crossed from low canopy swamp to a dry cathedral like primary forest. It also meant that I had the undivided attention of many community elders who took me on some unforgettable hunting trips. As miscommunications go, this one turned out to my advantage. Not only was I taken on many future hunting trips but on these inimitable occasions when I was guided through the jungles by the elders I began to appreciate their perception of a 'jungle'. Before all I could see was a barren wild expanse of vegetation. The elders would continuously be examining plants, describing different habitats and recounting tales to each other. It appeared to me that their use and knowledge of the land was based on livelihood. For instance on occasion when I asked the name of a particularly strange looking plant, it would not always have a name. However, I was frequently shown other plants that had numerous names and uses. In this process, I began to comprehend their aesthetic of the 'landscape' as I will describe below.

While I stayed in the village, I was accommodated by Moisés, his wife Gloria and their two kids (See Picture ten). I had already met them during the demonstrations in Puerto Tambo and was quickly made to feel at home with them. They had plenty of



Picture 10: Moisés, his wife Gloria and their two kids.

room as Moisés had just added another floor to their house. Moisés and I spent many hours talking into the night. He was a gentle soul and perhaps too good-hearted for his own good, for he was always lending out tools that never came back (or came back

broken), or splitting the cost of goods with people who never paid their half. He even

gave me some gold since I had been interested in the mining operations. He said that he wanted no money for it but later I discovered through Javier that the amount he had given me was two days wages.

Feo o Hermosa (Ugly or Beautiful)

In Amazonian ethnography, there are not too many direct references to the indigenous aesthetics of landscape. Those that discuss such issues stress the historical associations between people and the land, where the land is identified through an event that happened there, that is identified through lived experience (See Gow 1995). In my time with the Harakmbut, I was able to concentrate on the indigenous perception, in an attempt to gain a better understanding of their idiosyncratic view of landscape, which was certainly different from my own. I found that some elucidation of this view would then contribute to my overall interpretation of one of the key themes in my thesis: that of the applicability of Geomatics to indigenous land issues.

Understanding such a vague notion as that of perception or aesthetics of landscape is a considerable task. The comprehension of such a notion is at best slow, and not always sufficiently coherent to be empirically explained. However, during my stay with the Arakmbut I went on many jungle adventures, or as Luis called them 'hunting trips', although there was not much left to actually hunt. In fact I tended to spend the majority of my time away on these trips, or in the jungles around the village. It was through these activities outside the village that I arrived at my clearest understanding of the indigenous appreciation and perception of their jungle landscape. The following section discusses some of the more salient examples of this landscape aesthetic.

Jungle trails and clearings

The Arakmbut I met had what I initially thought to be a strange idea of what constituted a beautiful or ugly forest. On several hunting trips, we would pass through secondary forest areas where the undergrowth was quite dense. After we reached a clearing and stopped to eat they would apologise to me for dragging me through “*muy fea trochas*” (very ugly trails). However, I had thought that the ‘trail’⁵³ was enchanting and if anything, I would have described it as ‘beautiful forest’. This disjunction of view was not a one off experience, for on other hunting trips with various other individuals they too would describe certain forest as ugly, which I truly thought to be beautiful.

Finally a time came, when I heard them refer to a forest as ‘ugly’, that I began to understand why our viewpoints were disparate. A few families had just cut and burnt an acre of forest a few minutes walk from the main village. One afternoon, I wandered over to see where the smoke was coming from and when I arrived I found Luis and his uncle sitting on a fallen tree admiring the area. One of the first things they said was “*¿es hermosa no?*” (It’s beautiful isn’t it?). To my Western eye a slashed and burnt forest was not on my aesthetically most pleasing list. However, after a while chatting to them about the clearing, it dawned on me that they were looking at it for its value. This was obvious in some respects as (a) it was surrounded by primary forest, and once the soil was leached the forest would regenerate quickly; (b) it was located close to the river, so irrigating would not be too much hassle and (c) soon it would be full of productive crops.

Another similar instance of this occurred when I went to help and watch in the gold mining clearings, which they had excavated. Again, I would see it as a situation of savage destruction, while they would refer to it with adoring adjectives. This fitted with

⁵³ I have put quotes around ‘trail’ as I could never work out how they managed to say that anyone had ever passed that way before. There was no trace of previous human activity that I could see, no footprint, worn ground, cut tree, nothing, and I wasn’t a complete jungle novice, just that my tracking skills were decades behind theirs.

the value driven aesthetic I gleaned from the clearing, as this area produced gold. I was still having trouble matching this idea to the references of 'ugly trails', until one day when I was out hunting with Luis. He had spotted a monkey, but was having real difficulties preparing his bow and finding a clear shot. The undergrowth kept snagging his bow and obscuring his line of sight. Since this was one of the 'ugly trails', it fitted with the above explanation. It was ugly because it made hunting less successful; it was not productive. I should note that the value system I was glossing onto ugly or beautiful was just one aspect of the forest that they disliked; it did not produce food. However, it may have also lacked some social relations or any number of other elements that I did not attribute to it because I was using my Western interpretations of value.

At first I was happy with this conclusion as I thought they were associating 'ugly' and 'beautiful' with a utilitarian value. However, it did not take very long for me to realise that I was trying to paste one of my views of the world over what in fact was an attribute of what could best be understood as a set of judgements that were philosophically grounded within their own particular social philosophy. This became even more apparent to me when I entered into a discussion about rubbish.

Spiritual Rubbish

I started to notice all the plastic bottles, tin cans and other rubbish strewn around the village. At first, I compared it to the British gypsy's notion of internal and external space. In her book "The Traveller Gypsies", Judith Okely (1983) described a similar scene, with rubbish strewn around the gypsy's caravans. The gypsies make a strong distinction between the division of internal purity and external impurity, which they relate to the body. This distinction pervades much of their world. For instance, clothing (part of the external body covering) is not washed in the same bowl as cutlery and crockery, for the latter are part of the body's internal world. Similarly the insides of

their caravans remain spotless as part of the sacred internal space, with the outside space disregarded to be left as dirty external space: the rubbish and junk is not seen to contaminate this external space.

I thought that the Arakmbut might be making a similar distinction, as most of the rubbish was concentrated around the perimeters of the houses. However, the inside of a number of houses was also strewn with rubbish. I tried once or twice to prompt people to talk about this rubbish, but with little success. For instance, while digging up worms for fishing we would also uncover old plastic rubbish. I made a point of examining it in the hope that they would comment on it and I could start a conversation about rubbish, but they never did. I had given up trying when I unwittingly entered into a full blown philosophical discussion on this very subject.

Whilst paddling along a small stream, with my host Moisés, heading out to the Madre de Dios river for some fishing, we passed several floating Coca-Cola bottles. I chortled to myself as I remembered a lodge owner jesting that they should make an advert for Coca-Cola, which depicted an Amazon river choked with plastic coke bottles, that read 'The Amazon prefers Coca-Cola'. Moisés saw me watching the bottles drift past and asked, "why don't Westerners like rubbish". It was a great question as I was completely flummoxed. I had spent some time wondering why they had no regard for garbage, but I had not really analysed why we dislike rubbish so much. Vassos Argyrou (1998) pondered this same question in relation to Cyprus. He argues that in Western intellectual circles the discourse with the environment is a relationship of power, where the higher the civilisation the greater is their mastery of nature. In conjunction with this mastery of nature, the civilisation gives nature the status of a sacred domain and it is venerated. Both environment and nature then gain the attributes of a pictorial landscape, where littering is a disrespectful act, and in the hierarchy of civilisation is judged to be a sign of inferiority or as Vassos calls it 'otherness'. In relation to Moisés

question as to why tourists dislike rubbish, I think the key point is this view of nature as a 'pictorial landscape', which is defaced by the presence of rubbish. It is ruined for the tourist because the world they imagined themselves to be in is suddenly flooded with social disharmonious issues that they had tried to escape. Vassos examines these disharmonies between the classes and the concerns or relations to litter.

Despite assertions to the contrary, litter has never been a self-evident truth, something that lies out there for anyone to see and shun. Rather, litter - ultimately an eyesore that spoils a good picture - is a cultural construct and emerges as a truth under determinate social conditions. At the most general level, the vision of the world in which litter appears to have no place presupposes a certain relation with the world. It is a relation in which one does not need to grapple with the world physically because, given the division between mental and manual labor, the economic necessity to do so has been effectively neutralized. It is only when the world can be kept at arm's length, so to speak, that one can begin to constitute the world as a spectacle. In contrast, those whose lives are dominated by economic necessity, who experience the world as a compelling urgency and struggle with it at the most basic level of existence, are objectively disinclined to reduce it to the status of a landscape.

(1998: 160)

A parallel can be seen with a Cypriote individual whose life is dominated by economic necessity and an indigenous person, in that they demonstrate the same lack of concern for manufactured rubbish. If this analogy is followed through then I could compare this to the economic necessity of the modern indigenous livelihood which is such that it neutralises their view of nature as a venerated picturesque landscape. In numerous conversations with Javier during my fieldwork, he talks of times past when "nature" was venerated to a greater degree and attributed with more spiritual significance (more sacred than profane) perhaps viewed as such a venerated picturesque landscape. However, as external pressures grew and economics orientated them into the cash-economy, they could no longer afford to view nature as an ornament, and instead came to view it through a utilitarian perspective as a resource, which has contributed to the detached attitude to litter.

Had I read this article before my discussion with Moisés I would have imagined this to be the case and perhaps would not have turned the question back on Moisés, asking him why he thought we did not like rubbish. This led to one of those gems of a

fieldwork conversation, where you are freely introduced to their cosmology⁵⁴. The conversation was a perfect one to have whilst fishing, precariously bobbing around in a canoe, waiting for a massive catfish to take the bait.

Moisés seemed equally flummoxed but after a long discussion arrived at a far better explanation than I could have for my own dislike of garbage. We had talked about the way they sweep the yards and mud floors in and around the houses. He described how fish and animal bones, skins and other forest resource waste (if not recycled) had a significance or ‘spiritual’ relationship with them. They did not simply toss out these wastes, but instead burnt them or occasionally buried them. This prevented any ill repercussions from the spirits attached to such wastes if by chance you had disrespected these remains. Gray notes this aspect of respect in the following quote:

“The way in which the Earth is treated affects the health and welfare of human beings. For example, if a hunter overkills, he lays himself open to attack from the spirits associated with the creatures he has killed. If someone treats the forest or river without respect, such as clearing areas considered too large, making too much noise, or laughing loudly, this will attract the spirits and lay them and their close relatives open to attack. The Arakmbut see the Earth as the vehicle for invisible spiritual activity which is a constant uneasy balance between different forces. Arakmbut shamanic activities are centred on restoring order in a world of spiritual danger and chaos”.

(Gray 1996c: 103)

The point about respect here is that the dangerous power associated with this natural waste is not attributed to outside materials, such as plastic bottles or tin cans. Therefore, the people have no relationship to it and it can simply be cast aside, with no fear of any adverse repercussions. This applies to virtually all materials and products that come from beyond the forest. Overing (1991), also describes how non-forest or market products were ‘disembodied’, “in the sense that the power of the creator of the food and the goods from these sources was not a factor with which to be reckoned” (1991: 183/4).

⁵⁴ It is well known by those who have conducted fieldwork in Indian communities that casual conversations struck-up whilst engaged in everyday activities, like fishing, washing, sitting round a hunting trip fire, give access to a peoples mythologies, cosmology and general social philosophies. This is probably the main reason fieldwork takes so long. Such conversations are not overly frequent, so only with time and the building up of trust can one truly learn about another’s culture.

Moisés's description of the attribution of power to forest waste seemed to hit a cord with me as to why I disliked seeing manufactured wastes lying around. So, I used this to explain why we abhor rubbish. I recounted that, for me, non-forest rubbish had a comparable destructive power and seeing it chucked around invoked an ill feeling. I went on to describe how bones, skins and other forest materials did not have any negative powers as they were viewed as good since they came from nature. Seeing these strewn around was not so problematic as they would biodegrade and revert back to nature, where as manufactured rubbish would not. I now wonder what effect this seemingly innocent conversation will have as some time later I saw Moisés picking out rubbish from his worm collecting spot and later burning it.

*

In this section, I have shown some examples of the concealed disparity between Western and Harakmbut conceptions and perceptions of the environment and landscape. I highlighted these disparities through the examples of 'ugly' and beautiful', using the notion of litter to expose my Western conceptions. I saw litter as an artefact of the West and presumed it would carry with it the attributes it is imbued with in the West. Only by discussing it with Moises did I see that it was just a neutral substance, appropriated into the Harakmbut culture and attributed with an alternative value. So these disparities are exposed if my (Western) relationship to the environment is broken down into what Gray calls different substances, i.e. territory based on political relations, lands based on economic relations, the earth based on spiritual relations, and landscape based on historico-geographic semantics (Gray 1996c: 126). However, it should be clear that to presume that my value system and thus relationship with the environment is concurrent with the Harakmbut's is more than just problematic. The Harakmbut as Gray says have a ubiquity of relatedness that includes all these differentiated substances in one notion of the environment, whose meaning shifts according to context (Gray 1996c: 126). For

example, when I went out on hunting trips I could easily map the routes we took, however, I was mapping their resources under the legal provision for 'traditional occupancy' which is predicated on a Western deconstruction of the environment. Here resources are objectified into separate entities that can be manipulated and organised. For the Harakmbut, however, resources are context based, that is they are regulated by the spirits, social relations, seasons, etc. Hence the legal provision for resources (and my crude geographical plots of simple locations) is an imperfect expression of the relationship that the Harakmbut have with resources.

It is this alternative perceptive and conception of landscape that I turn to in this next case study and in so doing expanding the discussion with reference to geomatic technologies.

CHAPTER SIX

The Ese'ejá

Auto-denomination: Ese'ejá.

Linguistic Family: Tacana.

Location: Department of *Madre de Dios*, in *Tabuamanu* & *Tambopata* districts.

Rivers: *Río Madre de Dios*, *Río Tambopata* and *Río Heath*.

Community Names: *Infierno*, *Sonene* and *Palma Real*.

Population: Estimated at 680 individuals (Mora, 1994, based on 1981 census).

Indigenous Organisation: *Federación Nativa del Río Amazonas (FEDNAA)*.

Overview of my Involvement with Ese'ejá

As I came to know some of Puerto Tambo's residents and its short-stay population⁵⁵, I was made aware of an indigenous community, called *Infierno*. Located not far from town, this community was renowned for two things. Firstly, as the stopping off point for tourists on their way to the lodges upriver, and secondly, as a place to try *Ayahuasca*⁵⁶ with its shaman in residence, Ignacio. I was keen to visit this community because they were referred to as "indigenous", and after all I was an anthropologist whose main reason for being in the jungle was to study 'indigenous people'. However, I knew that this village was frequently inundated with outsiders, and if I arrived unannounced I would be either ignored as a tourist or pointed in the direction of Ignacio's hut. I thought it better if a third party introduced me, and since I had already made contact with the local confederation⁵⁷, of whom the Ese'ejá were members, I tried to find someone there who could take me out to *Infierno*. However, while looking for such a contact at the FEDNAA office I became side-tracked with some Amaraeri territorial disputes and so thought no more about the Ese'ejá people. It was not until many months later that I eventually went out to see the *Infierno* community, when I

⁵⁵ This is perhaps the best way to describe those people who get stuck in such a town. They arrive either to conduct research projects or work for one of the tour companies. The majority of them are rich *limeños* or lost travellers and gringos, such as myself.

⁵⁶ See note seven on page 217 for information on *Ayahuasca*.

⁵⁷ See General Glossary reference on page 257 for FEDNAA.

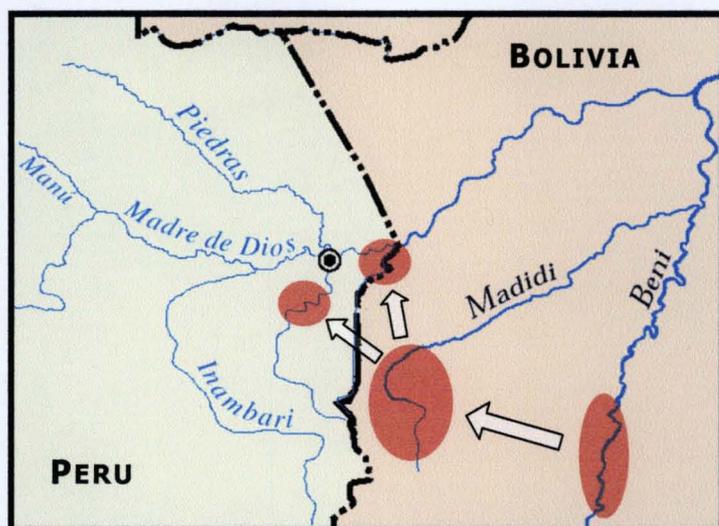
went to assist with a GIS project that the *Instituto de Ayuda* (IDA) was conducting with them.

This next section begins with some background to the Ese'ejá people, with whom I worked. This highlights that they have had a history of contact and forced migrations. More recently, they have been coming into conflict with the region's rapid development.

I then to discuss the two projects with which I was involved; the first was coordinated by the *Instituto de Ayuda* (IDA), in the form of a rapid rural appraisal, to determine the communities' resource management strategies. This demonstrates the contrasting perception of landscape representations within a mixed community of Colonists and Ese'ejá. The second project was effectively initiated by the Ese'ejá elders, where I began the process of mapping the communities' cultural geography. This raises a number of issues of cultural interpretations of, and relationships to, land and landscape. Both these projects employ Geomatic technologies and so highlight some of the intercultural issues in the application of this technology.

Brief Ese'ejá History & Background to Fieldsite

The Ese'ejá were originally located in the headwaters of Rio Beni in what is now Bolivia (See Map 3 below). According to Zeleny (1976) they were probably in contact with the Incas in the Rio Beni Valley. The Europeans made contact with them, in this



Map 3: Migration of Ese'ejá to current locations on Rio Tambopata, Heath and Madre de Dios.

region, in 1567. The next record of their location was in the 1770s when an expedition found them in the headwaters of the Rio Madidi and Rio Madre de Dios. During the last two centuries, their population size has been seriously reduced. The devastating exploitation of the rubber boom at the end of the 19th Century caused the largest decline. A massive immigration of Europeans and North Americans came to invest money in vulcanised rubber. The rubber trees grew wild in the amazon and the indigenous peoples were adept at finding them. This effectively made them a commodity for the rubber exportation companies that were rapidly growing in the jungle towns such as Iquitos, Puerto Tambo and Pucallpa. These companies sent 'slave hunters' into the native communities to find labour for the extraction of rubber resin. The captured indigenous peoples were almost completely enslaved, their living conditions deteriorated rapidly and thousands died, and were also struck down by the diseases brought over by the colonists. This caused the extinction of many indigenous groups as well as devastating the socio-economic balance of others. The rubber industry in the Amazon rapidly began to decline after 1912 when rubber grown in Asian and African colonies began to compete on the world market. It was probably a result of the massive population upheavals caused by the *caucheros*⁵⁸ that influenced their current locations along the Rio Tambopata (Infierno community), Rio Heath (Sonene community) and Rio Madre de Dios (Palma Real community), see Map 4 below. Two further population declines occurred in 1929 and 1960 when influenza epidemics killed several hundred Ese'ejá people.

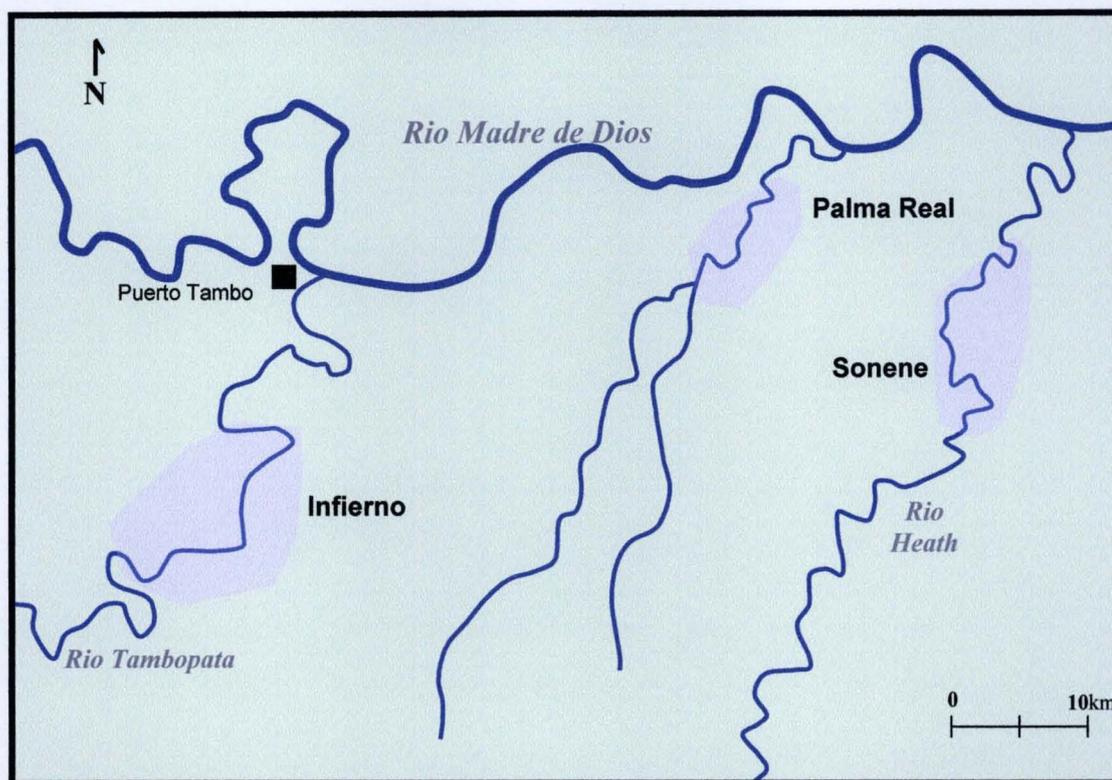
The Infierno community is located only 15km⁵⁹ from the city of Puerto Tambo. It is situated along the Tambopata River with dwellings on both banks. The community has land title (See Map 5 below) with the status of *comunidad nativa*⁶⁰. Their southern boundary borders the Tambopata Candamo Reserved Zone and the northern

⁵⁸ Rubber barons, those who enslaved Indians to tap rubber plants.

⁵⁹ 15 kilometres as the crow flies, by dirt road it is 19km and 34km by river.

⁶⁰ See note eight on page 217 for history of Titling process.

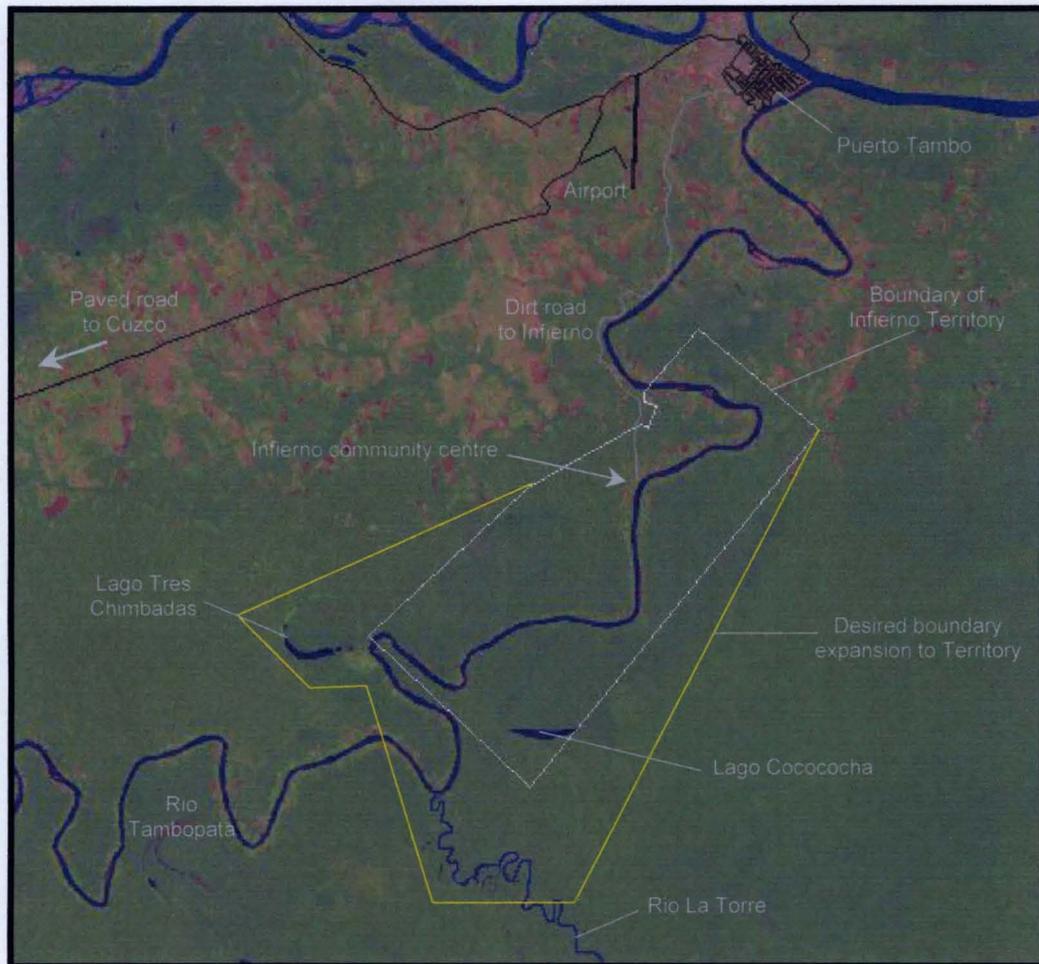
boundary is close to the new trans-oceanic highway. The Infierno population, although a *comunidad nativa*, has always been a mixture of colonists, Ese'ejá and *mestizos*. Within Infierno there has been a considerable degree of intermarriages between resident



Map 4: Relative locations of the three Ese'ejá settlements.

colonists and Ese'ejá, to the extent that Mestizos are now the largest majority in the community population. Through this section I will discuss the colonist and Ese'ejá, but not mestizos, this is because I never met anyone who categorised themselves as mestizo. Many would acknowledge their mixed heritage (cf. Gow 1991), although proudly claim to be either Ese'ejá or colonist. The national perception of who a mestizo is and the current state of internal community disputes, I would argue, were the reason for such an emphasis on a non-ambiguous identity. The reason for the mixture dates back to the 70's when the Ese'ejá in this region were looking to obtain land title. The Ese'ejá population alone was not large enough to qualify for 'community' status. They overcame this by collaborating with some colonists living in the area, who agreed to be counted as Ese'ejá, and thereby they gained land title. The population has generally

been split by the river, with the colonists living on the west bank (with easy access to roads and Puerto Tambo) and the Ese'ija living on the East bank (with better access to the uninhabited jungles for hunting, etc). The community's official centre is located on the western bank, with two small stores, a school, medical centre, meeting hut and two



Map 5: Infierno community title boundary and indication of desired boundary expansion, plotted of satellite image.

football pitches. Infierno has an extensive communications network: There is a river taxi twice daily and a small truck (converted to carry people), which also runs daily along a dirt road to Puerto Tambo. More recently, a minibus has been running the same route as a result of the national economic decline affecting the town. The towns' people will exploit every niche in the market place until it is saturated. Because this route had been monopolised by only one truck, it was open to further exploitation, especially with the increase in small farms developing along this road. This extensive communication and transport network has resulted in the constant presence of external agents within the

community including NGO's (Conservation International, CESVI, *Pro-Naturaleza*, Centro-EORI, TReeS, ACSS, IDA, among others), researchers (biologists, anthropologists, foresters, etc), Stanford University (They appear to have adopted Infierno as their indigenous pet in the jungle and frequently send students there to study the natives), and tourism companies (Rainforest Expeditions, Peruvian Safari, Tambopata Jungle Lodge and *Wasai* Expeditions). These tour companies' use the communities landing beach, as they can cut out over 30km of expensive river transport and simply ferry the clients by road to and from Puerto Tambo. To exploit this the community, with the help of undergraduates from Stanford University, has begun an Artisan project, where they sell locally produced handicrafts to the tourists who utilise the communities river port.

In spite of the frequent and sustained intrusion of external agents, their proximity to the market and the subsequent enticement to exploit their resources, the Ese'ejá have conserved a large majority of their natural resources⁶¹. Perhaps the two main reasons for this are the natural river boundary and the preservation of their communal forest reserve zone. More than 15 years ago an area of 3000 hectares, within their titled lands, was separated off as a forest reserve for future subsistence needs. Through time, the reserve has been the centre for numerous projects in combination with different external agents. An ongoing project (AMETRA), set-up more than a decade ago, created a centre for the study, conservation and practice of traditional medicine, *Centro Ñape*.

In May 1996 Members of Infierno community and a tourism company called Rainforest Expeditions signed an contract to jointly run a tourist lodge in their community reserve, with profits being split 60% to the community and 40% to tour company. The venture was begun with an emphasis on Eco-tourism and not Ethno-

⁶¹ Recently the community's colonist population have been bringing in more and more of their relatives and friends to the area. They have to settled within the community boundaries, much to the annoyance of the Ese'ejá. The other pressure on their resources has been from towns people extracting the valuable timbers from within the boundaries or establishing slash and burn based plantations of bananas, pineapples and alike, which overlap or are adjacent to the Infierno title.

tourism. The community “wanted to be considered civilised and not have to dress up in feathers and dance around like monkeys”, although they have started up a crafts venture which they sell to the tourists. They have a twenty-year contract at the end of which the company will leave and the community will run the whole operation themselves. Presently the agreement works and provides jobs as well as a regular community income from the profit sharing. However, this capitalist venture has seen some criticism in the literature about the Infierno community, such as Alexidis (1999), who says: “The capitalisation process never favours the indigenous e.g. private capitalists like rubber, timber, quinine, animal pelts, gold, cattle, oil and other resources have caused decimation from disease, force enslavement, dwindling resource base and marginalisation from homelands” (1999: 54). This is a fairly strong critique for a community which only considers itself half-indigenous. Although, it is perhaps this aspect that has caused the most criticism, bad feeling and personal grievance in the community as not everyone is becoming involved in the lodge activities and some are accused of getting more money than others. It is true that the Tour Company, who relinquish no power of organisation to the community, have favoured the employment of colonists, however this was because the Ese’eja proved unreliable or would disappear for weeks on end.

Another problem developed as the men went to work at the lodge, for when the lodge began it was little known, particularly by the women, that the men had signed contracts to work in the lodge for extended periods. The impact of this is only now being seen as their *chacras*⁶² are suffering from neglect. With the men away for such long periods nobody is left to manage these *chacras*, so the plantations suffer or they

⁶² See Spanish Glossary on page 261. In an indigneous community these would normally be referred to as ‘gardens’, however, the Ese’eja *chacras* were significantly different from the ‘gardens’ I encountered in other indigenous communities and were more like the colonist’s *chacras* so I use the same term for them as well.

have to hire people to tend them, and so nullify the extra wage benefits they may have earned from working at the lodge.

Despite these intra-community problems the lodge does act as an incentive to preserve the community reserve and provide a form of welfare for each household in the community as the profits will be shared equally.

Resource Mapping in Infierno

My involvement in this next project was more by coincidence than plan. I had just returned to Puerto Tambo and was eating *palmito*⁶³ in *Restaurante el Califa*, when I walked Hugo and Manolo, employees of the *Instituto de Ayuda (IDA)*. I had been working with IDA in the *Selva Central* and in their office in Lima, and knew all its employees including these two. They joined me for lunch and I discovered that IDA had teamed up with a group of other NGOs to form the *Arc*, which aimed to look at Community-Based Resource Management. They had targeted Infierno as a unique example of a community with a forest management strategy. This ‘management strategy’ *Arc* had extrapolated from the communities’ establishment and maintenance of the forest reserve zone, within their titled territory. *Arc* planned to study the Infierno community through an analysis of their socio-economic and management activities in their forests reserve zone and surrounding forests. Since they were using GIS and working with the Ese’jea, whom I had wanted to visit from early on in my fieldwork, I asked them if I could assist or simply shadow their work, and they agreed to both.

It was not long before I realised that this community suffered from what Chambers (1983) called ‘rural development tourism’. In his book “Rural Development”, he outlines a phenomena of modern day development and research organisations, whereby they become constrained by their reliance on urban centres’

⁶³ Shredded palm hearts.

infrastructures. As he says, “it is cheaper, safer and more cost-effective ... to do urban rather than rural research. If rural work is to be done, then ‘peri-urban’ is preferable to work in remoter areas” (1983: 7). The Infierno community is definitively ‘peri-urban’. Along with these restrictive economic factors is a little acknowledged aspect of aid work, development projects and many research programmes, which is the unwillingness of the field workers to endure hardships. Hence, remote fieldsites that could be reached by overcoming these perceived insurmountable problems, such as communication, travel time, fieldsite contacts, and accommodation, are left unexplored or unknown. For modern agencies, wrapped in paperwork, meetings, schedules and other such bureaucratic constraints the logistics of working remote are too time consuming. *Arc* was a casualty of this phenomenon, since all of their fieldsites had been located close to an urban centre.

Infierno suffer from this “spatial bias” (Chambers 1983: 13), being victims of their locality to an urban centre, and also being served by a good communications network. The result has been that they have become the focus of many external agencies, such as those listed above. Because of this, the community shows a distinct reticence towards yet another study, survey or development program. The *Arc* team encountered this and had to enter into some drawn out negotiations, in order to get permission to work with the Infierno community. They eventually struck a deal, whereby the community would consent to the interviews as long as *Arc* gave the community a copy of all resulting documents, maps, and held a workshop to explain their findings. On top of this, *Arc* had to make a detailed map of the boundaries and layout of each household, a laborious task and something I was able to help out with.

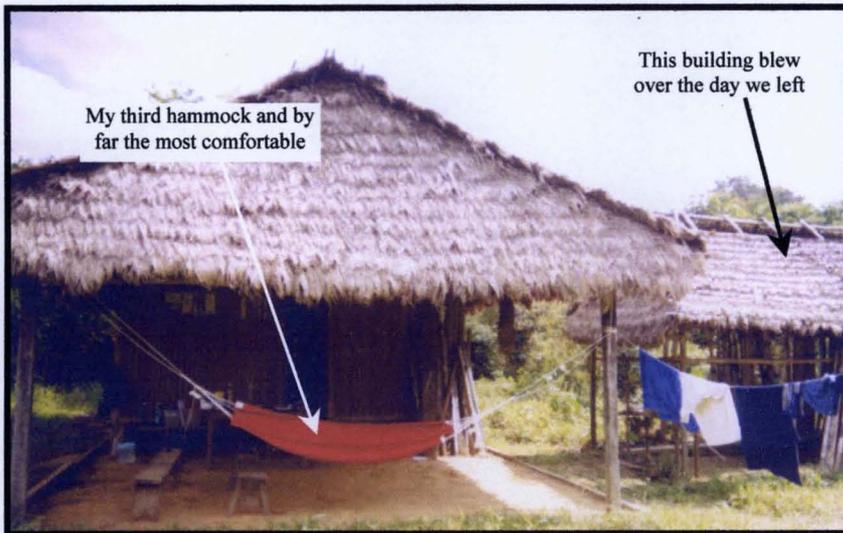
The Arc Team

The *Arc* research team consisted of Hugo and Manolo. They were both in their mid-twenties and did not take life too seriously, perhaps because they came from wealthy backgrounds. I already knew them from the IDA office, in Lima, and they had dragged me out on a few bar crawls. So when I asked if I could shadow their project they were more than happy for the extra help.

Manolo was undertaking the anthropological side of the work and he planned to conduct structured interviews with each household to build a picture of their socio-economic history. Hugo was the forester and was going to build land-use maps for each household, processing the data within a GIS to construct a more general map for the whole community. It was Manolo I was most interested in shadowing, since he was the anthropologist of the team. Unfortunately, however, he was accompanied by his fiancée Lolita. Manolo had not told IDA that he was bringing his fiancée along, as he had been reprimanded for taking her on previous field trips because his work had been compromised, while he constantly tended to Lolita's needs. This cosseting consumed Manolo's time, as Lolita was not very comfortable with the heat, alternative living arrangements, lack of creature comforts, spiders, ants, mosquitoes, snakes, jungles or indigenous people. Amazingly, Manolo had managed to convince Lolita to come on this second trip, with the offer of 'luxury' accommodation.

One of the colonists, who was working at the lodge for a six-month period, had offered Manolo his hut while he was away (See Picture 11 below). However, on seeing the hut Lolita freaked and went straight back to Puerto Tambo to rent a 'proper house'. So, true to form Manolo spent little time with us in the 'luxury' hut, in fact he spent little time in the village, as he was trapped bowing to the wishes of Lolita, back in Puerto Tambo. Perhaps this is another example of Chambers' 'urban bias'. Manolo would visit maybe twice a week to formulate his questionnaire, although he did not

actually conduct any interviews as he said he was not ready. I did ask why he did not just visit each household and discuss the relevant issues, but a GIS project needs hard data extracted from surveys and forms. Not to mention the time restraints NGOs put on



Picture 11: The hut the Arc team and I were loaned in Infierno

their field workers. Ironically, Manolo spent the best part of two months formulating his questionnaire, which he had said would save him time. Then he spent under two

weeks conducting interviews, with half the number of families he had planned to interview. Consequently, I did not shadow Manolo but instead accompanied Hugo, which, as it turned out, was a more profitable experience.

Arc Field Methods

Hugo was trying to build up land use maps for each household. The logistics were simple; we started at one end of the community and worked our way along. Hugo would arrange with the head of each household a time when he could visit to conduct a short interview. He then took along a satellite image of the area and overlaid this with a sheet of transparent plastic, upon which the interviewee could draw. A typical interview would be conducted as follows:

- Arrival, greetings, introductions and short explanation of project.
- Detailed questionnaire of crops grown, gathered, traded, and those species known to grow wild that had commercial value, such as *Castaña* (Brazil Nuts).
- Informants mark on satellite map locations of cultivated, and gathered resources.
- Informants would also draw on other relevant details, such as *chacra* boundaries, etc.

- General conversation, sometimes a drink and some fried yuca.
- Farewells and leave.

In terms of co-operation, we were very fortunate since we had unwittingly played the community off against itself. The families who could be said to be trying to keep up with the 'Jones's', in that they had *chacras* that were less productive, could then boast to the 'Jones's' about the satellite map experience and so the 'Jones's' wanted us to come and interview them next. This meant that we were always welcomed at the next household. Similarly, because we had started on the side mostly inhabited with colonists we had sparked the Ese'eja people's curiosity, which again made subsequent interviews with them easier to arrange. The whole process took a couple of months because, however keen they are to get involved, people in such communities have very different concepts of timetables and appointments to those of a Lima based NGO.

Hugo had used the same methodology with all the community inhabitants (Ese'eja and Colonists), which served to highlight the differences in the responses and reactions to his questions. My fieldwork and later analysis of the interviews with colonists are curt. Instead, for me, they served as comparison and a form of control group, which helped to accentuate the responses of the Ese'eja households to the same questions.

Interviews with Colonists

The interviews with the Colonists were very straightforward; they quickly comprehended the relation of the satellite image to their landscape and could locate their house and *chacra* with relative ease. Maps seemed to be part of the colonist's lives, as they had to plot and locate land claims when dealing with government agencies. They unreservedly described all the areas that they utilised for wood, timber, cash crops or wild resource extractions. This open manner probably stemmed from the land laws for colonising migrants, where they would be granted land titles if they could demonstrate that they were working that land. I never got the impression that they were

holding back any information and on the whole all took a perfunctory attitude towards the interviews. The satellite image provided a real source of interest and many would spend a fair time studying it, looking at all the areas and constantly commenting on, or asking about the different features.

In general they would have a very utilitarian attitude toward the forest areas and seemed very relaxed when asked numerous detailed questions.

Interviews with Ese'eja

To get to the Ese'eja dwellings, you have to cross the river, which although only 50 yards across turned out to be an epic undertaking. NGO fieldworkers, especially those who normally drive air-conditioned cars, do not like basic modes of transport. So even though we could have happily borrowed a canoe and some paddles, Hugo needed a motor-boat, with a rain canopy. This took nearly two weeks to organise and what they organised was, in my opinion, more hassle than even a paddle-less canoe. They had arranged that Carlos's brother⁶⁴ would come and collect us and take us to the various households along the Ese'eja side of the river. Carlos's brother was very unreliable and we spent many days waiting for him to appear. Then when he did take us somewhere, we would often be abandoned, not a big problem as the people were very accommodating, but Hugo was never very comfortable without his toothbrush.

The Ese'eja side of the river was very different, and the houses and surrounding forest were managed differently than that of the colonist's households. A typical colonist household would have the building stuck in the middle of a rough plantation. An Ese'eja household would have the building surrounded by useful plants and located near a fresh water supply that was not the main Tambopata river. To me these households had an aesthetic appeal that the colonist's houses did not have, and,

⁶⁴ Carlos is an Ese'eja elder who enters the plot later in the Cultural Mapping section. I never caught his brother's name so he shall be known as Carlos's brother.

although a cliché, the Ese'ejá households seemed to be more in tune with the surrounding jungle.

The Ese'ejá interviews were not as simple as the colonists. Their immediate response was one of suspicion and distrust, particularly amongst the elders. This came partially from the growing distrust of outside agents, but mainly from their lack of awareness of the project. Hugo had told me that only Carlos was at the initial meetings they had conducted with the community to organise the project. At The meeting Carlos had voiced his disinterest and left halfway through, which probably explained the boat fiasco. Because of this lack of awareness, at the start of each interview Hugo had to spend a good hour justifying why he wanted them to mark out their resource use on the satellite image. Although they claimed to be unaware of the project, they had heard about our interviews with the colonist families and in the end they all co-operated. I saw this initial interaction as them establishing the higher ground with Hugo having to play the humble role, whereas the colonists had automatically adopted the humble role. Later, the Ese'ejá also made it very clear that Hugo must give back all the data he collected and no copies were to be made, again something the colonist did not do.

While these Ese'ejá elders were marking their resources on the satellite image I began to appreciate some differences in their perceptions of two-dimensional representations of land and landscape. These differences stem from the simple conception of a Map or satellite image. It has been argued that a Map is a cultural artefact (Turnbull 1989, Gell 1985, Ingold 2000, Rundstrom 1990, Geertz 1976) in that for any one distinct social group, their social philosophies and resulting inscriptive practices will act to formulate and design the cartographic representation of their landscape or surrounding geography; or as Rundstrom (1990) puts it "Maps may be considered artefacts composed of signs that materialize a way of experiencing. By

transforming a given way of thinking into material reality, maps simultaneously reflect and reinforce the world view or spatial thought of a culture” (p. 155).

Cartographic maps or ‘representations of the earth’s surface, showing physical features’, can be anything from markings in the sand, an arrangement of leaves and twigs or printed lines, symbols and shapes on paper. The point is that they are not universal representations of an area of the Earth’s surface, for each is conceptually connected to the culture or social philosophy that produced them. Maps provide a way of seeing for a particular culture and hence are born out of and provide the way of knowing for that particular culture. Monmonier (1991) wrote “*How to lie with maps*” where he talks of the white lies that an accurate map must tell, so that it can clearly portray the ‘essential’ features. Naturally the essential features are dependent on the intended purpose of the map but they are also a Western notion of what a Map is designed to portray, which is our relationship with the land. Our maps portray the land as a delineated lifeless, still, space as it comes from our way of knowing and seeing the land and landscape. However, as I shall discuss, in a world-view where spaces are made-up of places and “places do not have locations but histories” (Ingold 2000: 219), these maps are effectively empty shells, with limited significance or purpose. Hugo had some appreciation of this and hence he decided to use a satellite image rather than a more rarefied cartographic map. Nonetheless, the same is true for satellite images, for they too are not simply pictures of the earth’s surface and divorced from the culture that produced them and, as Hugo believed, understandable by everyone. They are in fact processed data, and the processing originated in the West. They may appear to be just a photograph (which in itself is not a simple object), but colour is manually allocated for each feature on the image, hence the rivers and bodies of water are coloured in shades of blue, even though amazon rivers are normally brown. The point I am trying to convey here is that it is all too easy to forget that maps and mapping are not universally

similar representations and processes respectively, and so not easily translatable as many would believe.

This became apparent while the Ese'eja elders were looking over the image. It took just a little explanation to make them see that this was a representation of their landscape. However, although Hugo and I assumed that they were automatically taking the next steps of understanding, they were not. Scales, colour representations, distances, boundaries and the transfer of perception from the two-dimensional to three-dimensional and back again, are all inherent in our familiarity with such medium, but not something that the Ese'eja were used to reading. The best analogy for this would be that written English is an inscription (through symbols) of our spoken communication and our maps are a comparable inscription of the Western relationship to the land: one of delineation. Just as you would not expect everyone to be able to read and understand the symbols of writing, nor should you automatically expect everyone to understand and comparably interpret maps or satellite images. The Ese'eja are not far removed from a social philosophy that saw the landscape as a living history. A satellite image is a snapshot, a moment in time, and in the amazon the rivers change so much that no two images of the same spot will be the same. The image that Hugo had was taken during the wet season, and the significance of this became apparent one evening while we were travelling upriver. We passed a sand bar in the middle of the river, which Carlos's brother informed us was his favourite place from which to fish, and that he was always guaranteed a decent sized *zúngaro* (type of catfish) from that spot. Hugo asked him why he had not mentioned this the day before when he was drawing on his fishing spots. His reply was logical, since this sand bar is covered over by the river during the rainy season, he had not seen it on the image, and had therefore thought we only wanted to know the wet season fishing spots. Although for myself and Hugo, it was perhaps automatic to traverse seasonal change when plotting features on such an image. This

was not the case for Carlos's brother and it was becoming increasingly clear that all the Ese'eja were seeing the image for what it was, an image of the rainy season. Although all the data collected has been given back to the Ese'eja, it would be an interesting project to re-examine what resources they had marked on this rainy season image, and whether a dry season image would render significantly different results.

This is a problem of visualisation and one that is only now being discussed in Geographical Information Systems (GIS). Cartwright (2002) raises this issue in relation to the contemporary multimedia potential to change the viewpoint of space and place. He says, "do the 'tools' for geographical visualization change the viewpoint of space and place and therefore, if so, is a 'jaundiced' view of (geographical) reality provided which aids in the construction of a particular mental map and thus an individual's perception of place and space" (2002: 21). For the case of the Ese'eja, this 'jaundiced' view in the form of a satellite image meant that the Ese'eja were only marking those resources that were available in the rainy season. The image was also distorted as it was a view from above, a perspective only pilots are used to seeing, which meant that they were only marking on those resources which had obvious locational links, or places clearly distinguishable on the image. For example, Hugo had arranged to take a tour of Philippe's favourite hunting spots around his household, in order to record accurately⁶⁵ the locations of certain resources. During this tour, Philippe pointed out numerous other significant resources, which he had previously not mentioned, not because he wanted them kept out of the records, but because as he said 'he had not seen them on the satellite image' as they were obscured by the canopy, and because his perspective was so radically different.

Another feature of this alternative-translation was the problem of relating scale and distances from the real world into the image. For instance, Pio was asked to indicate the

⁶⁵ We took along a Global Positioning System (GPS), to mark the locations.

location of the most productive *colpa*⁶⁶ on the image. This *colpa* was a great distance away and Pio repeatedly waved off into the jungle to imply how far it was. Hugo asked him again if he would indicate where it was on the image and after a few minutes pondering on the image he said it was not on the image, but far away and waved again with his hand. Hugo and I could conceive that the image covered a vast area of Jungle and knew that it was very likely to be within the borders of the image. It included, on the northern edge, the very large Rio Heath, and we knew that people rarely went as far as that to hunt. So, Hugo asked him to describe the route he would take, and which rivers he crossed in order to get there. After a while we worked out that the *colpa* was in fact on the image. This was confirmed as Pio knew where the Rio Heath was and he said it was much further away than his *colpa*.

This theme of distance and scale came up over and over again. The natural process of describing a long distance is to exaggerate with your gestures. A small paper map is not the best means on which to convey how far away something is, as moving your finger an inch over the page does not compare to the wild gestures you can achieve with your arms. For this reason, I think Pio could not accommodate the maps large scale, which would not be sufficient to convey the two-day journey required to reach his *colpa*. Pio was also the eldest and his history of communicating knowledge was centred in the oral and performative.

These representations of the land and landscape are taken from the same conceptual constructions that have developed geomatic technologies. For Hugo and me, as Ingold phrases it, “schooled in the Conventions of modern cartography” (2000, 235), plotting features from our landscape would be a straightforward task, but we made the mistake of presuming that it would be just as inherent for the Ese’ija.

⁶⁶ A *colpa* (See Spanish Glossary on page 261) is a location where mineral salts crystallise on the surface soils. These are often exposed riverbanks or other raised bare earth surfaces. At these *colpas* animals and birds can be found eating the salts, which is why they are called ‘salt licks’ by tour companies. Because of the regular visits to these places by numerous sorts of animals they are good places to hunt.

Another issue arose as the interviews went on, an issue that has appeared in the literature. Andrew Turk (1998) talks of culturally and politically sensitive information needing to be guarded within the Geographical Information System, which he was compiling with the Australian Aboriginals. This issue was voiced by many of the Ese'ejá in a parallel form, for they asked whether others would see these maps. This gave Hugo and me the impression that either certain areas were secret and that they did not want their next door neighbour pilfering their secret supplies, or that it might be discovered that they were pilfering a neighbour's resources. They could have also been candid about this information because of the recent inter-community dispute that had begun not long before we arrived.

Despite some of the above problems, this mapping exercise was for Hugo very productive, and for me it proved an invaluable experience for my understanding of the differences in intercultural interpretations of a two-dimensional representation of the world.

Authenticity

The *Arc* team came to Infierno during a time when the community was starting to lose its cohesion because of their heterogeneity. That which enabled them to create the community, was now pulling it apart. A few of the Ese'ejá elders have been trying to split the community territory, so that the Ese'ejá live on one side of the river, with half the territory, and the colonists on the other. The Tambopata river has always been a natural divide, with the majority of Ese'ejá living on the east bank and the colonists and mestizos on the west bank. The Ese'ejá want the land title to be divided using this natural boundary.

Whenever the topic came up during the Ese'ejá interviews with Hugo they would state the same motivation for the split, which was their loss of cultural heritage. In

terms of logistics and numbers, this was a very valid argument. The Ese'ejá element of the Infierno community was in the minority; those with a strong Ese'ejá heritage would soon be gone or dispersed. The schooling was Peru-centric, more colonists were immigrating into the Infierno titled lands all the time and the younger generation of Ese'ejá were leaving for the urban centres to find work. A common lament by the elders would be that the other two Ese'ejá communities (Palma Real and Sonene) were true to their heritage and hence "proper indigenous people". They saw the split as a way to regain their focus and shut out the invading outside world of tourism, the State, urbanisation and the colonists.

The problem for these Ese'ejá was that the split, as they were proposing, was not viewed as equitable by both parties. The Infierno community's history is one of complex integration between colonists and Ese'ejá, combined with a joint commercial venture. Because of this integration alone such a split would never be simple. The Ese'ejá had made it impossible for themselves by trying to claim that the reserve and so the tourist lodge (and all its profits) would rightfully belong to the Ese'ejá half, since their indigenous status enabled the community to establish land rights in the first place.

The lodge generates a considerable income for the community. This is in the form of employment as guides (principally colonists) and other lodge staff, as well as a percentage share of the Rainforest Expedition's profits. Therefore, if you try to take this away from a group of commercially minded people on the grounds that you deserve it because you are indigenous, then a dispute will ensue, and such a dispute did.

I am not going to enter into the full furore of this dispute, I simply want to discuss one aspect that was repeated to myself and Hugo, by the colonists, whenever this issue came into the conversation. This was the accusations by the colonists that the Ese'ejá were all mestizos and no longer indigenous, and so had no more rights to the land than they did. This entailed the issues of authenticity and classification as indigenous that I

have mentioned earlier. It would, for most indigenous or colonists, not be a problem, however, because of the dispute it became an issue, as I shall explain.

The main exponents of the community split were Ese'eja men who married mestizos and colonist women. It was these men who were proposing that after the split only the 'Ese'eja' could live in their newly titled Ese'eja area. They included, in their definition of Ese'eja, their children and wives, who were of mestizo and colonist origin. This was why it became a problem, when it would normally not be. Why it is a problem I will discuss later, but, firstly, the position of why it is not should be examined. As I discussed above where the definition of indigenous is perhaps best resolved with a recognition of self-determination, then this issue of who is Ese'eja should be regarded in the same light. Peter Gow in his book 'Of Mixed Blood' (1991) discusses this issue amongst the Piro people of the *Bajo Urubamba*. The Piro report to be of mixed blood, which from a Eurocentric viewpoint would signify that they were *mestizo* and not indigenous. However, this is not what they are conveying, as this sentiment is affirming that their "kinship is a historical product" (Gow 1991: 252). Gow goes on to explain that the Piro determine their 'race' or 'blood' by identifying with the land they grew up in, and the way and by whom they were raised. The Ese'eja emphasise much the same, with everyday lifeways being the determining factor of 'race'.

The reason that a definition of indigenous became an issue in this case was that the colonists were challenging their authenticity as Ese'eja. If they had not brought the lodge and hence such a rich source of capital into the dispute, then perhaps the colonists would not raise the issue. However, the colonists and the legal system work within a culture that predicates rules such as heritage, genealogy and bloodline in the determination of race. For the colonists any claim by the Ese'eja that they could choose who was Ese'eja and who was not was absurd, as the colonists knew their history of

consanguines and affines. When I left this issue had not been resolved and I have not heard if the Ese'ejá took it any further. It does highlight the problems that indigenous people have when attempting to establish their rights. Authenticity through bloodline is not as yet on the agenda of Peruvian indigenous land rights, as it is in North American, and I would hope that it never becomes an issue.

The Ese'ejá covet the land as in their view they have a fragile claim to it which they have had to fight for over many years. The Colonists on the other hand have a simpler outlook, as they do not have any spiritual or social connection with the land and its preservation or conservation. They know that if they exploit it they have a better chance to legal title they also care little for its conservation as forest, because for them it is just a lifeless resource and if it runs out they can take their lifestyle with them to another venture or location. The Ese'ejá's culture has a connection to the land and so it has a greater importance to their present and their future.

This issue of a loss of heritage arose whenever I began to chat to any group of older Native Amazonians. These discussions would then become very animated if I mentioned that I specialised in projects to record this kind of knowledge, in a technological format that they could keep. The Ese'ejá were no exception and their lament at their loss of heritage, combined with the dispute over territory, resulted in a unique opportunity arising for me, and I was able to conduct a simple cultural mapping project with them.

Ese'ejá Cultural Mapping

The chain of events that led up to this project, highlights a number of aspects of fieldwork relationships that are unpredictable but vital to the amount and type of people and information I was exposed to, so a brief narration of these events follows.

I had stopped off, on my way back to Puerto Tambo, at the Centro Ñape medical centre to speak to Amanda. Amanda is an anthropologist who has been working with the Ese'eja for a number of years. She has concentrated her studies amongst the Ese'eja of Infierno and was always very happy to have in-depth anthropological discussions about them. Amanda was however the victim of the 'my Indians' phenomenon. Throughout the anthropological world, academics will occasionally be heard referring to 'their Indians'. This is a throwback to times when anthropologists would look for a distinctive and previously unheard of group of natives to study. Once they had published their studies the accepted outcome was for the academic community to attribute those people to that anthropologist. In seminars people can still be heard to say 'my Indians do this... *or* my Indians do that...', although it is now frowned upon to talk about 'your Indians'. The problem with this phenomena is that there are still those who will vehemently guard 'their Indians' and try to sabotage any other anthropologist's attempts to study these same Indians, treating them as poachers. When Amanda arrived two years ago she was a victim of this type of clandestine campaign, where another female anthropologist had spread rumours that Amanda was sleeping with all the her male informants. This other anthropologist had studied the Ese'eja for many years and was very well known and respected amongst the Infierno community. Amanda is still regarded with slight suspicion by the women and slight hopeful desire by the men. Nonetheless, she has built up enough of a good reputation now that most Ese'eja and colonists see through the petty bitching of this other anthropologist.

I stopped at *Centro Ñape* because Hugo had employed a botanist from Cuzco and was now making botanical maps of the community's forests. So rather than trudge through the rainforest along grid-squares and being eaten by critters, I was heading back to town to meet Dr Richard Fox, who had kindly agreed to give me his digital maps of the *Madre de Dios* region. I was a few days early and so stopped off to talk with

Amanda and observe how the Ñape centre was practising traditional medicine. During my stay with her, we discussed the idea of a cultural mapping project and its application to the community. Amanda was truly interested in the notion of cultural mapping, although, thought it would be unlikely that the elders would impart such detailed information to a stranger (me), since I had only known them for a short time and had still to gain their trust. She did, however, think it would be worth mentioning such a project to a couple of the elder Ese'eja, who were due to arrive back at *Centro Ñape* that week. I only mentioned the project as a passing thought, since I had had a few conversations with the elders about this form of knowledge and its loss. But I did not really want to be one of the many researchers running yet another project with the overburdened Ese'eja. So, when I left Amanda I had very little hope or perhaps little desire that such a project would become possible.

After a week's rest and relaxation in the local town of Puerto Tambo, reading letters from home and devouring food parcels of Cadburys chocolate, I decided to head back to Infierno to see if Manolo had started his interviews. It was a quiet day and the truck to Infierno only had one other passenger. He had black wild hair, smart clothes (at least by jungle standards) and dark deep-set eyes. He did not help me up as I climbed aboard and seemed to regard my presence with contempt. The day was just passing out of the midday swelter, but the cool breeze afforded from the open backed truck made it a very pleasant journey. As we were driving through the outskirts of town, the bus suddenly screeched to a halt throwing us forward. We had just missed two small boys who had run out into the road chasing after a pig. The screech of the bus brought out their mother, who on seeing what had happened stormed over to the boys screaming her head off. The two kids realising that they were in for it, turned tail and ran, with their mother in hot pursuit yelling even louder. The bus pulled away with the driver laughing loudly to himself. We sat down again, but now the old man was smiling and he

remarked that the two kids were in big trouble. This seemed to break the ice and he asked me where I was going. He and I talked at length about my interest in Infierno and more generally about foreigners coming in to conduct research projects. He must have liked the conversation as on our arrival at Infierno, as he suggested that we meet-up again to talk more. I later discovered that this person was Carlos, who was famed for his distrust and active dislike of all outsiders, especially those who wanted to run projects and conduct research amongst the Ese'ejá. This explained the venomous tone of a comment he had made during our conversation, which roughly translates as: "They come in, spend months eating our food, living in our houses, and absorbing our knowledge. They then go back to their own countries and get rich from this knowledge".

I was quite puzzled as to why he wanted to talk further but also encouraged since I had an opportunity to, as Hugo put it, 'get the enemy on my side'. As it turned out Amanda had already mentioned my cultural mapping idea to Carlos, so he must have guessed during our bus trip that I was the one wanting to conduct the mapping project. This, I presumed, meant that he wanted to meet up again because he was in fact interested in the mapping project and not my scintillating conversation. Sure enough when we met-up, a week later, he suggested we use his boat for the mapping. Considering the hassle Hugo had encountered when he wanted to hire Carlos's boat a few weeks before, it was an amazing change of heart. Amanda had wrongly presumed that these elders would not want to impart such information to someone they did not know very well. In fact, they were so desperate not to lose what they had, that they would talk about it to virtually anybody who offered to help. Not to mention going out of their way to make it happen (Carlos and his boat).

Both Carlos and Philipe wanted to map the area within the current community boundary and then the areas around *Lago Tres Chimbadas* and *Rio La Torre*. These last

two areas form part of an intended territorial expansion application (*See Map 5 on page 173*).

The oxbow lake *Lago Tres Chimbadas* and the river *La Torre* are historically known to be the furthest destinations that hunting parties would regularly visit, when the Ese'ejá lived in the headwaters of the *Madidi* river. Although they did not recall the traditional names for these places, they knew that they held tremendous significance for their people. There was a plan to have the elders from the other communities of *Palma Real* and *Sonene* come to these places and see if the Infierno elders together could recall the traditional names and stories. The Ese'ejá living at the other two communities were often considered, by those in Infierno, to be 'more indigenous' than those in Infierno.

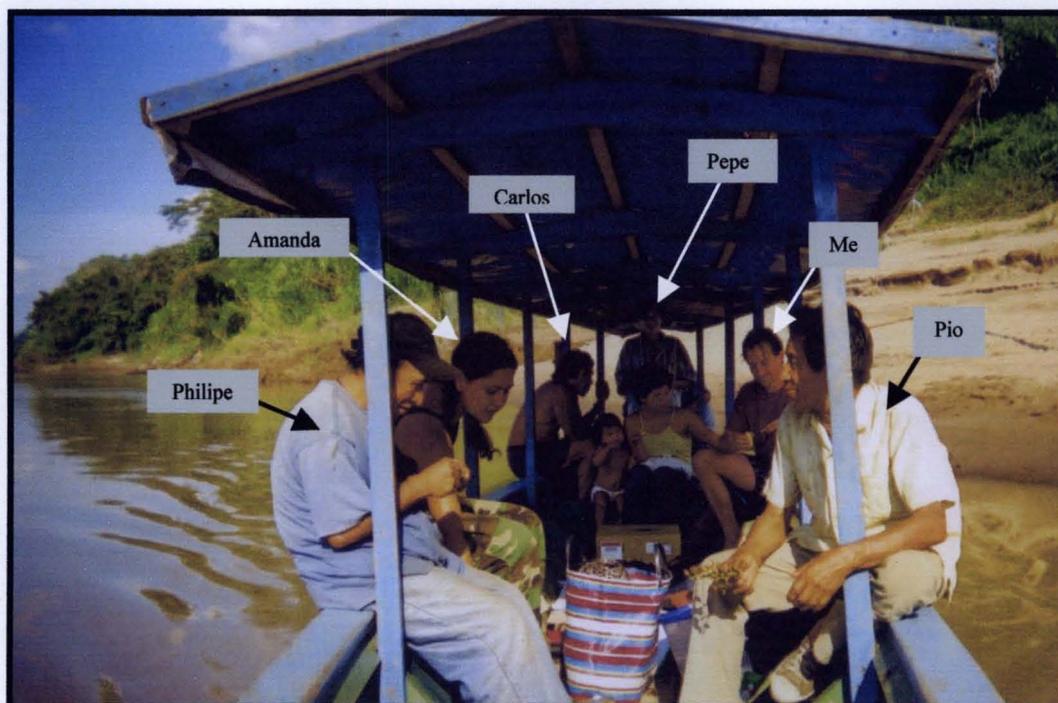
It was through such comments and other similar remarks that they expressed a respect for their cultural heritage, which gave me a glimpse as to why they were keen to conduct this mapping project. At first, my impression was marred by Amanda's opinion that they just wanted a map to brandish as evidence of their rightful claim to the surrounding territories and thus to support the community split. Perhaps there was an element of truth to this, but on reflection and remembering conversations with the Ese'ejá elders, I now think it was principally a desire to preserve this heritage that they felt was being lost and forgotten. Ironically, I am now convinced that they thought the project would magically exhume long forgotten toponyms and other forgotten stories or myths, through some Western wizardry.

It should be evident in the above section that the previous relationship of instant distrust, when Hugo and I showed up, was now an instant relationship of trust, when they themselves took the initiative and effectively brought in the expert to map their culture.

Mapping Culture

Carlos arrived with a boat full of people including his wife, kids, and Pio. Pio is the eldest Ese'eja living in Infierno and I liked him from the first moment I met him. He was always calm and quietly spoken, not through shyness but old age. Then when he spoke to you he always had a smile on his face and chuckled to himself whenever he told you a story.

With Hugo and me aboard and the lunch things loaded we headed upriver to collect Philipe (the current shaman in residence at Centro Ñape) and Amanda, on the way we dropped off most of the other people (See picture 12 below). Life goes on in Infierno and if a boat is going upriver, through the heart of the community, it is as good as a hop-on / hop-off bus, so all the way up river we collected and deposited various people. The idea for the day was to motor upriver, to the upstream community boundary, and then slowly drift back down with the current. This slow pace would give



Picture 12: Cultural mapping on the *Rio Tambopata* (lunchtime)

enough time to map the culturally significant aspects visible or close to the river. I had explained to them that for every space, place or distinct feature we passed they should tell all they knew or remembered, if it had any story, special name or significance to

them individually or as Ese'ija. The following table is the result of this day's activity. Each numbered entry corresponds to a waypoint mark on the map (See map 6 below). The GPS waypoints marks are symbolised as red dots on the map and mark the positions of any features that the Ese'ija indicated to be significant. The following table contains the only results that I legitimately possess, since other results were given back to the Ese'ija as pre-agreed at the beginning of the project. I was allowed to keep a sample for my thesis, or as Carlos joked, "steal some knowledge to make yourself rich". I am using this sample data as it highlights some issues about the cultural mapping process that I wish to discuss.

GPS Co-ordinates for the Cultural mapping project of Baawaja Kuñaji (September 2001)	
Ese'ija Participants Pio, Carlos (with wife and kids), Pepe, Philippe.	
Other Nationalities Peruvian, British & Mexican Hugo, David Menell, y Amanda.	
ID Number	Description
281	Entrance to house and chacra of Don Hector.
282	Entrance to house and <i>chacra</i> of Juan Poje.
283	Entrance to house and <i>chacra</i> of Don Pedro Mishaja.
284	<i>Chacra</i> of Don Agustin Mishaja.
285	Entrance to house and <i>chacra</i> of Don Julio Pesha.
286	Entrance to house and <i>chacra</i> of Don Victor Pesha.
287	House of Don Tadeo Mishaja, Don Jorge Mishaja y Don Marcos Carrasco.
288	Entrance to house and <i>chacra</i> of Don Carlos.
289	Entrance to house and <i>chacra</i> of Don Jose Mishaja. The stream that marks the boundary to house. (The <i>Cocococha</i> stream marks the edge of the Communal Reserve.)
290	Entrance to house and <i>chacra</i> of Don Honorato Mishaja.
291	Entrance to house and <i>chacra</i> of Don David Flores and his father-in-law Don Eduardo Flores, who has been working the <i>chacra</i> for the past year.
292	Entrance to house and <i>chacra</i> of Don Narciso Cordero.

293	<p>This is the traditional medicine centre called <i>Centro Ñape</i>, previously well known as AMETRA (<i>Asociacion de Medicina Tradiconal</i>). The centre was renamed in honour of the respected Ese'ija shaman named Ñape (<i>Yamitecua</i> is Ese'ija for Shaman), who lived here for many years. (There is no Ese'ija name for the centre). The beach of <i>Centro Ñape</i> is known as <i>Meshiaji topo</i> (in Ese'ija, which translates as Round Beach) it is known as <i>Hermosa Chica</i> (in Spanish which translates as Beautiful Girl). The Ese'ija say that the area all around <i>Meshiaji topo</i> and <i>Centro Ñape</i> is magical and that many Ese'ija ancestors can be found here. On various occasions when people rested or spent the night on the beach, they have seen the ancients' spirits. Don Ñape was able to summon these ancient spirits (<i>emano kuana</i> in Ese'ija), that wandered around the area.</p> <p><i>Hermosa Chica</i> acts as a resting-place during hunting or gathering trips up the <i>Kuisho Kuei</i> river (<i>Rio La Torre</i> in Spanish) or up the <i>Baawaja Kuñaji</i> (<i>Rio Tambopata</i> in Spanish). For this reason, there are many memories of nights spent in this place. For example, almost 60 years ago, the women were sleeping in the beach with the children while the men hunted up river and a jaguar came to attack them. The older women tell of how they had to spend the whole night frightening off the tiger, which circled them getting closer and closer to where they were huddled. Today another jaguar is occasionally seen and heard around this area. Today the beach still serves as a place where Ese'ija families rest when going up river to hunt & fish or gather brazil nuts or <i>crisneja</i> leaves.</p>
294	? Lost data
295	Entrance to house and <i>chacra</i> of Elber Marichi. (Located in front of <i>Posada Amazonas</i> .)
296	Entrance to house and <i>chacra</i> of Don Fredi Chambi.
297	Fredi Chambi (they appear to be two separate <i>chacras</i> but seemingly belong to the same person).
298	<p>The first home of Carlos Macias and his wife for 17 years from 1969. Before that, it was the house of Felipe Yojaje and his son Cesar Yojaje who went to <i>Palma Real</i> and then <i>Sonene</i>. The sons and daughters of Cesar Yojaje now live in the communities of <i>Sonene</i> and <i>Palma Real</i>. The landmark of the community, made of stone and mud, was discovered here in 1999 by Don Juan Pasha during an expedition to mark to limits of the community, it is still here but unfortunately now in ruins.</p> <p>In this place, they had also intended to establish the <i>Hermosa Grande</i> school, before it was built in its current location in the Infierno Community centre.</p> <p>The <i>Kuisho Kuei</i> river is not part of the Infierno community neither is it part of the new proposed community of <i>Baawaja Kuñaji</i>. The river continues to be an important place for Ese'ija to gather resources, like wood and brazil nut and hunt.</p>
299	Previously this area was adjacent to the community before it became the property of Sr. Bocangel. Interestingly one can observe a strong difference between the secondary forest on the side of Sr. Bocangel and the oldest forest of the Infierno community. (This difference of vegetation appears clearly in the satellite image). In this area, they used to hunt a lot of <i>sajino</i> and on the side of the reservation there are several small lagoons where the herons sleep.
300	Narrow navigable river called <i>Aso pashe</i> . Este cano es el sitio por donde se inunda todo el bajio de esta zona.
301	Actual boundary of community with Sr. Bocangel, colonist from Arequipa.
302	Old entrance to <i>Lago Tres Chimbadas</i> (There is an Ese'ija name for the lake but it was not recorded on this trip). When this entrance was connected, they used it to access the lake by canoe for fishing and hunting.
303	INRENA signpost marking the trail that leads to the oxbow lake <i>Lago Tres Chimbadas</i> . The tourists from the lodge <i>Posada Amazonas</i> use this entrance to see the giant otters and other wildlife. This <i>Lago Tres Chimbadas</i> is extremely important to the Ese'ija, as they have hunted

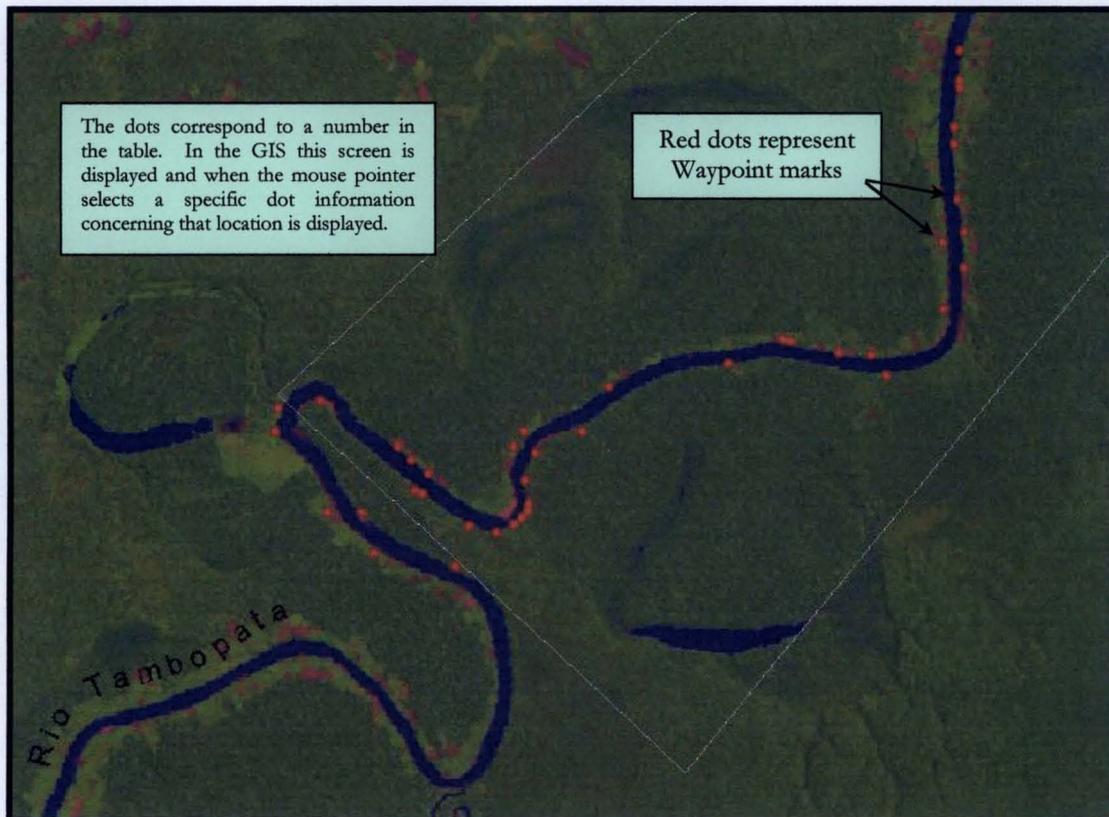
	and fished here for many years. The lake was supposed to be within the limits of the Infierno community boundary, however, INRENA decided to leave it outside the limits of the community boundary and territories around the lake have been given to colonists, who have subsequently invaded the community land and extracted wood. Today the Ese'eja continue to fish at night in the lake.
304	<p>In this beach is the sepulchre of the controversial and powerful Don Ñape (the Ese'eja are accustomed to talk to the dead in the places where they died). Ñape Obtuvo was his nickname because they say that he resembled the bear (<i>ñapesa</i>) since he was very <i>pelludo</i>. They say that one morning he died because he was called by <i>esha sha poi sha</i> (a cockerel spirit). She called and called until he realised that he was dead. Nape died very young between 25 and 35 years old and it is said that <i>edosikiana</i>, the mother of the forest, gave him very special powers but that he used them for dubious purposes, mainly to seduce women, so she took him and them back.</p> <p>Amanda's Note: The current Shaman who lives at the Centro Ñape, and was recounting these stories, is well known to be a womaniser and often has sex with young female patients that stay at the centre, so perhaps he is trying to deflect rumours about himself by making out that Ñape was a philanderer!</p> <p>My Note: The current shaman is Philippe and gossip aside he was comparable to Sigmund Freud in respect to his patient-doctor relations.</p>
305	Between 1961 and 1968 Don Pedro and Don Juan Peshá lived here (father of Víctor and Juan Peshá). Here there is a small <i>Colpa</i> (animal salt lick), <i>me' o meshi me'</i> .
306	Beach called <i>Meshiaji aiai o</i> (<i>Hermosa Grande</i> in Spanish). Opposite this beach is the lodge <i>Posada Amazonas</i> . In the site of the lodge <i>Posada Amazonas</i> between 1961-1968 lived various Ese'eja families who used this land behind <i>Meshiaji aiai o</i> for their <i>chacra</i> . In this time, all the <i>chacras</i> were adjacent and much of the work was carried out on a community basis, particularly amongst in-laws. The main crops used to be bananas.
307	Macaw <i>Colpa</i> (salt lick) called <i>Ja we ha me'</i> .
308	Place where grandfather Tomas Mishaja lived. In this location there is a big Pijuayo palm, which marks the location of his house. These type of palms are generally planted by people and can show the location of previous human activity. Philippe made all aboard laugh when he recounted a tale about this palm, when it caught fire and killed a group of kittens that were hiding inside it.
309	Here between 1962-67 lived Don Felipe and Don Cesar Yojaje.
310	Place where Doña maria Sa'ao Huiája, grandmother of Carlos Dejavisó, and other women get mud to make pots.
311	Place where Don Juaquin Cuená (de 1961-1968) lived.
312	<p>Place of the Sirens called <i>Bacti ena sha ua ani</i>. This Place or the house of the Siren is where the party of the Siren is frequently heard. At night, they hear the sounds of guitars, drums, songs, and laughter. In the morning, it is said that they find entwined Boas sick from the previous night's party. The Sirens are good creatures that take care of you in the night, and for that reason one should not fear them. The Ese'eja have several tales about the Siren's world, an identical world to ours but under the water where one does not age nor gets sick. The stories speak of the various encounters that there have been with the Ese'eja, such as tales of them being abducted and the Ese'eja falling in love with them.</p> <p>In this place of the house of the Siren, there is a lot of <i>palometa</i>.</p>
313	Place where Don Cesar Gusman and Don Hector Sewe (1961-1968) lived.
314	Old site of the <i>chacra</i> of Hector Sewe. In addition, they say that there were always more beaches in this area than there are today.

315	Cochita of the Guzman family where you can always catch large quantities of fish. A little further down is the house of the father of Don Tadeo.
316	Old chacra of Don Juan Pesha Baca. Today it has been abandoned for about 6-7 years.
317	Old entrance to <i>bai ai'ai</i> (<i>Lago Cocococha</i> in Spanish (oxbow lake)). According to the Ese'ija all the lakes and <i>cochas</i> have their magic. Also in this place is the house of taricaya called ' <i>da tijaeti</i> '. Only in this place can you find the <i>Charapa</i> (land turtle).
318	Stream known as <i>Tosi anijenaba etsaa</i> , or the stream of the <i>carachama</i> . This stream is renowned by the Ese'ija as it never dries-up and has abundance of carachamas. In this area there are various stone formations known as <i>Japal</i> , or the zone of the <i>perdal</i> where also you will find various <i>posas</i> or <i>muyunas grandes</i> called <i>baeti</i> .
319	Entrance to the house and <i>chacra</i> of Don Carrasco.

These field notes were recorded in Spanish and translated by Amanda and myself. Not all Spanish or Ese'ija vocabulary have English equivalents so these words are left untranslated.

Ese'ija Cultural Maps

These results begin to highlight the problems of having too many interested parties. I shall explain. I began this project in a fairly sporadic manner, having very informal



Map 6: Waypoint marks that correspond to numberings in table

conversations with various Ese'ija elders, as and when I met them. During these

conversations, they would convey to me much of the sort of information I intended to record in a 'cultural map'. Information such as toponyms, old river names and alike. I was happy that they understood what I was trying to record, and so I assumed that little explanation was needed in case they began to misinterpret or reinterpret what I wanted them to discuss. So my explanation before we set-off upstream was brief, because I presumed that they would be telling me the same sort of information as they had in our prior conversations. However, Amanda is a domineering person and likes to be in control. Over the two hours it took us to reach the upstream boundary, after visiting people, ferrying people across the river and generally socialising, she had effectively taken over the exercise. The Ese'eja were now disclosing the sort of information that she thought 'cultural mapping' entailed. To this end the majority of the recorded responses only indicate where people live and who owns which *chacra*. Such information is more along the lines of a demographic or topographic survey, but it was what Amanda thought was needed (or I suspect what she needed to know for her fieldwork). On this occasion, I learnt some methodological lessons, such as, do not have too many gossiping Indians in the boat at the same time. Especially with an outspoken anthropologist, well known to them, who they will defer to for guidance. The few details and stories which were recorded came from moments when I was able to corner either Pio or Carlos, and ask them for some more details about the locations they had mentioned in passing. I did try to talk with Philippe but during this trip he was more interested in Amanda's attentions than mapping culture. Another problem was gossip as they would talk for hours about the latest developments surrounding the territorial expansion; or the most recent marriages; or the prices being offered at the market. This information was fascinating and gave an insight into the everyday concerns of the Ese'eja, but perhaps it would have been more productive, in terms of cultural mapping, with fewer people. Principally because I am sure we missed

numerous relevant stories about various locations along the way as they were too busy chatting. On subsequent trips I only took one or two Ese'eja, so as to keep their full attention on the project, a method that worked very well. It was the information that I compiled from these trips, which made me rethink my conceptions of cultural mapping, as I shall explain later in this section.

Apart from distracted and mislead informants, another drawback was their loss, or lack of knowledge. I did not know the entire history of the Ese'eja when we began this project and my first thought was that they were not telling me certain information, because it was politically sensitive or such like. However, over the next few weeks I discovered that the lack of information was due to two significant factors. Firstly, that they had little historical connection with this area, and so there were fewer places, locations or features associated with stories, myths and other such history. Then secondly, the transmission of such knowledge was dwindling because later generations either did not want to know or did not care about this sort of history. Pio, who was the eldest amongst them, commented on his fading memory as regards place names and stories. On a couple of occasions, whilst floating down river, he said that he recalled being told a story about a certain place but now he could not remember what it was about. The other two Carlos and Philippe admitted to never knowing that much and so had even less knowledge of Ese'eja place names. They all knew the story concerning the Sirens, which is currently told to children in school, but they all lamented that stories are rarely recounted today.

The proximity to the town and the improved infrastructure for children has meant that they all regularly go to school and receive a secondary education. This could be a contributing factor to the younger peoples expressed disinterest in such traditional matter, such as language, place names and old stories. They could consider this traditional information irrelevant and the little they do get taught is not reinforced in

their community life due to the few numbers of Ese'eja (cf. Kulick 1992). Another factor often commented on by the elders is the beguiling nature of materialism and the rapidly growing communications and transport networks. This creates a world where this old knowledge is not relevant to the young people's lives. Especially when they move to the cities, with the likelihood of their return and beginning to learn all that the elders know unlikely. Although this was a complaint by many elders when we spoke of this decline in interest, I did see a correlation with the livelihood change in the young. The more remote communities always had those younger members who were completely enchanted by the urban elements. However, they also had those who preferred to 'follow in their fathers footsteps'. These individuals would always be the most interesting to go on hunting trips with as they would teach me the ways of the jungle and not want to know the ways of my urban world.

*

The mapping I have talked about so far looks at maps whose design and understanding is linked to the Western representations of the landscape. The cultural map has even stronger links to these representations, for it is deeply entrenched in Western concepts of both what culture is and what a map should look like. Here the notion of what 'culture' should be, is comparable to Friedman's (1989) conception of the "Culture P", and Wagner's concern (1981) that our perspective of culture oppresses indigenous conceptualisations as a hegemonic set of interpretations of culture that are imposed on indigenous peoples. Added to this is the Western topographical mapping tradition, which is based on the premise that it does not (intentionally anyway) represent human agency. Human agency, if intentionally represented, is overlain onto this lifeless grid of topologically related geographical features, whereas the indigenous landscape is defined by human agency and not geography. Any representation of spatially related human agency relies heavily on the symbolisation or rarefaction of the information, again with

the principle layout being dependent on topographical relationships. This limits the sort of information that such a map can include, if the map is to be compiled using these conventional Western-mapping constructs. Admittedly, when I first started this project I was still thinking along these lines. Hence, I was focusing upon the sort of information that could easily be plotted, if I perceived it to be congruent with my interpretations of 'cultural' or 'traditional'. For instance, if a strangely shaped rock, or distinctive bend in a river, had a traditional name, then this location could be geo-referenced and plotted on a map as a 'cultural' feature. It was these stereotypical aspects of a community's social philosophy that I originally aimed to record and map. However, when I began to work with the Ese'eja elders I found that there was a vast amount of spatially related information which was not stereotypically cultural and, very little of which was easily symbolised, such that it would produce a coherent map. Much of their spatially related 'cultural' information is built on histories, movement, and the everyday or seasonal activities of the community. One classic example of this form of unmapable aspect was the constant shifting of buildings and *chacras*. The locations they chose to build new houses and the areas they cultivate are not randomly selected, but follow histories in the landscape. This is something uniquely 'cultural' with a definitive spatial element, but which does not fit into any contemporary mapping construct. I was only prepared to map toponyms, river names, old villages, mythologically referenced places, or other such culturally significant features, as were included in the *Instituto de Ayuda*'s survey, as discussed in the previous chapter.

Even the elements that I thought would be simple to map, such as place names, were becoming as illogical as fitting round pegs into square holes. They refer to a place only because of something that occurred there, and never simply because the place exists physically. Then the event that occurred there is related to the surrounding area and the history of that region. Ingold talks of this when he discusses how a native will

engage in wayfinding. In his chapter, entitled “To Journey along a way of life: Maps, wayfinding and navigation” (2000), he argues that a “native inhabitant may be unable to specify their location in space, in terms of any independent system of coordinates, but will still insist with good cause that they know where they are. This is because *places do not have locations but histories* ... For those who know a country, in short, the answers to such basic questions as ‘Where am I?’ and ‘Which way should I go?’ are found in narratives of past movement.” (Ingold 2000: 237 (*my emphasis*)). The way that a person, native to his surroundings, relates to wayfinding, as Ingold describes above, is directly comparable to the way the older Ese’ija relate to their territory. Whilst on walks through the surrounding forests, of the east-bank, I tended to ask ‘where are we?’. I did not ask for any wise anthropological reason, but simply because I had developed a healthy fear of snakes and would like to be able to know the quickest way out to find some anti-venom. Nonetheless, I did note the responses, as they were memorable because of their unhelpfulness to my fear management, and I would have to dig in my bag to retrieve my GPS in order to regain my bearings. The general response to the question was that we were near such and such a hunting spot or close to somebody’s old house. Just as with wayfinding they were perceiving the history in the landscape, which had more significance to them, for knowing ‘where we were’, than to me. After a time they saw what information I was asking for and the responses changed to ‘over that way is Rio la Torre and over that way is Rio Tambopata’. The original responses are a glimpse into their relationship with the living landscape. Gow (1995), who worked with the Piro, one of the Ese’ija’s close neighbours, describes this relationship as ‘knowledge’ and contends that “for the native Amazonian people, this knowledge is part of lived experience in the sense of ‘what is going on’” (ibid. 44). For the untrained eye, or myself, with relatively little experience of the rainforest, the majority of dense forest is perceived merely as wild forest. However, Gow argues, the

Amazonian Piro perceive it as more, they look at the land as kinship. Just as kinship is reproduced through production and reciprocal sharing of resources, the activities that modified the natural environment to enable this production are a part of kinship or “human landscape agency”. Therefore the Piro never see an area of forest as simply an area where native people’s productive activities took place, and hence not primary or virgin forest, as a trained ecologist would. Instead they see it as the “loci of kinship”(Gow 1995: 49).

The Norwegian philosopher, Jakob Meløe (1988a; 1988b), describes the significant difference in what a foreigner and a native will perceive in the same landscape. He describes how the truth about a landscape is what the native’s life has taught them about it. Their descriptions of it stem from and guide their activities in it. Thus a foreigner in this landscape may look at the same physical space but will see little of what they see, and know even less of their reading of it and the implications of that reading. He goes on to say “There is a sense in which we all see the same when looking in the same direction or at the same lump of matter. But, standing alone, this sense of ‘seeing the same’ is devoid of practical or moral implications, and so of little use, whether in the moral sciences or in our daily life” (Meloe 1988b: 400). Meloe is saying that to understand the landscape we must know the relationships those who belong to it have in their perception and activities in it. Their activities define it and so their perception of it defines them. Landscape is praxis or as Jimenez (2003) would call it ‘activated Landscape’.

The West through technology and the paper map have consistently tried to take people out of the landscape, or to put it another way they try to assert that maps are universal and universally understood. Geomatics is based on the premise that the landscape is still, silent or timeless, but the community everyday life is a continuous relationship with the landscape. Therefore, it seems absurd to map those aspects of

their culture which we can only extract as inert. This would consequently exclude the essence of their cultural landscape and hence exclude their social philosophy.

Modern technologies do afford some means of overcoming the constraints of contemporary mapping constructs and allow the development of new forms of landscape representation. Although if Gow (1995) is right and the “Native Amazonian people do not create representations of their land” (ibid. 45), then this would be a futile exercise as even these representations would be Western translations. The ever present external influence has now perhaps forced this to change, especially with the growing importance of what Gow calls ‘pieces of paper’, title deeds or land rights maps. Representations of the land can not be ignored and Geomatic technologies may provide a way to bridge the gap between the Native Amazonian mode of experience of the land and the Western perception of the landscape, thereby providing a judicially acceptable and tangible interpretations or translations of indigenous landscapes.

There is, however, a major drawback to such maps. For instance, if we start from the premise that traditional rights to land are legitimated by the presence of indigenous people, then cultural maps and maps of traditional resource use or such like, which support traditional land rights, actually go against their traditional rights to land. They effectively set a new precedent whereby they are undermining their self-determined or automatic right to the land, in place of rights determined by proxy (a map), rights determined by the juridical system of the nation State and not by themselves. So by the simple act of using a map to fight their lands rights battle, they are acknowledging the State’s power and legitimating its power over them and the land.

CHAPTER SEVEN

Summary and Conclusion

The title of this thesis and hence the underlying question has been to examine the application of geomatics technologies within an indigenous context. Along with theoretical and ethnographic material from the literature, this question has been examined with three ethnographic case studies of Peruvian Amazonian Indians. As should now be apparent this question was situated within the discourse of power and dispute in land rights. So to examine the technology in context I had to elucidate a number of issues including such topics as the political setting and indigenous perception of their geographical space. I now want to summarise these and other issues, and draw some conclusions from my research.

The introduction to each of the ethnographic sections included a brief historical background. These backgrounds were based on Eurocentric accounts to highlight the continuous and now exponential increase in external pressures that each of these indigenous communities have experienced. The effect of these external pressures can be interpreted as either positive or negative, but it should not be too divisive to suggest that the effects of the *caucheros*, and later debt bondage⁶⁷, have had a negative effect. Debt bondage, is today somewhat mediated by the State's authority, however it is the State which affords indigenous people their independence as well as determining their livelihood by limiting their resources. Therefore debt bondage and external pressures are still major dilemmas for contemporary indigenous communities as they will continue to deplete the available resources of indigenous peoples so that they are less likely to be able to subsist from their surrounding territories. The dilemma is most evident when it is considered in relation to their limited titled territories, since it could

⁶⁷ See note nine on page 218.

become one of many avenues for the destruction of indigenous communities through loss of land. Gray summarises the problem in relation to State law. He says:

“The recent 1993 Constitution, addressed the three provisions of the 1933 Constitution. These are that indigenous territories are inalienable (cannot be sold), unmortgageable (cannot be placed as security for a loan), and imprescribable (cannot be claimed by any other party). The 1993 Constitution removed the inalienable and unmortgageable provisions and stated that any lands which the State considered to be ‘abandoned’ could be claimed by third parties and bought from the State.

Indigenous territories can be sold, providing two thirds of the community are in agreement (although this was present in the 1979 Constitution). The most worrying aspect, however, is the use of community land as security for loans. This means that any debtor can take land in lieu of money from an indigenous defaulter. Already, in the summer of 1995, government agencies were travelling through the Madre de Dios offering loans to the communities. Although the Land Law does not directly destroy the Law of Native Communities, it weakens protection and makes despoliation of indigenous lands and resources much more straightforward.

The law of indigenous peoples in Peru has moved from positive initiatives such as the Constitution of 1933 and the 1974 Law of Native Communities to the 1993 Constitution and the current Land Law, which unilaterally impose deregulation of lands and neoliberal attitudes to national resources over and above national and international obligations, such as ILO Convention 169, which Peru signed on the same day as the 1993 Constitution”.

(Gray 1996c: 72)

As well as government and private agencies offering such loans, there are still those who acts as Patrons, such as the wealthy gold mining bosses. In the case of the *Boca del Iñambari* community they had borrowed a considerable amount of money from a local mining boss to buy mining equipment. Mining is a hit an miss affair and so if they fail to repay the loan it could result in the Patrons reclaiming their debt through land represcription, or moving their mining activities into the indigenous community titled lands, which would add to the already significant disrespect the miners, loggers and colonists have for indigenous land title. These reclamations of debt by contemporary Patrons would, apart from land represcription, fuel both the invasions of titled lands and the Indians rapacious use of their limited resources to repay debt. Land rights could effectively lead to accelerated land loss.

These pressures on resources and land were the principle force behind the indigenous communities recognition of the State’s legal concepts of territory, bounded lands and land ownership. As I mentioned earlier the indigenous communities traditionally defined any such comparable concepts through social relations. Their traditional territories were not marked out with lines on maps, fences or natural

boundaries: instead they were continuously reassessed and moved in concert with the social relations between people and communities. That is not to say that they did not have any connection with the land, rather that they had a fluid relationship with it, whereby it moves with them and gives them life. The following quotes exemplify this relationship, cited in Chirif *et al* (1991: 27) – *my translation*:

“Any change of importance of one of the two will have future repercussion for the other”

A quote from the President of Colombia in a speech to the indigenous congress in 1988, where he was expressing the sentiment that the territory and the people are inextricably linked.

“But it is only the people who need the land, the monkeys and deer don’t need anything”

Answer given by Juaneco of the Community Tsisontire, in reply to officials when they said that too much land was being requested for very few families within a Nature Reserve.

“Each part of this earth is sacred for my people. Each needle of the pine, each sandy riverbank, each mist in the dark forests, each prairie and each insect that hums is sacred in the memory and experience of my people. We know that white man doesn't understand our customs. One piece of ground is the same as the another because you are as a stranger that comes in the night to take of the earth what you need. The earth is not your sister but your enemy, and when you have conquered her you leave. Leaving the tombs of your parents and the legacy of your children, forgotten”.

One century ago a leader of the Duwanish people wrote to the president of the United States, to explain how the native perceives their territory.

“They live in our lands and yet they still make fun of us. They take everything at a whim and we have to watch as they waste destroy our land. We can not live supporting all this”.

Don Dario Randureza, of the Guarani people said while looking at the wires fences of a hacienda.

“These trees are dying because they can be attacked, the balance has gone from this land because it was destroyed by the Caucheros some years ago and the spirits do not return to redress the balance”.

Renzo of the Hauswald community talking to me about the diseased Cocoa trees.

The themes in these quotes are simple, indigenous people perceive the land as their ancestral inheritance which gives them life, and one which they must care for in order for it to care for their descendants. Their mutual existence and development is not based on an idea of ownership, even though they will defend a piece of land to the

death. They are not asserting ownership but instead protecting their child's future. Each aspect of their physical environment has an inherent 'sacred' nature, in their collective memories and experience of it. They see the forest, flora, fauna, water and earth as connected in an interrelationship. However, to say that they have a 'relationship' with it still sets them apart from it, when I would suggest that their everyday existence is a Heideggerian state of being that incorporates and combines themselves with land, the spirit world, socio-economics, social relations and alike, all as a unified perception.

Territory, boundaries and ownership are not compatible with such an indigenous state of being in the world. For this reason the contemporary indigenous communities can not maintain such a concordant jungle existence. Contemporary generations are adopting the rapacious economic processes of the State, and becoming consumers of manufactured goods. Operating within the cash economy means that they are driven to extract resources from their lands in order to furnish a need that is no longer satiable⁶⁸. The extraction rate outstrips the jungle's natural replenishment rate, and so species, animals and plants begin to be eradicated from surrounding areas. Whereas before the communities need was satiable simply because of their nomadic economies of scale and the limited availability of consumer goods. However, now they can not move as their titled territories are fixed, and the market economy is beginning to dominate their socio-economic activities. The State by unintentionally imposing these concepts (legal concepts of territory, bounded lands and land ownership) is effectively undermining their autonomy by identifying 'their territory' with a place rather than with social relations. So their socio-economic balance with their source of livelihood, the land, is undermined making them dependent on the State's cash economy. In other words,

⁶⁸ Working on the notion that consumer goods have been integrated into a contemporary indigenous lifestyle, such as boat engines, fuel, bottled drinks, beer, batteries, cooking implements, etc.

territoriality can be used ideologically, to promote certain interests that require social control by associating them with a place within which that control is recognised.

That is not to say that they are submissive recipients of such State bureaucracy. The indigenous land rights movement is a testament to an attempted reclamation of autonomy. The foundation for the movement is the indigenous federation supported by international organisations, principally by the United Nations. It was the United Nations that included indigenous rights in its human rights declaration and this led to the formation of the UN's Working Group on Indigenous Populations (WGIP). This forum for the voice of the indigenous people, along with the State ratification of the International Labour Organisation's Convention 169 gave the indigenous federations the requisite political ascendancy, whereby they could pressure government to instigate an equitable State policy regarding indigenous communities. Although as I mentioned in the "Finding my Feet" section this international involvement raised issues of authenticity through Western legal regimes that may do more harm than good, unless self-determination is acknowledged as the key proof of the status 'indigenous'. Self-determination is recognised by the United Nations as the prerequisite to the full accommodation of fundamental human rights and now the UN have recognised indigenous human rights as a distinct category. However, the recognition of self-determination within a State system does not resolve the entrenched and persistent discrimination against indigenous communities and their rights: "In view of the fact that most national governments, at this stage, are unwilling to publicly acknowledge their own responsibility for and complicity in the discrimination and subordination of indigenous peoples within their jurisdiction" (Simpson 1997:26). This is where indigenous federations, Non-Governmental Organisations (NGOs) and the "invisible white man" play a vital role in the pursuit of an equitable resolution to the legal plight of these peoples.

Indigenous federations are not an indigenous epistemological construct, they have developed out of the State's system of governance and sovereignty. This effectively determines their mode of operation, which has a number of consequences. For instance, the federations have to be based in urban centres, which restricts those Indians who can run it to young adults⁶⁹. Many of the corrupting factors incurred by such an urban setting (such as power, considerable international funding, perceived authority amongst their people and alike) have resulted in a general distancing in ontology between the federation officials and the communities. This could become progressively problematic if the federations develop as the only avenue through which communities can obtain rights, justice or outside assistance. I suggested that these indigenous federations, as a consequence of their management, this ontological drift and a desire for power, will fortify their virtual strangle hold on communities' interactions with national and international agents.

Along with the vicarious influence of the State, the federation officials are also guided by NGOs (national and international) and the 'invisible white man'. The NGOs are now taking on a new role in the State whereby they are the major political protagonists with international endorsements in deference to large international bodies, such as WGIP, State organisations or government departments. This then gives them significant influence within the indigenous federations. The positive effects of such an influence are in the impartial advice, and guidance through State and international legal processes. However, this influence is not without bias. For instance, I would argue that the NGO's agendas are not concurrent with indigenous federation ideology, in that any development programme run by an NGO is, in my experience, only superficially attempting to study or develop the indigenous community they are involved with. Instead, just as Robert Marcias said, they are simply augmenting their general influence,

⁶⁹ There seems to be no atypical federation official, for all those I met and those that have featured in the literature are described as young adults with some educational background in urban centres and respectively weaker ties holding them to their communities.

reputation and renown and building-up their portfolios, which will enable them to get further research funding to conduct other research initiatives. Few development projects result in the unit of study (such as the indigenous community) receiving significant remuneration such that they are not effectively exploited.

This is a strong critique but one I heard repeated in various forms by numerous indigenous elders. The main critique, which may or may not be interpreted as negative, is the bias this influence has on the projects these federations sanction, and projects that operate within their constituent communities. The NGO's agenda for development and aid originates in a culturally specific value system that is rarely assessed prior to the application of their projects. In the case of technological development all parties involved appropriate these new mediums, with minimal appraisal. Geomatics technologies are no exception, though their introduction has been less insurgent than other developments, because cartographic paper maps have been in use for decades. Paper maps have power and a form of inherent authority, for this reason indigenous federations have been using them in land rights claims for a number of decades. Geomatic technologies are used in the same capacity, as the computerised cartography, whereby technology is invoked as an additional authenticator.

So the context within which the technology is applied is one of conflict, through the evolution of indigenous land rights, and that of social and political ascendancy through Federations, NGOs and international legal recognition. The nature of land rights around the world is such that they are conceded to indigenous groups with respect to the State's acknowledgement of the means by which that group is legally associated with the land. In Australia for instance it is through sacred sites, in South America it is through resource use. Resources can, however, be mapped using Conventional cartographic techniques and in South America geomatics has been employed for this purpose. This is where numerous issues become apparent in respect to the technology

and the context within which it is applied. Firstly there is the influence and effect of its development and practitioners. The technology (i.e. geomatics) was developed in a specific cultural setting so it carries inherent epistemological baggage and an ontologically distinct perspective; in other words it provides a way of seeing and way of knowing. The technology I argue is not neutral in this respect and it shapes the projects and viewpoints of the practitioners, added to which its practitioners generally have a positivistic view of its use and the gathering and dissemination of all geographical knowledge. The ethical issues are rarely considered, whereby the removal, misuse and use of intellectual property in such formats are not considered to be part of the mandate of data gathering. Indigenous peoples are, unfortunately, rarely involved in the use and manipulation of their knowledge within these geomatics platforms. From the point of view of these practitioners of geomatics technologies, blinded by what Benjamin Orlove (1993) calls the “the cartographic gaze”, there is only one representation and similarly one perspective of geographical space, the consequences of which are that indigenous knowledge (that which they categorise as distinct phenomena, such as traditional resources or toponyms) which does not fit with the geomatic format of capture and representation is either adapted or ignored.

Secondly the geomatic technologies which are employed by the advocates, such as NGOs, Indigenous federations and the invisible white man, are subject to indigenous and national political discourse, such that they derive concepts of legitimacy, authenticity and authority for the advocates. The consequences of this become apparent as it is utilised within the communities because it has become a political tool and is no longer just a research device. Along with this the non-neutral ontology of the technology contributes to the top down design bias. Subsequent projects run the risk of being ineffective or inappropriate at the community level.

Thirdly, the application of the technology at the community level highlights issues of epistemological and ontological disparity. The indigenous peoples have an alternative conception of the geography that is being portrayed and captured by the geomatics technologies. As I mentioned earlier theirs is a perspective of a living and lived landscape, not one divided, neutralised and categorised. The direct application of geomatics technology, without adaptation or appropriation by the community, is often incompatible and unsustainable. However, the development of cultural mapping is an area where indigenous people are and can be the developers of the system. Cultural mapping can be used as the medium for the judicial definition of 'traditional occupancy' (ILO Convention 169), in that the multimedia potential of modern technologies may be able to overcome the rarefaction of knowledge captured in such mono-dimensional formats (such as the separate media of sound and vision). This opens two avenues for its development: firstly the evolution of geomatics databases for relevant indigenous knowledge and traditional resources, and secondly as a State compatible representation of an indigenously contrived notion of traditional occupancy.

Although there is a sense that knowledge is being lost and these technologies can capture it, they do need to be managed from an indigenous perspective as the following quote highlights.

"Indigenous peoples must first and foremost control their own information. It has also become clear over the years that the knowledge base of indigenous peoples is vital, dynamic and evolving. Merely 'collecting' and 'documenting' indigenous environmental knowledge is in fact counter-productive. These knowledge systems have been under serious attack for centuries, and the social systems that support them have been seriously undermined. However, indigenous peoples must not just support 'salvage' operations of what now is often referred to as 'a rapidly disappearing knowledge base'. It is not just a question of recovery and recording indigenous knowledge; it is one of respect and revitalisation. This information has to remain current and not be considered a relic of the past. Indigenous peoples must also insist that their knowledge not be reduced to an interesting research topic for Western science to explore.

(Kemp & Brooke 1995: 27)

With this last point in mind I would conclude that Geomatics technology is akin to the 'invisible white man' in that it can either be an indigenous leader and appropriated by the indigenous peoples to become an advocate for their agendas, or it can be a dominant

external influence, in that it is relied upon again as an advocate but that it shapes their, and its own, agendas.

NOTES

1. *Terra Nullius*: Terra Nullius is a Latin term meaning 'no man's land' or more precisely 'land over which no previous sovereignty has been exercised'. The doctrine of *terra nullius* is an extension of Natural Law and the Roman private law formula of *res nullius*, or property not owned by any person. According to this, property could be brought under ownership for the first time by means of occupation, involving both the expressed intention to assert ownership and the act of physical control. This doctrine of peaceful occupation or settlement, as distinct from the acquiescence or conquest of the prior occupants later manifest as *terra nullius* and was thought to have provided the basis in international law for the progressive appropriation of the New Worlds (Australia and the Americas). For example in the colonisation of Australia the doctrines of Terra Nullius, along with John Locke's doctrine that property in land originally came from tilling the soil (mixing labour with land), gave the British government, in the name of the Crown, the basis on which to assess Aboriginals as 'habitants with no fixed abode'. The Aboriginals then had no rights of prior ownership, regulated laws or customs which may necessitate their consent to forgo their land rights. The enlarged notion of *Terra Nullius* has only recently been ruled 'not to apply' in Australia by resolution 31/95 of the Australian General Synod, on 3 June 1992.
2. What is this changing landscape? It could be argued that the 'remote indigenous community living in harmony with their surroundings and practising a 'mysterious' and unique culture' no longer exists. Population pressure and the development of rapid communications networks, in the nation-States surrounding the indigenous peoples, have forced these isolated groups and communities to either appropriate and/or become impoverished by an induced integration into the cash economy. I am not suggesting that acculturation or globalisation are at work here, as it is obvious that an indigenous community's social philosophy is not erased by external influences, it simply appropriates them (cf. Pace 1993, Rapport & Overing 2000). Nonetheless such indigenous philosophies are becoming forcibly altered by the plethora of external influences, which leave the indigenous culture in an ephemeral state, and no longer esoteric.
3. The World Rainforest Movement is a global network of citizens' groups of North and South working to defend the world's rainforests against the forces that destroy them. The shared vision of the WRM's members is set out in the 'Penang Declaration', published in 1989. The Declaration identifies the main causes of tropical deforestation and highlights an alternative model of development in the rainforests, based on securing the lands and livelihoods of forest peoples. The World Rainforest Movement was established in 1986. Its secretariat, currently based in Montevideo, Uruguay, produces a monthly information bulletin and co-ordinates the member organisations in joint campaigns to support forest peoples' efforts to counteract commercial logging, dams, mining, plantations, agribusiness, settlement and other projects which destroy the forests and local communities.

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International Secretariat
Tambo 1858 CP 11200, Montevideo, Uruguay
Tel: 598 2 403 2989 fax: 598 2 408 0762
Email: mailto:wrms@wrms.org.uy
web page: <http://www.wrms.org.uy/>

4. For those who have not met me, I also have blonde hair. The two kids had blonde hair because their grandfather was a Nazi. In the history section I mentioned the Tyrolian community who settled in the Yanasha territories. It was because of this established German community that many Nazis fled to this area after the war. Apart from the stories I heard, about Nazi hunters flushing out high-ranking SS officers, I also met two men, in their late twenties, each called Hitler. These children's father told me how his grandfather had come over after the war. It was fascinating to see another side to the Nazis story after being raised in a country that has a national obsession with the Second World War
5. Ethnic Group and Linguistic Family: The Native Community of Boca Inambari was originally referred to as the Mashco people. This is a term employed by the Missionaries to refer to them; however, they feel it has pejorative undertones and prefer the name Arakmbut, and Harakmbut when referring to the whole Nation. The term Amarakaeri refers to their language group, this along with Toioeri, Arasaeri, Kisambaeri, Sapiteri, Wachipaeri and Pukirieri, is a sub group of Harakmbut. The level of intra-comprehension between these sub-groups is very high, with the normal lexical exception. The majority of the Boca Inambari community is all Arakmbut (Amarakaeri), with some cases of intermarriage with Wachipaeri, Toioeri, Matsiguenka and Mestizos. Their names reflect the influences of contact with the national society (due to a few decades of intermarriages with colonists and traders, and the influence of missionaries), so many people have a mix of traditional and mestizo names.
6. Gold and Diamonds are measured by a traditional system of Troy Ounces, Dwerts, Pennyweights and Grains. [1 Grain = 0.0648 grams, 24 Grains = 1 Dwert or 1 Pennyweight (1.5552 grams), and 20 Pennyweights = 1 Troy Ounce (31.1035 grams). One Ounce used in cooking is an Avoirdupois Ounce and weighs 28.3495 grams. So 50,000,000 Troy ounces is 1,555,175 Kilos of gold. For more gold facts ask the author who can bore for Scotland on the subject.
7. Ayahuasca is the local name for the hallucinogenic tonic made from a variety of plants. The principle vine, which contains the active alkaloid, is the Ayahuasca vine (*Banisteriopsis caapi*). A preparation of this alone would be ineffective, as the stomach would simply digest the active alkaloid, hence it is mixed with digestive inhibitors such as *Diplopterys cabrerana*, *Herrania*, *Ilex guayusa* and *Heliconia stricta*. The plants are boiled for a few hours then the mixture is strained allowed to cool and drunk (depending on potency 1 – 2½ fluid ounces per person). A well-prepared tonic simply induces hallucinations, whereas stronger and poorly prepared tonics may induce vomiting and free flowing defecation, again followed by very powerful hallucinations.
8. The process of titling indigenous lands was developed out of the Law of Native Communities (Ley No. 22175, 1978), drafted during the military government of Juan Velasco Alvarado (1968-1975). The current form of land titling was drawn up in 1978 and is a highly bureaucratic and expensive procedure, involving up to twenty-six distinct stages. Not surprisingly, titling has been slow in Peru. An initial flurry by SINAMOS (National System to Support Social Mobilisation) in the time of Velasco (1970s) saw most of the current land titles put in place. This slowed to a virtual stop when Francisco Belaunde Terry came to power (1980-1985). Alan García (1985-1990) was in favour of the titling process continuing but never

reinitiated any programmes, then Alberto Fujimori's government (1990-2000) desired to colonise and develop the Amazon resources so any native titling was significantly impeded through bureaucratic obstacles. Only with the present government, headed by Toledo, has it begun again. The land title they are given is called 'comunidad nativa' and provides three fundamental land protection principles, which are: (Note: in 1995 the Land Law weakened these protections): Inalienability, a prohibition on mortgaging lands, and a prohibition on superimposing titles onto these indigenous communities lands.

9. Debt Bondage or "the system known as 'enganche' or 'habilitación' was general practised in Perú, in which a debt towards a patron was repaid with work. In this way, a pair of trousers or a machete could be the equivalent of one year's labour. To this abuse could be added the kidnapping of children, the rape of women, the incarceration of indigenous people and harsh punishment of all attempts at protest or escape. And all of these atrocities were carried out with the approval of the local authorities" (Hiero 1998: 9).
10. If you were to look at the federation system as a communication route that an indigenous person would have to take, in order to talk to the international indigenous movement, it would be roughly as follows. Using the example of an Arakmbut individual in the Boca Inambari community. They would first have to seek the representation either the community's representative within the local federation or the communities appointed go-between for the federations. Then they would contact either the local federation, for the Boca Inambari community this is the *Federación Nativa del Río Amazonas* (FEDNAA, established in 1982), or they would address the Consejo Harakmbut (COHAR), a federation formed in 1993 to represent the voice of the Harakmbut peoples. As is fashionable in the United States, so is it in South America to use acronyms. FEDNAA would then either bring the issue up and the tri-annual congress or pass it on to the regional federation, the Asociación Interétnica de Desarrollo de la Selva Peruana (AIDASEP, founded in 1980). AIDASEP itself is part of a broader co-ordinating body of national Amazonian indigenous organisations the Coordinadora Indígena de la Cuenca Amazónica (COICA), which links organisations from Colombia, Venezuela, the Guianas, Brazil, Bolivia, Ecuador, and Peru. COICA operates internationally as a member of the International Alliance of the Indigenous Tribal Peoples of the Tropical Rainforest, which brings regional organisations together from the Americas, Africa, and Asia into an international network which has its secretariat in London (Gray 1996c: 8).
11. Masato is an alcoholic refreshment made from mashed up Yuca and sugar, left to ferment in large canoes covered with banana leaves (See picture 2 on page 89). There are many variations of the recipe but the alcohol content is generally low, although it improves over a number of days. The Amazonian Indians do not have the same gene that Europeans possess, which enables us to rapidly process alcohol, and hence they get very drunk very quickly on this brew. Personally, I loved it, as I never got a hangover after a night drinking Masato.

APPENDIX ONE

INTERNATIONAL LABOUR ORGANIZATION

Convention 169 - International Labour Standards C169 Indigenous and Tribal Peoples Convention, 1989 Convention concerning Indigenous and Tribal Peoples in Independent Countries

(Note: Date of coming into force: 5th September 1991.)

Date of adoption: 27th June 1989

See International Labour Organisation web site for further information on Convention 107 & 169 (www.ilo.org)

The General Conference of the International Labour Organisation,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its 76th Session on 7 June 1989, and

Noting the international standards contained in the Indigenous and Tribal Populations Convention and Recommendation, 1957, and

Recalling the terms of the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights, the International Covenant on Civil and Political Rights, and The many international instruments on the prevention of discrimination, and

Considering that the developments which have taken place in international law since 1957, as well as developments in the situation of indigenous and tribal peoples in all regions of the world, have made it appropriate to adopt new international standards on the subject with a view to removing the assimilationist orientation of the earlier standards, and

Recognising the aspirations of these peoples to exercise control over their own institutions, ways of life and economic development and to maintain and develop their identities, languages and religions, within the framework of the States in which they live, and

Noting that in many parts of the world these peoples are unable to enjoy their fundamental human rights to the same degree as the rest of the population of the States within which they live, and that their laws, values, customs and perspectives have often been eroded, and

Calling attention to the distinctive contributions of indigenous and tribal peoples to the cultural diversity and social and ecological harmony of humankind and to international co-operation and understanding, and

Noting that the following provisions have been framed with the co-operation of the United Nations, the Food and Agriculture Organisation of the United Nations, the United Nations Educational, Scientific and Cultural Organisation and the World Health Organisation, as well as of the Inter-American Indian Institute, at appropriate levels and in their respective fields, and that it is proposed to continue this co-operation in promoting and securing the application of these provisions, and

Having decided upon the adoption of certain proposals with regard to the partial revision of the Indigenous and Tribal Populations Convention, 1957 (No. 107), which is the fourth item on the agenda of the session, and

Having determined that these proposals shall take the form of an international Convention revising the Indigenous and Tribal Populations Convention, 1957;

Adopts the twenty-seventh day of June of the year one thousand nine hundred and eighty-nine, the following Convention, which may be cited as the Indigenous and Tribal Peoples Convention, 1989;

PART I - GENERAL POLICY

Article 1

1. This Convention applies to:
 - (a) tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations;
 - (b) peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonisation or the establishment of present State boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.
2. Self-identification as indigenous or tribal shall be regarded as a fundamental criterion for determining the groups to which the provisions of this Convention apply.
3. The use of the term peoples in this Convention shall not be construed as having any implications as regards the rights which may attach to the term under international law.

Article 2

1. Governments shall have the responsibility for developing, with the participation of the peoples concerned, co-ordinated and systematic action to protect the rights of these peoples and to guarantee respect for their integrity.
2. Such action shall include measures for:
 - (a) ensuring that members of these peoples benefit on an equal footing from the rights and opportunities which national laws and regulations grant to other members of the population;
 - (b) promoting the full realisation of the social, economic and cultural rights of these peoples with respect for their social and cultural identity, their customs and traditions and their institutions;
 - (c) assisting the members of the peoples concerned to eliminate socio-economic gaps that may exist between indigenous and other members of the national community, in a manner compatible with their aspirations and ways of life.

Article 3

1. Indigenous and tribal peoples shall enjoy the full measure of human rights and fundamental freedoms without hindrance or discrimination. The provisions of the Convention shall be applied without discrimination to male and female members of these peoples.
2. No form of force or coercion shall be used in violation of the human rights and fundamental freedoms of the peoples concerned, including the rights contained in this Convention.

Article 4

1. Special measures shall be adopted as appropriate for safeguarding the persons, institutions, property, labour, cultures and environment of the peoples concerned.
2. Such special measures shall not be contrary to the freely-expressed wishes of the peoples concerned.
3. Enjoyment of the general rights of citizenship, without discrimination, shall not be prejudiced in any way by such special measures.

Article 5

In applying the provisions of this Convention:

- (a) the social, cultural, religious and spiritual values and practices of these peoples shall be recognised and protected, and due account shall be taken of the nature of the problems which face them both as groups and as individuals;
- (b) the integrity of the values, practices and institutions of these peoples shall be respected;
- (c) policies aimed at mitigating the difficulties experienced by these peoples in facing new conditions of life and work shall be adopted, with the participation and co-operation of the peoples affected.

Article 6

1. In applying the provisions of this Convention, governments shall:
 - (a) consult the peoples concerned, through appropriate procedures and in particular through their representative institutions, whenever consideration is being given to legislative or administrative measures which may affect them directly;
 - (b) establish means by which these peoples can freely participate, to at least the same extent as other sectors of the population, at all levels of decision-making in elective institutions and administrative and other bodies responsible for policies and programmes which concern them;
 - (c) establish means for the full development of these peoples' own institutions and initiatives, and in appropriate cases provide the resources necessary for this purpose.

2. The consultations carried out in application of this Convention shall be undertaken, in good faith and in a form appropriate to the circumstances, with the objective of achieving agreement or consent to the proposed measures.

Article 7

1. The peoples concerned shall have the right to decide their own priorities for the process of development as it affects their lives, beliefs, institutions and spiritual well-being and the lands they occupy or otherwise use, and to exercise control, to the extent possible, over their own economic, social and cultural development. In addition, they shall participate in the formulation, implementation and evaluation of plans and programmes for national and regional development which may affect them directly.
2. The improvement of the conditions of life and work and levels of health and education of the peoples concerned, with their participation and co-operation, shall be a matter of priority in plans for the overall economic development of areas they inhabit. Special projects for development of the areas in question shall also be so designed as to promote such improvement.
3. Governments shall ensure that, whenever appropriate, studies are carried out, in co-operation with the peoples concerned, to assess the social, spiritual, cultural and environmental impact on them of planned development activities. The results of these studies shall be considered as fundamental criteria for the implementation of these activities.
4. Governments shall take measures, in co-operation with the peoples concerned, to protect and preserve the environment of the territories they inhabit.

Article 8

1. In applying national laws and regulations to the peoples concerned, due regard shall be had to their customs or customary laws.
2. These peoples shall have the right to retain their own customs and institutions, where these are not incompatible with fundamental rights defined by the national legal system and with internationally recognised human rights. Procedures shall be established, whenever necessary, to resolve conflicts which may arise in the application of this principle.
3. The application of paragraphs 1 and 2 of this Article shall not prevent members of these peoples from exercising the rights granted to all citizens and from assuming the corresponding duties.

Article 9

1. To the extent compatible with the national legal system and internationally recognised human rights, the methods customarily practised by the peoples concerned for dealing with offences committed by their members shall be respected.
2. The customs of these peoples in regard to penal matters shall be taken into consideration by the authorities and courts dealing with such cases.

Article 10

1. In imposing penalties laid down by general law on members of these peoples account shall be taken of their economic, social and cultural characteristics.
2. Preference shall be given to methods of punishment other than confinement in prison.

Article 11

The exaction from members of the peoples concerned of compulsory personal services in any form, whether paid or unpaid, shall be prohibited and punishable by law, except in cases prescribed by law for all citizens.

Article 12

The peoples concerned shall be safeguarded against the abuse of their rights and shall be able to take legal proceedings, either individually or through their representative bodies, for the effective protection of these rights. Measures shall be taken to ensure that members of these peoples can understand and be understood in legal proceedings, where necessary through the provision of interpretation or by other effective means.

PART II - LAND

Article 13

1. In applying the provisions of this Part of the Convention governments shall respect the special importance for the cultures and spiritual values of the peoples concerned of their relationship with the lands or territories, or both as applicable, which they occupy or otherwise use, and in particular the collective aspects of this relationship.
2. The use of the term lands in Articles 15 and 16 shall include the concept of territories, which covers the total environment of the areas which the peoples concerned occupy or otherwise use.

Article 14

1. The rights of ownership and possession of the peoples concerned over the lands which they traditionally occupy shall be recognised. In addition, measures shall be taken in appropriate cases to safeguard the right of the peoples concerned to use lands not exclusively occupied by them, but to which they have traditionally had access for their subsistence and traditional activities. Particular attention shall be paid to the situation of nomadic peoples and shifting cultivators in this respect.
2. Governments shall take steps as necessary to identify the lands which the peoples concerned traditionally occupy, and to guarantee effective protection of their rights of ownership and possession.
3. Adequate procedures shall be established within the national legal system to resolve land claims by the peoples concerned.

Article 15

1. The rights of the peoples concerned to the natural resources pertaining to their lands shall be specially safeguarded. These rights include the right of these peoples to participate in the use, management and conservation of these resources.
2. In cases in which the State retains the ownership of mineral or sub-surface resources or rights to other resources pertaining to lands, governments shall establish or maintain procedures through which they shall consult these peoples, with a view to ascertaining whether and to what degree their interests would be prejudiced, before undertaking or permitting any programmes for the exploration or exploitation of such resources pertaining to their lands. The peoples concerned shall wherever possible participate in the benefits of such activities, and shall receive fair compensation for any damages which they may sustain as a result of such activities.

Article 16

1. Subject to the following paragraphs of this Article, the peoples concerned shall not be removed from the lands which they occupy.
2. Where the relocation of these peoples is considered necessary as an exceptional measure, such relocation shall take place only with their free and informed consent. Where their consent cannot be obtained, such relocation shall take place only following appropriate procedures established by national laws and regulations, including public inquiries where appropriate, which provide the opportunity for effective representation of the peoples concerned.
3. Whenever possible, these peoples shall have the right to return to their traditional lands, as soon as the grounds for relocation cease to exist.
4. When such return is not possible, as determined by agreement or, in the absence of such agreement, through appropriate procedures, these peoples shall be provided in all possible cases with lands of quality and legal status at least equal to that of the lands previously occupied by them, suitable to provide for their present needs and future development. Where the peoples concerned express a preference for compensation in money or in kind, they shall be so compensated under appropriate guarantees.
5. Persons thus relocated shall be fully compensated for any resulting loss or injury.

Article 17

1. Procedures established by the peoples concerned for the transmission of land rights among members of these peoples shall be respected.
2. The peoples concerned shall be consulted whenever consideration is being given to their capacity to alienate their lands or otherwise transmit their rights outside their own community.
3. Persons not belonging to these peoples shall be prevented from taking advantage of their customs or of lack of understanding of the laws on the part of their members to secure the ownership, possession or use of land belonging to them.

Article 18

Adequate penalties shall be established by law for unauthorised intrusion upon, or use of, the lands of the peoples concerned, and governments shall take measures to prevent such offences.

Article 19

National agrarian programmes shall secure to the peoples concerned treatment equivalent to that accorded to other sectors of the population with regard to:

- (a) the provision of more land for these peoples when they have not the area necessary for providing the essentials of a normal existence, or for any possible increase in their numbers;
- (b) the provision of the means required to promote the development of the lands which these peoples already possess.

PART III - RECRUITMENT AND CONDITIONS OF EMPLOYMENT

Article 20

1. Governments shall, within the framework of national laws and regulations, and in co-operation with the peoples concerned, adopt special measures to ensure the effective protection with regard to recruitment and conditions of employment of workers belonging to these peoples, to the extent that they are not effectively protected by laws applicable to workers in general.
2. Governments shall do everything possible to prevent any discrimination between workers belonging to the peoples concerned and
 - (a) other workers, in particular as regards:
 - (a) admission to employment, including skilled employment, as well as measures for promotion and advancement;
 - (b) equal remuneration for work of equal value;
 - (c) medical and social assistance, occupational safety and health, all social security benefits and any other occupationally related benefits, and housing;
 - (d) the right of association and freedom for all lawful trade union activities, and the right to conclude collective agreements with employers or employers' organisations.
3. The measures taken shall include measures to ensure:
 - (a) that workers belonging to the peoples concerned, including seasonal, casual and migrant workers in agricultural and other employment, as well as those employed by labour contractors, enjoy the protection afforded by national law and practice to other such workers in the same sectors, and that they are fully informed of their rights under labour legislation and of the means of redress available to them;
 - (b) that workers belonging to these peoples are not subjected to working conditions hazardous to their health, in particular through exposure to pesticides or other toxic substances;
 - (c) that workers belonging to these peoples are not subjected to coercive recruitment systems, including bonded labour and other forms of debt servitude;

- (d) that workers belonging to these peoples enjoy equal opportunities and equal treatment in employment for men and women, and protection from sexual harassment.
4. Particular attention shall be paid to the establishment of adequate labour inspection services in areas where workers belonging to the peoples concerned undertake wage employment, in order to ensure compliance with the provisions of this Part of this Convention.

PART IV - VOCATIONAL TRAINING, HANDICRAFTS AND RURAL INDUSTRIES

Article 21

Members of the peoples concerned shall enjoy opportunities at least equal to those of other citizens in respect of vocational training measures.

Article 22

1. Measures shall be taken to promote the voluntary participation of members of the peoples concerned in vocational training programmes of general application.
2. Whenever existing programmes of vocational training of general application do not meet the special needs of the peoples concerned, governments shall, with the participation of these peoples, ensure the provision of special training programmes and facilities.
3. Any special training programmes shall be based on the economic environment, social and cultural conditions and practical needs of the peoples concerned. Any studies made in this connection shall be carried out in co-operation with these peoples, who shall be consulted on the organisation and operation of such programmes. Where feasible, these peoples shall progressively assume responsibility for the organisation and operation of such special training programmes, if they so decide.

Article 23

1. Handicrafts, rural and community-based industries, and subsistence economy and traditional activities of the peoples concerned, such as hunting, fishing, trapping and gathering, shall be recognised as important factors in the maintenance of their cultures and in their economic self-reliance and development. Governments shall, with the participation of these people and whenever appropriate, ensure that these activities are strengthened and promoted.
2. Upon the request of the peoples concerned, appropriate technical and financial assistance shall be provided wherever possible, taking into account the traditional technologies and cultural characteristics of these peoples, as well as the importance of sustainable and equitable development.

PART V - SOCIAL SECURITY AND HEALTH

Article 24

Social security schemes shall be extended progressively to cover the peoples concerned, and applied without discrimination against them.

Article 25

1. Governments shall ensure that adequate health services are made available to the peoples concerned, or shall provide them with resources to allow them to design and deliver such services under their own responsibility and control, so that they may enjoy the highest attainable standard of physical and mental health.
2. Health services shall, to the extent possible, be community-based. These services shall be planned and administered in co-operation with the peoples concerned and take into account their economic, geographic, social and cultural conditions as well as their traditional preventive care, healing practices and medicines.
3. The health care system shall give preference to the training and employment of local community health workers, and focus on primary health care while maintaining strong links with other levels of health care services.
4. The provision of such health services shall be co-ordinated with other social, economic and cultural measures in the country.

PART VI - EDUCATION AND MEANS OF COMMUNICATION

Article 26

Measures shall be taken to ensure that members of the peoples concerned have the opportunity to acquire education at all levels on at least an equal footing with the rest of the national community.

Article 27

1. Education programmes and services for the peoples concerned shall be developed and implemented in co-operation with them to address their special needs, and shall incorporate their histories, their knowledge and technologies, their value systems and their further social, economic and cultural aspirations.
2. The competent authority shall ensure the training of members of these peoples and their involvement in the formulation and implementation of education programmes, with a view to the progressive transfer of responsibility for the conduct of these programmes to these peoples as appropriate.
3. In addition, governments shall recognise the right of these peoples to establish their own educational institutions and facilities, provided that such institutions meet minimum standards established by the competent authority in consultation with these peoples. Appropriate resources shall be provided for this purpose.

Article 28

1. Children belonging to the peoples concerned shall, wherever practicable, be taught to read and write in their own indigenous language or in the language most commonly used by the group to which they belong. When this is not practicable, the competent authorities shall undertake consultations with these peoples with a view to the adoption of measures to achieve this objective.
2. Adequate measures shall be taken to ensure that these peoples have the opportunity to attain fluency in the national language or in one of the official languages of the country.
3. Measures shall be taken to preserve and promote the development and practice of the indigenous languages of the peoples concerned.

Article 29

The imparting of general knowledge and skills that will help children belonging to the peoples concerned to participate fully and on an equal footing in their own community and in the national community shall be an aim of education for these peoples.

Article 30

1. Governments shall adopt measures appropriate to the traditions and cultures of the peoples concerned, to make known to them their rights and duties, especially in regard to labour, economic opportunities, education and health matters, social welfare and their rights deriving from this Convention.
2. If necessary, this shall be done by means of written translations and through the use of mass communications in the languages of these peoples.

Article 31

Educational measures shall be taken among all sections of the national community, and particularly among those that are in most direct contact with the peoples concerned, with the object of eliminating prejudices that they may harbour in respect of these peoples. To this end, efforts shall be made to ensure that history textbooks and other educational materials provide a fair, accurate and informative portrayal of the societies and cultures of these peoples.

PART VII - CONTACTS AND CO-OPERATION ACROSS BORDERS

Article 32

Governments shall take appropriate measures, including by means of international agreements, to facilitate contacts and co-operation between indigenous and tribal peoples across borders, including activities in the economic, social, cultural, spiritual and environmental fields.

PART VIII - ADMINISTRATION

Article 33

1. The governmental authority responsible for the matters covered in this Convention shall ensure that agencies or other appropriate mechanisms exist to administer the programmes affecting the peoples concerned, and shall ensure that they have the means necessary for the proper fulfilment of the functions assigned to them.
2. These programmes shall include:
 - (a) the planning, co-ordination, execution and evaluation, in co-operation with the peoples concerned, of the measures provided for in this Convention;
 - (b) the proposing of legislative and other measures to the competent authorities and supervision of the application of the measures taken, in co-operation with the peoples concerned.

PART IX - GENERAL PROVISIONS

Article 34

The nature and scope of the measures to be taken to give effect to this Convention shall be determined in a flexible manner, having regard to the conditions characteristic of each country.

Article 35

The application of the provisions of this Convention shall not adversely affect rights and benefits of the peoples concerned pursuant to other Conventions and Recommendations, international instruments, treaties, or national laws, awards, custom or agreements.

PART X - PROVISIONS

Article 36

This Convention revises the Indigenous and Tribal Populations Convention, 1957.

Article 37

The formal ratifications of this Convention shall be communicated to the Director-General of the International Labour Office for registration.

Article 38

1. This Convention shall be binding only upon those Members of the International Labour Organisation whose ratifications have been registered with the Director-General.

2. It shall come into force twelve months after the date on which the ratifications of two Members have been registered with the Director-General.
3. Thereafter, this Convention shall come into force for any Member twelve months after the date on which its ratification has been registered.

Article 39

1. A Member which has ratified this Convention may denounce it after the expiration of ten years from the date on which the Convention first comes into force, by an act communicated to the Director-General of the International Labour Office for registration. Such denunciation shall not take effect until one year after the date on which it is registered.
2. Each Member which has ratified this Convention and which does not, within the year following the expiration of the period of ten years mentioned in the preceding paragraph, exercise the right of denunciation provided for in this Article, will be bound for another period of ten years and, thereafter, may denounce this Convention at the expiration of each period of ten years under the terms provided for in this Article.

Article 40

1. The Director-General of the International Labour Office shall notify all Members of the International Labour Organisation of the registration of all ratifications and denunciations communicated to him by the Members of the Organisation.
2. When notifying the Members of the Organisation of the registration of the second ratification communicated to him, the Director-General shall draw the attention of the Members of the Organisation to the date upon which the Convention will come into force.

Article 41

The Director-General of the International Labour Office shall communicate to the Secretary-General of the United Nations for registration in accordance with Article 102 of the Charter of the United Nations full particulars of all ratifications and acts of denunciation registered by him in accordance with the provisions of the preceding Articles.

Article 42

At such times as it may consider necessary the Governing Body of the International Labour Office shall present to the General Conference a report on the working of this Convention and shall examine the desirability of placing on the agenda of the Conference the question of its revision in whole or in part.

Article 43

1. Should the Conference adopt a new Convention revising this Convention in whole or in part, then, unless the new Convention otherwise provides-
2. the ratification by a Member of the new revising Convention shall ipso jure involve the immediate denunciation of this Convention, notwithstanding the provisions of Article 39 above, if and when the new revising Convention shall have come into force;
 - (a) as from the date when the new revising Convention comes into force this Convention shall cease to be open to ratification by the Members.
3. This Convention shall in any case remain in force in its actual form and content for those Members which have ratified it but have not ratified the revising Convention.

Article 44

The English and French versions of the text of this Convention are equally authoritative.

- Cross-references: Conventions: C107: Indigenous and Tribal Populations Convention, 1957.
- Recommendations: R104: Indigenous and Tribal Populations Recommendation, 1957.
- Revised: C107: This Convention revises the Indigenous and Tribal Populations Convention, 1957.

APPENDIX TWO

ILO Conference, Philadelphia 1944 Declaration concerning the aims and purposes of the International Labour Organisation

See International Labour Organisation's web site for further details (www.ilo.org)

The General Conference of the International Labour Organization meeting in its Twenty-sixth Session in Philadelphia, hereby adopts this tenth day of May in the year nineteen hundred and forty-four the present Declaration of the aims and purposes of the International Labour Organization and of the principles which should inspire the policy of its Members.

I

The Conference reaffirms the fundamental principles on which the Organization is based and, in particular, that-

- (a) labour is not a commodity;
- (b) freedom of expression and of association are essential to sustained progress;
- (c) poverty anywhere constitutes a danger to prosperity everywhere;
- (d) the war against want requires to be carried on with unrelenting vigor within each nation, and by continuous and concerted international effort in which the representatives of workers and employers, enjoying equal status with those of governments, join with them in free discussion and democratic decision with a view to the promotion of the common welfare.

II

Believing that experience has fully demonstrated the truth of the statement in the Constitution of the International Labour Organization that lasting peace can be established only if it is based on social justice, the Conference affirms that-

- (a) all human beings, irrespective of race, creed or sex, have the right to pursue both their material well-being and their spiritual development in conditions of freedom and dignity, of economic security and equal opportunity;
- (b) the attainment of the conditions in which this shall be possible must constitute the central aim of national and international policy;
- (c) all national and international policies and measures, in particular those of an economic and financial character, should be judged in this light and accepted only in so far as they may be held to promote and not to hinder the achievement of this fundamental objective;
- (d) it is a responsibility of the International Labour Organization to examine and consider all international economic and financial policies and measures in the light of this fundamental objective;
- (e) in discharging the tasks entrusted to it the International Labour Organization, having considered all relevant economic and financial factors, may include in its decisions and recommendations any provisions which it considers appropriate.

III

The Conference recognizes the solemn obligation of the International Labour Organization to further among the nations of the world programmes which will achieve:

- (a) full employment and the raising of standards of living;
- (b) the employment of workers in the occupations in which they can have the satisfaction of giving the fullest measure of their skill and attainments and make their greatest contribution to the common well-being;
- (c) the provision, as a means to the attainment of this end and under adequate guarantees for all concerned, of facilities for training and the transfer of labour, including migration for employment and settlement;
- (d) policies in regard to wages and earnings, hours and other conditions of work calculated to ensure a just share of the fruits of progress to all, and a minimum living wage to all employed and in need of such protection;
- (e) the effective recognition of the right of collective bargaining, the cooperation of management and labour in the continuous improvement of productive efficiency, and the collaboration of workers and employers in the preparation and application of social and economic measures;
- (f) the extension of social security measures to provide a basic income to all in need of such protection and comprehensive medical care;
- (g) adequate protection for the life and health of workers in all occupations;
- (h) provision for child welfare and maternity protection;
- (i) the provision of adequate nutrition, housing and facilities for recreation and culture;
- (j) the assurance of equality of educational and vocational opportunity.

IV

Confident that the fuller and broader utilization of the world's productive resources necessary for the achievement of the objectives set forth in this Declaration can be secured by effective international and national action, including measures to expand production and consumption, to avoid severe economic fluctuations to promote the economic and social advancement of the less developed regions of the world, to assure greater stability in world prices of primary products, and to promote a high and steady volume of international trade, the Conference pledges the full cooperation of the International Labour Organization with such international bodies as may be entrusted with a share of the responsibility for this great task and for the promotion of the health, education and well-being of all peoples.

V

The conference affirms that the principles set forth in this Declaration are fully applicable to all peoples everywhere and that, while the manner of their application must be determined with due regard to the stage of social and economic development reached by each people, their progressive application to peoples who are still dependent, as well as to those who have already achieved self-government, is a matter of concern to the whole civilized world.

APPENDIX THREE

The Main International Labour Organisations Conventions

Fundamental Conventions

1. Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87).
2. Right to Organise and Collective Bargaining Convention, 1949 (No. 98).
3. Forced Labour Convention, 1930 (No. 29).
4. Abolition of Forced Labour Convention, 1957 (No. 105).
5. Discrimination (Employment and Occupation) Convention, 1958 (No. 111).
6. Equal Remuneration Convention, 1951 (No. 100).
7. Minimum Age Convention, 1973 (No. 138).
8. Worst Forms of Child Labour Convention, 1999 (No. 182).

Priority Conventions

1. The Tripartite Consultation (International Labour Standards) Convention, 1976 (No. 144).
2. The Labour Inspection Convention, 1947 (No. 81).
3. The Labour Inspection (Agriculture) Convention, 1969 (No. 129).
4. The Employment Policy Convention, 1964 (No. 122).

12 Categories of Conventions and Recommendations

1. Basic human rights.
2. Employment.
3. Social policy.
4. Labour administration.
5. Industrial relations.
6. Conditions of work.
7. Social security.
8. Employment of women.
9. Employment of children and young persons.
10. Migrant workers.
11. Indigenous and tribal peoples, indigenous workers in non-metropolitan territories.
12. Other special categories:
(i.e. seafarers, older workers, fishermen, dockworkers, plantation workers, tenants and sharecroppers, nursing personnel, hotel and catering personnel).

APPENDIX FOUR

List of the countries that have ratified the International Labour Organisations Conventions 107 and 169 regarding Indigenous and Tribal peoples.

See ILO web site www.ilo.org for updates

Convention Number 107 was ratified by 27 countries, Convention Number 169 was ratified by 14 countries, Only 8 out of the original 27 countries updated to the new Convention.

Country	Ratification date of C107	Ratification date of C169	Status
Angola	4 th June 1976	-	Active
Argentina	18 th January 1960	3 rd July 2000	Active
Bangladesh	22 nd June 1972	-	Active
Belgium	19 th November 1958	-	Active
Bolivia	12 th January 1965	11 th December 1991	Active
Brazil	18 th June 1965	-	Active
Colombia	4 th March 1969	7 th August 1991	Active
Costa Rica	4 th May 1959	2 nd April 1993	Active
Cuba	2 nd June 1958	-	Active
Denmark	-	22 nd February 1996	Active
Dominican Republic	23 rd June 1958	-	Active
Ecuador	3 rd August 1969	15 th May 1998	Active
Egypt	14 th January 1959	-	Active
El Salvador	18 th November 1958	-	Active
Fiji	-	3 rd March 1998	Active
Ghana	15 th December 1958	-	Active
Guatemala	-	5 th June 1996	Active
Guinea-Bissau	21 st February 1977	-	Active
Honduras	-	28 th March 1995	Active
Haiti	4 th March 1958	-	Active
India	29 th September 1958	-	Active
Iraq	16 th July 1986	-	Active
Malawi	22 nd March 1965	-	Active
Mexico	1 st June 1959	5 th September 1990	Active
Netherlands	-	2 nd February 1998	Active
Norway	-	19 th June 1990	Active
Pakistan	15 th February 1960	-	Active
Panama	4 th June 1971	-	Active
Paraguay	20 th February 1969	10 th August 1993	Active
Peru	6 th December 1960	2 nd February 1994	Active
Portugal	22 nd November 1960	-	Active
Syrian Arab Republic	14 th January 1959	-	Active
Tunisia	17 th December 1962	-	Active

APPENDIX FIVE

Global Positioning System (GPS)

The GPS

The Global Positioning System (GPS) was developed by the United States department of defence, known to them as Navigation System with Timing and Ranging (NAVSTAR). To explain how the system works it is easier to break it down into three parts. Firstly, the satellites, then the ground control and monitoring stations then finally the receivers.



Satellites

In 1978, the first NAVSTAR satellite was launched, but it was not until 1994 that a full constellation (enough satellites to give full global coverage) was achieved. Each satellite has a precise orbital path (some 20,200km above the surface) and circles the earth twice every 24 hours. The arrangement of the orbits means that at any one point on the earth at least eight satellites will be in view (a receiver will be able to receive a direct line of sight signal) at any one time. Each satellite only lasts around ten years until it has to be replaced.

In 1980, the system was made available to the general population and the satellites began to transmit two signals. One signal is designed for military use and the other for civilian use. The civilian signal was degraded so that it would transmit a signal that gave a random error between 0 and 100 metres. However, in May 2000 the error was removed making a standard civilian receiver accurate to within 15 metres. Each satellite transmits two coded signals. One is the almanac data, which gives the satellite's orbit, altitude, location and speed. The second is a pseudo-random code from which the receiver is able to calculate its range. These coded signals are calibrated using atomic clocks, which means that the position can be calculated to sub centimetre accuracy.

Control and Monitor Stations

To determine unknown positions on the ground, the positions of GPS satellites in space must be known at all times. A small network of ground receiver stations is located at carefully surveyed positions. They keep track of the shapes of satellite orbits, which sometimes are disturbed by the gravitational fields of the Earth and the Moon. Data collected by these Stations is processed at the Master Control Station at Colorado Springs. From this station, any corrections to the satellite orbits are uploaded to them, along with a continued update to the almanac data that the satellites transmit.

GPS Receivers

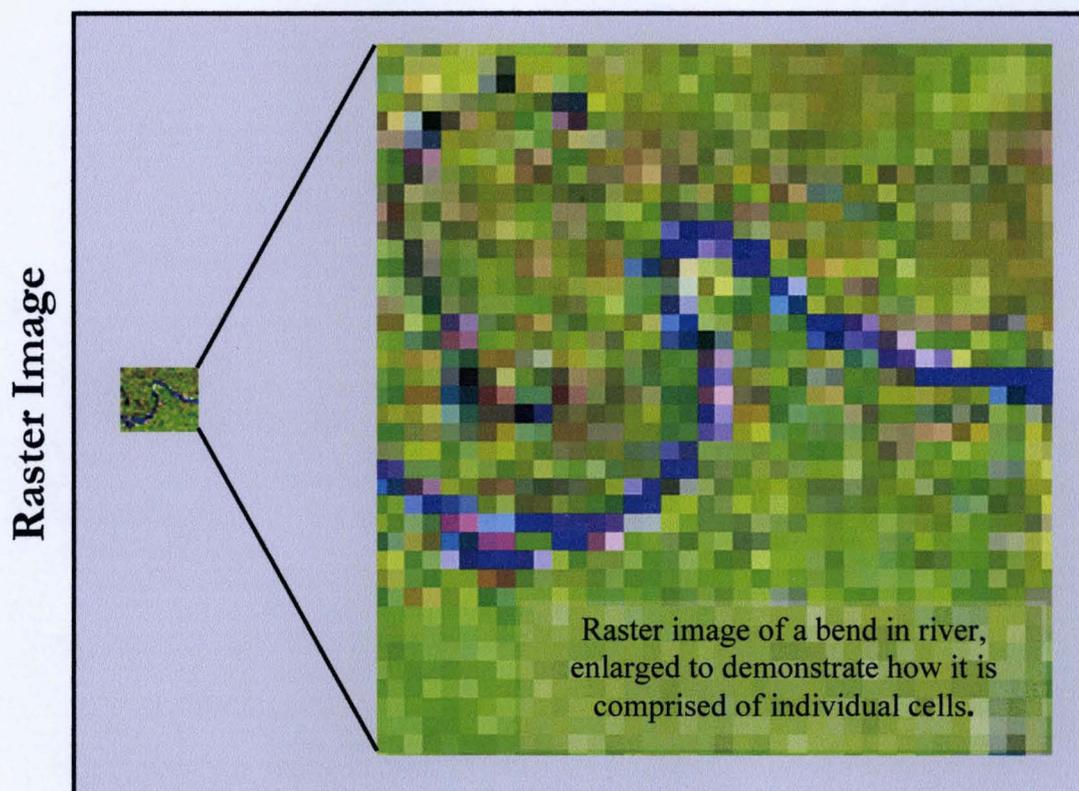
The receiver processes the two codes from the satellite and can then calculate the range of the satellite. The range is calculated by determining the time delay of the signal. The pseudo code transmitted by the satellite is also transmitted by the receiver, which tries to match-up the two. The receiver then compares the two codes and determines how much it has to delay or shift the code so that it matches that transmitted by the satellite. This time delay is multiplied by the speed of light (signals velocity) to give the distance.

The signals from the satellites are fairly weak and so can only be detected, fixed and processed if the receiver has a direct line of site to the respective satellites (This weak signal also means that they can be blocked by walls, hills, dense tree canopies and alike). Once the receiver has at least three signals it can triangulate the position in two dimensions, but with four or more, it can give three-dimensional positions

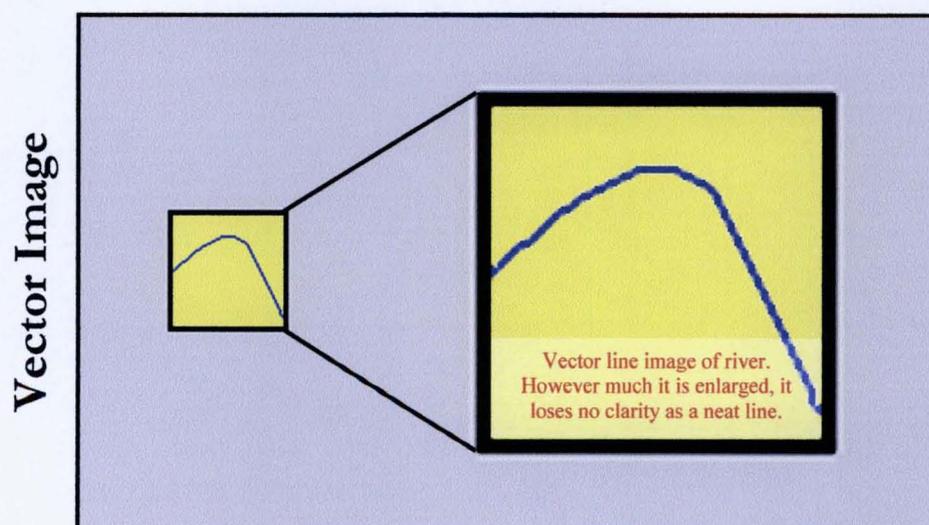
APPENDIX SIX

Raster Vector Formats

The two formats of data collection are Raster and Vector. Remote sensing devices collect data in raster format. The diagram below shows a raster image with lots of individual cells of differing colours (each cell has value from 0-255). The problem with



this format is fairly obvious as the diagram illustrates: 1) the object of interest is easily obscured by the noise from the other cells. 2) The amount of information stored per image is very high, as all cells are stored as separate values as opposed to vector, which can store large areas as one value. 3) The resolution of the raster image has to be very high to get clear images and hence requires large data storage (also remote sensing images of such resolutions are very expensive or even classified).



APPENDIX SEVEN

Amazon Gold Mining

Gold mining in this region takes four forms as outlined below, the Indians I worked with employed the first two methods in their gold operations.

Artisanal Prospecting

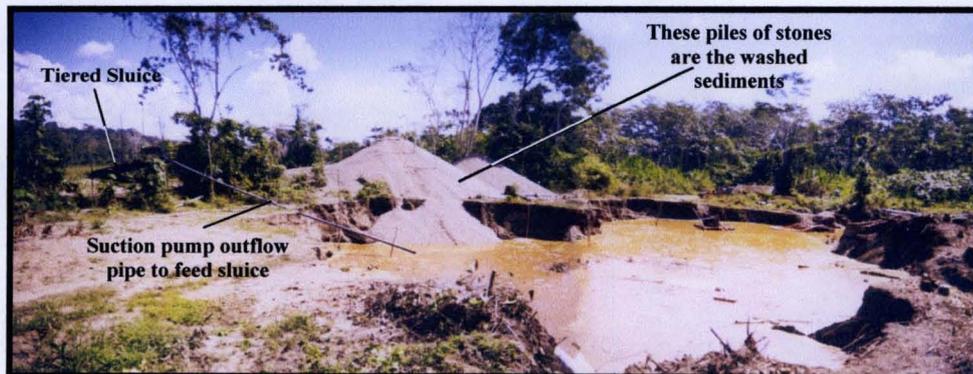
The smallest scale mining is referred to as *artisanal* as it does not employ any mechanical machinery. They have a system for washing the sediments, which are dug by hand from the riverbanks. The sediments are usually washed in a sluice, which is lined with a carpet to trap the very fine gold particle. The water to wash the gold is brought down through an extensive series of channels and pipes from higher up river. Over the last few years this system of channels has been replaced by mechanical pumps. These pumps do not consume a lot of fuel and so the extra cost can be absorbed by the resulting increased capacity to wash more sediments.



Riverbed and Dry Riverbed Dredging

The principle is the same with sediments washed over sluices lined with carpets. The difference is one of scale with the sluices being much larger and often tiered. The sediments are extracted using suction pumps.

To suck-up the riverbed sediments a floating barge and divers are used. The dry riverbeds are exploited by locating an old dried-up oxbow lake, clearing the forest and digging down to the alluvial sediments. These holes then fill with ground water and again the sediments are sucked-up, as shown in the photo below.



Jungle clearing and excavation hole for dry riverbed gold dredging.

Water cannon Mining

The last method is only used on a vast scale where the jungle is blasted away with high-pressure water cannons to create a river of sediments, which are channelled, sucked-up and processed.

APPENDIX EIGHT

IDA's Cultural Mapping Project

Sample of Data Sheets

Registro de Puntos Tomados y de Otros Datos Geográficos sobre cada Elemento
(anotar en cuaderno aparte de los datos geográficos)

Mapeo Histórico, Geográfico y Cultural del Territorio del Pueblo Amuesha (Yanesha)

Nacio, Comunidad Nativa Loma Linda
Dr Michael Jones, Instituto de Ayuda

Código del elemento	Nro. Archivo	Nombre Archivo	UTM X	UTM Y	Descripción del Elemento y su Ubicación

Library of features to be mapped and codes assigned to each feature type

ELEMENTO	CODIGO	DESCRIPCION
Cerro	ce01	Indica la cumbre de un cerro conocido.
Peña	pe01	Indica una peña o roca grande.
Riachuelo	ri01	Indica una riachuelo menor de 3 metros de ancho.
Quebrada	qu01	Indica una quebrada de entre 3 y 8 metros de ancho.
Rio	ri01	Indica un rio mayor de 8 metros de ancho.
Pozo o sitio del rio	po01	Indica un pozo en un rio o quebrada.
Caida de Agua	cd01	Indica una caída de agua con importancia cultural.
Laguna	la01	Indica una laguna o cuerpo de agua.
Lugar histórico	lh01	Indica el lugar de un pueblo, asentamiento, chacra puerahua, o de un acontecimiento importante antiguamente.
Santuario religioso	sn01	Indica el lugar de un Yompor, Yachor, Yemonasheñ, Yoch u otra personaje poderoso que recibia la adoración o celebración del pueblo.
Recurso importante	re01	Indica un recurso como colpa, mina de sal, fuente de agua, nidal de aves, etc. que es o era importante para el pueblo.
Camino antiguo	ca01	Indica un camino que usaban los antiguos antes que ingresan los colonos.

Formato de Anotaciones de Información Histórica, Geográfica o Cultural sobre cada Elemento (anotar en cuaderno aparte de los datos geográficos)

- **Fecha de recolección de información:**
- **Código del Elemento:**
- **Nombre del Elemento en Yeñño:**
- **Traducción al Español del nombre en Yeñño:**
- **Nombre del elemento en Español:**
- **Tiene historia o significado cultural: Si No**
- **Explicación:** (explica brevemente la historia o indica si no ha podido recopilarlo)
- **No. de cassette de grabación:**
- **Nombre, edad, sexo y ubicación del informante:**
- **Tiene una canción: Si No**
- **Explicación:** (describe la canción o indica si no ha podido recopilarla)
- **No. de cassette de grabación:**
- **Nombre, edad, sexo y ubicación del informante:**

APPENDIX NINE

IDA's Territorial Mapping Project

Questionnaire filled out in each community

FICHA DE REGISTROS DE COMUNIDADES NATIVAS

1 Código de la Comunidad

I. NOMBRE

2 Nombre de la Comunidad:

3 Federación:

4 Primer grupo étnico que predomina:

5 Segundo grupo étnico que predomina:

6 Tercer grupo étnico que predomina:

II. POBLACION

7 Población total en la comunidad:

8 Número de familias en la comunidad

9 Número de hombres mayor o igual a 15 años:

10 Número de hombres menor o igual a 14 años:

11 Número de mujeres mayor o igual a 15 años:

12 Número de mujeres menor o igual a 14 años:

13 Total de escolares en la comunidad:

III. UBICACION

14 Río, Quebrada o Lago cercano:

15 Pueblo cercano:

16 Distrito:

17 Provincia:

18 Departamento:

19 Coordenadas geográfica de la escuela:

20 Coordenada UTM de la escuela:

IV. REGIMEN LEGAL ADMINISTRATIVO

21 Esta inscrita como Comunidad Nativa:

Sí ()

No ()

- 22 En que año fue inscrita la Comunidad:.....
- 23 Número de resolución con que fue reconocida como Comunidad Nativa:
.....
- 24 Con que grupo Etno-Linguistico está reconocida la Comunidad Niva?
.....
- 25 En que Departamento o Región se encuentra el Registro Público de la comunidad:
.....
- 26 Inscripción Registro Público, en que tomo:
- 27 Inscripción Registro Público en que folio:
- 28 Inscripción Registro Público en que asiento:
- 29 Inscripción Registro Público en que partida:
- 30 Esta titulada la Comunidad?
Sí () No ()
- 31 Número del Título de propiedad comunal:
- 32 Número de resolución con que fue titulada la Comunidad:
.....
- 33 En que año fue inscrito el Título de la Comunidad en el Registro Público:
.....
- 34 Inscripción del Título en el Registro Público en que tomo:
- 35 Inscripción del Título en el Registro Público en que folio:
- 36 Inscripción del Título en el Registro Público en que asiento:
- 37 Inscripción del Título en el Registro Público en que partida:
- 38 Cual es el área total Titulada?:
- 39 Cual es el área que se dio en uso?:
- 40 Cual es el área que se dio para uso fiscal?:
- 41 Area que arroja el programa Arc/Info
- 42 Cual es el perímetro Titulado?:
- 43 Cual es el número de ficha?:
- 44 La comunidad a solicitado ampliación?
Sí () No ()
- 45 Número de Resolución de la ampliación:
.....
- 46 En que año fue inscrito la ampliación en el Registro Público?:
- 47 Cual es el área total de la ampliación?:
- 48 Cual es el área que se dio en uso?:
- 49 Cual es el área que se dio para uso fiscal?:
- 50 La ampliación solicitada ya tiene titulo?
Sí () No ()
- 51 Número de resolución con que fue titulada la Ampliación:
.....
- 52 En que año fue inscrito el Título de la Comunidad en el Registro Público:
.....

- 1 Maloca material tradicional ()
 - 2 Casa familiar-material tradicional ()
 - 3 Casa familiar-madera zinc ()
 - 4 Casa familiar-cemento zinc ()
 - 5 Combinación 2, 3, 4 ()
- 79 De que forma se encuentran ubicadas las viviendas?.
- 1 Disperso en chacra ()
 - 2 Núcleo pequeño ()
 - 3 Pueblo ()
 - 4 Pueblo con vivienda en chacra ()
 - 5 Combinación 1,2,3 ()

VI. EDUCACION

- 80 Existe escuela primaria en la Comunidad?.
- Sí () No ()
- 81 Número de la escuela primaria:
- 82 La escuela primaria es Bilingüe?.
- Sí () No ()
- 83 Cuantos profesores hay en la Comunidad que enseñan en primaria?:
- 84 Cuantos de estos profesores son bilingües?:
- 85 Cuantos alumnos estudian en primaria?:
- 86 Cuantos alumnos hombres hay en primaria?:
- 87 Cuantas alumnas mujeres hay en primaria?:
- 88 Cual es el grado mayor en primaria?:
- 89 Existe colegio secundario en la Comunidad?
- Sí común () Si agropecuario () No ()
- 90 Nombre del colegio secundario:
- 91 Cuantos profesores hay en la comunidad que enseñan en secundaria?:
- 92 Cuantos alumnos estudian en secundaria?:
- 93 Cuantos alumnos hombres hay en secundaria?:.....
- 94 Cuantas alumnas mujeres hay en secundaria?:
- 95 Existe Instituto Superior Tecnológico en la Comunidad?.
- Sí () No ()
- 96 Cuantos profesores hay que enseñan en el Instituto Superior Tecnológico?:.....
- 97 Cuantos alumnos estudian en el Instituto Superior Tecnológico?:
- 98 Cuantos alumnos hombre hay en el Instituto Superior Tecnológico?:
- 99 Cuantas alumnas mujeres hay en el Instituto Superior Tecnológico?:
- 100 A que Unidad de Servicios Educativos (USE) pertenece?:
.....
- 101 Cuantas personas aproximadamente saben leer y escribir en la Comunidad?:.....

VII. SALUD

	Si para consumo y venta	()	No	()
124	Producen Frijol?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
125	Producen Sacha papa?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
126	Producen Pituca?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
127	Producen Maní?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
128	Producen Aracacha?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
129	Producen Shupe?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
130	Producen Daledale?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
131	Producen Camote?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
132	Producen Arroz?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
133	Producen Café?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
134	Producen Achiote?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
135	Producen Cacao?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
136	Producen Cítricos?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
137	Producen Yute?.			
	Sí para uso	()	Sí para venta	()

	Si para uso y venta	()	No	()
138	Crían Gallina en la Comunidad?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
139	Crían Pavo?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
140	Crían Pato?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
141	Crían Cuyes?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
142	Crían Cerdo?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
143	Crían Vacuno?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
144	Crían Ovino?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
145	Crían Bufalo?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
146	Cazan cutpe o añuje?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
147	Cazan majas?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()
148	Cazan armadillo o carachupa?.			
	Sí para consumo	()	Sí para venta	()
	Si para consumo y venta	()	No	()

- 149 Cazan Ronsoco?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 150 Cazan Venado?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 151 Cazan Ardilla?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 152 Cazan Oso?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 153 Cazan Cashuna o achuni?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 154 Cazan Sajino?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 155 Cazan Huangana?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 156 Cazan Sachavaca?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 157 Cazan Paujil?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 158 Cazan Perdiz?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 159 Cazan Loro?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 160 Cazan Guacamayo?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 161 Cazan Pavamonte?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()

- 162 Cazan Cotomono?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 163 Cazan Maquisapa?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 164 Cazan Martín?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 165 Cazan Chozna ?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 166 Cazan Huapo?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 167 Cazan Choro?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 168 Crían Tilapia?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 169 Crían Carpa?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 170 Crían peces Nativos?
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 171 Pescan Boquechico?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 172 Pescan Carachama?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 173 Pescan Paco?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()
- 174 Pescan Doncella?.
- Sí para consumo () Sí para venta ()
- Si para consumo y venta () No ()

- 175 Pescan Sábalo?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 176 Pescan Dorado?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 177 Pescan Saltón?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 178 Pescan Palometa?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 179 Pescan Gamitana?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 180 Pescan Paiche?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 181 Pescan Corvina?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 182 Recolectan Chonta?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 183 Recolectan Castaña?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 184 Recolectan Zapote?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 185 Recolectan Ungurahui?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 186 Recolectan Pijuayo?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()
- 187 Recolectan Yarina?.
- Sí para consumo ()
- Si para consumo y venta ()
- Sí para venta ()
- No ()

188	Recolectan Aguaje?.				
	Sí para consumo	()		Sí para venta	()
	Si para consumo y venta	()		No	()
189	Extraen Cedro?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
190	Extraen Caoba?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
191	Extraen Ishpingo?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
192	Extraen Tornillo?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
193	Extraen Cumala?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
194	Extraen Lupuna?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
195	Extraen Catahua?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
196	Extraen Moena?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
197	Extraen Requía?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
198	Extraen Copaiba?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
199	Extraen Llanchara?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()
200	Extraen Sangre de grado?.				
	Sí para uso	()		Sí para venta	()
	Si para uso y venta	()		No	()

217 Trabajan empresas madereras dentro la comunidad?.

Sí () No ()

218 Trabajan empresas petroleras dentro la comunidad?.

Sí () No ()

219 Nombre de la empresa petrolera

.....
.....

220 Existe proyecto con financiamiento externo en la Comunidad?.

Sí () No ()

a)

b)

c)

DATOS DEL INFORMANTE

- Nombre y Apellidos

..... Cargo:
..... Cargo:
..... Cargo:
..... Cargo:

DATOS DEL ENCUESTADOR

- Nombre y Apellidos

..... Cargo.....
..... Cargo.....

Fecha recopilación de datos:

.....

APPENDIX TEN

IDA's Territorial Mapping Project

Questionnaire for Head of community

REGISTRO DE ASENTAMIENTOS HUMANOS

- 1 Nombre del Asentamiento:
- 2 Tipo de Asentamiento:
- | | | |
|--------------|-----------------------|--------------------|
| Ribereño () | Colono () | Fundo agrícola () |
| Indígena () | Extractivo Minero () | Petrolero () |
- 3 Primer grupo étnico que predomina:
- 4 Segundo grupo étnico que predomina:
- 5 Población total:
- 6 Total de Familias :
- 7 Total de Estudiantes:

UBICACION

- 8 Río, Quebrada o Lago cercano:
- 9 Pueblo cercano:
- 10 Distrito:
- 11 Provincia:
- 12 Departamento:
- 13 Coordenadas UTM de la escuela:

REGIMEN LEGAL ADMINISTRATIVO

- 14 Esta reconocida como Comunidad Campesina:
- | | |
|--------|--------|
| Sí () | No () |
|--------|--------|
- 15 Esta titulada?.
- | | |
|--------|--------|
| Sí () | No () |
|--------|--------|
- 16 Numero del Título
- 17 Tienen interés de ser reconocidos como:
- | | |
|----------------------|-------------------------|
| Comunidad Nativa () | Comunidad Campesina () |
|----------------------|-------------------------|
- 18 Existe autoridad
- | | |
|--------|--------|
| Sí () | No () |
|--------|--------|
- 19 Denominación de la autoridad:
- 20 Nombre de la Autoridad:

VIVIENDA

- 21 Cuantas viviendas hay :
- 22 De que tipo están construidas la mayoría de las viviendas?
Material tradicional() Madera zinc() Cemento zinc()
- 23 De que forma se encuentran ubicadas las viviendas?
Nucleado () Disperso () Mixto ()

EDUCACION

- 24 Existe escuela primaria?
Sí () No ()
- 25 Número de la escuela primaria:
- 26 Existe colegio secundario?
Sí común () Si agropecuario () No ()
- 27 Existe Instituto Superior Tecnológico?
Sí () No ()

SALUD

- 28 Existe botiquín?
Sí () No ()
- 29 Existe Puesto de Salud?
Sí () No ()
- 30 Existe Centro de Salud?
Sí () No ()

PRODUCCION ECONOMICA

- 31 Qué productos venden durante el año para obtener un ingreso económico?
1)..... 2)..... 3).....

DATOS DEL INFORMANTE

- Nombre y Apellidos
..... Cargo:

..... Cargo:

DATOS DEL ENCUESTADOR

- Nombre y Apellidos
..... Cargo.....

..... Cargo.....

Fecha recopilación de datos:

GENERAL GLOSSARY

TERM OR ACRONYM	EXPLANATION
NGO	Non Governmental Organisation
IWGIA	<p>The International Work Group for Indigenous Affairs</p> <p>IWGIA is an independent international membership organisation staffed by specialists and advisers on indigenous affairs.</p> <p><i>Aims & activities</i></p> <p>IWGIA supports indigenous peoples' struggle for human rights, self-determination, right to territory, control of land and resources, cultural integrity, and the right to development.</p> <ul style="list-style-type: none"> • IWGIA collaborates with indigenous peoples' organizations all over the world. • Documentation about indigenous affairs is an essential part of IWGIA's work. The documentation is based on research carried out by persons from IWGIA's network and is used in IWGIA's publications. • IWGIA publishes books, periodicals and a yearbook about indigenous peoples. • IWGIA holds consultative status with the United Nations Economic and Social Council (ECOSOC) and is an observer to the Arctic Council. <p>The basis for IWGIA's activities is an integrated approach which aims to combine the different key activities. Key activities are documentation and publication, human rights work, political lobbying and projects.</p>
FEDNAA	<p><i>Federación Nativa del Rio Amazonas</i></p> <p>The Native federation of the River Madre de Dios and Tributaries has its head office the town of Puerto Tambo, in the Madre de Dios region of Peru</p> <p><i>Self Declared Objectives:</i></p> <p><i>“Objetivos Principales: Integrar a la población indígena de la cuenca del Rio Madre de Dios y afluentes, para la defensa de los derechos y su participación organizada en el proceso de desarrollo integral de sus afiliados. Se define como una asociación civil sin fines de lucro. Promover y apoyar la organización empresarial de las comunidades nativas, impulsando en ella, su conciencia solidaria y eficacia empresarial.”</i></p>

FADEMAD	<p><i>Federación Agraria de Madre de Dios</i></p> <p>The Agrarian Federation of the Madre de Dios is a body representing peasant farmers who have come from the highlands and have individual properties in the Madre de Dios. Although over the years there have been problems between the agricultural colonists and indigenous peoples as they compete for resources, they have discovered that they are united over two important questions. Firstly, they both need to influence the regional State authorities to provide them with facilities. Secondly, both indigenous peoples and agriculturalists are in a struggle to defend their lands from the invasions of gold miners. (See Gray 1996c for further details)</p>
IDA	<p><i>El Instituto de Ayuda (IDA)</i> es una asociación civil peruana sin fines de lucro, cuya preocupación central es la gestión óptima de los bienes comunes. De ella depende nuestro bienestar común para hoy y para el futuro como pueblo y como país. De ella también depende el bienestar de la numerosa población que habita las zonas rurales, boscosas y litorales, así como la salud y continuidad de la oferta ambiental de los diversos ecosistemas que nos sustentan. De ella depende, finalmente, la viabilidad y calidad de la vida urbana de todos los sectores sociales.</p> <p>En la actualidad, el IDA está realizando tres iniciativas hacia la gestión óptima de los bienes comunes: <i>Arc</i> (Manejo Comunitario de Recursos Naturales), AARAM (Ríos Andino-Amazónicos) y <i>Native GIS</i> (Mapeo de Comunidades).</p>
<i>Arc</i>	<p><i>Arc</i> es auspiciado por el Instituto de Ayuda, el Instituto de Pesquisa Ambiental da Amazonia, Oxfam America y The Woods Hole Research Center. Es apoyado por la Fundación Ford y el PPD/PPG7 (Brasil).</p>
<i>Native GIS</i>	<p>El Sistema de Información sobre Comunidades Nativas del Perú, <i>Native GIS</i>, es una base de datos georeferenciada sobre comunidades nativas de la Amazonía peruana. El <i>Native GIS</i> es una obra colectiva del Consorcio constituido por el Centro de Desarrollo para el Indígena Amazónico (CEDIA), el Instituto de Ayuda (IDA), la Organización Regional AIDSESEP Iquitos (ORAI), Oxfam America Inc. y Servicio Holandés de Cooperación al Desarrollo (SNV-Perú). El propósito del Consorcio es poner a disposición de las organizaciones indígenas e instituciones interesadas información sistematizada que contribuya a la defensa y gestión de los territorios indígenas amazónicos. El IDA cumple las funciones de Secretaría Ejecutiva del Consorcio.</p>
AIDSESEP	<p>(Asociación Interétnica de Desarrollo de la Selva Peruana)</p> <p>The Inter-ethnic Association for the Development of the Peruvian Rainforest was established in 1980 by Aguaruna, Yanasha and Shipibo representatives. Since then it has grown to</p>

an organisation representing over thirty indigenous federations (some listed below). Whereas in the 1980s the government respected AIDSEP and the two bodies carried out several joint programmes in health, education, and land titling, the subsequent governments were less enthusiastic, to a point where the relationship was antagonistic. Hopefully with the more sympathetic Toledo administration, a co-operative relationship may well redevelop.

The Acronym is followed by their full name, and the Peruvian region they are in is in brackets.

1. ANAP: Apatyawaca Nampitsi Ashaninka Pichis (Pasco)
2. CAH: Consejo Aguaruna y Huambisa (Amazonas)
3. CECONSEC: Central de Comunidades Nativas de la Selva Central (Junín)
4. CHAPI-SHIWAG: Ijumbau chapi-Shiwag (Loreto)
5. FECONA: Federación de Comunidades Nativas del Ampiyacu (Loreto)
6. FECONABABAN: Federación de Comunidades Nativas del Bajo Amazonas y del Bajo Napo (Loreto)
7. FECONACADIP: Federación de Comunidades Nativas Candoshi del Distrito Pastaza (Loreto)
8. FECONADIC: Federación de Comunidades Nativas del Distrito de Cahuapanas (Loreto)
9. FECONAFROPU: Federación de Comunidades Nativas Fronterizas del Putumayo (Loreto)
10. FECONAU: Federación de Comunidades Nativas del Ucayali (Ucayali)
11. FECONBU: Federación de Comunidades Nativas del Bajo Ucayali (Loreto)
12. FEDECOCA: Federación de Comunidades Cocamilla (Loreto)
13. FENACOCA: Federación Nativa de Comunidades Cacataibo (Ucayali)
14. FEDNAA: Federación Nativa de Madre de Dios y sus Afluentes (Madre de Dios)
15. FESHAM: Federación Shapra del Morona (Loreto)
16. OAAM: Organización Aguaruna del Alto Mayo (San Martín)
17. OAGP: Organización Ashaninka del Gran Pajonal (Ucayali)
18. OIRA: Organización Indígena de la Región de Atalaya (Ucayali)
19. ONAPAA: Organización Nativa Aguaruna de la Provincia de Alto Amazonas (Loreto)
20. ORACH: Organización Achual Chayat (Loreto)
21. ORKIWAN: Organización Kichuaruna Wangurina (Loreto)
22. OSHDEM: Organización Shuara del Morona (Loreto)

INRENA

El Instituto Nacional de Recursos Naturales

INRENA, creado por Decreto Ley N° 25902 el 27 de noviembre de 1992, es un Organismo Público Descentralizado del

Ministerio de Agricultura, de carácter integral y multidisciplinario al servicio del país y su competencia es a nivel nacional en estrecha relación con los Gobiernos Locales, Organizaciones Agrarias, Comunidades Campesinas y Nativas e Instituciones Públicas y Privadas. Tiene personería jurídica de derecho público interno y autonomía técnica, administrativa, económica y financiera. Constituye autoridad nacional en materia de recursos naturales renovables y medio ambiente rural.

What is its mandate?

El **INRENA** es la autoridad pública encargada de realizar y promover las acciones necesarias para el aprovechamiento sostenible de los recursos naturales renovables, la conservación de la diversidad biológica silvestre y la protección del medio ambiente rural, mediante un enfoque de ordenamiento territorial por cuencas y su gestión integrada; estableciendo alianzas estratégicas con el conjunto de actores sociales y económicos involucrados.

SPANISH GLOSSARY

TERM	EXPLANATION
<i>Colpa</i>	These are salt licks. Areas where earth containing high mineral contents which have been exposed. Examples include riverbanks, depressions in swampland, dead palm trees, etc. Many different animals come to eat the mineral rich earth and so are exploited by indigenous people as hunting spots. Large riverbank colpas are also excellent locations to view large flocks of Parrots and Macaws who, in early morning, feed in great numbers at these colpas.
<i>Sancudos</i>	This is a general term for any biting insects, including mosquitoes, sand flies and any of the other endemic blood sucking insects of the amazon jungle.
<i>Colectivo</i>	These are cars, four-by-fours, minibuses or lorries, whereby the driver asks each passenger to pay a contributing amount. They travel along a certain route and people get on and off (or in and out) when they reach their desired destination, or flag it down on route. If you get them at source they will wait until every available space is filled before setting off.
<i>Rich Limeño</i>	An adjective and noun normally used to refer to the wealthy class of Peruvians who live in Lima. Often used in a derogatory manner.
<i>Caucheros</i>	The Mayan Indians called the milky white resin tapped from rubber trees “cauchu”, which means ‘tree that weeps’. The Spanish colonists who enslaved the Indians to collect rubber (initially because they could find and identify the plants very easily) became known as caucheros.
<i>Mestizo</i>	Term used to refer to those who have mixed heritage. For example in Peru it could refer to someone who has one parent of Spanish descent and the other Quechua.
<i>Chacra</i>	Term that refers to an area of cultivated land. Within the Peruvian Amazon region these are jungle clearings where individual households grow their crops or on a larger scale they can be plantations of cash crops for market.

GEOMATIC GLOSSARY

TERM	EXPLANATION
Accuracy	A measure of how close a recorded location is to its actual position.
Allocation	The process of partitioning a network into areas that satisfy one or more criteria. For example, a public transportation authority might wish to establish bus routes and stops such that every likely commuter resides within five minutes' walking time of the nearest stop.
Attribute	A non-spatial, quantitative or qualitative characteristic of an object or phenomenon. For example, population is one attribute of a county or census tract.
Buffering	A GIS procedure by which zones of specified radius or width are defined surrounding selected vector features or raster grid cells.
Cartogram	A type of thematic map in which the areas of spatial features are distorted in proportion to the value of an attribute.
Centroid	A point feature centrally located within, and used to identify, an area feature.
Choropleth Map	A type of thematic map in which the colours (or shades of grey) of area features represent categories of attribute values.
Computer-Aided Design	Digital drafting tools for engineering, architectural, facilities management, and graphic design applications. CAD packages allow users to precisely specify sizes, shapes, and positions of vector elements, and to assign elements to separate layers. Only graphic attributes (such as line width, colour, and polygon shading) are encoded. Linkage of vector elements and attribute databases is not directly supported. Therefore, CAD packages do not provide analytical capabilities such as polygon overlay and spatial searches.
Co-ordinate System	A juxtaposition of two or more measurement scales which together define spatial locations in

	two or more dimensions.
Data Model	A conceptual framework for representing the locations and characteristics of real-world phenomena in a geographic database.
Database	Data are symbolic representations of phenomena. A database can be thought of as a "population" of data. Each data element is stored in a field. All data fields related to an individual member of the "population" are stored as a unique record. Database systems provide a means to select and organise data in response to a question, and thereby to produce information.
Datum	A network of precisely-surveyed control points used as a reference for measurements of other horizontal or vertical positions. For global-scale measurements, the WGS 84 ellipsoid also serves as a datum.
Declination	The angular difference between true north and magnetic north.
Desktop Mapping	A class of software that supports creation of thematic maps for diverse applications, including public health, business, and social science. Desktop mapping packages provide rudimentary linkages between attribute databases and vector features or raster grid cells. Display capabilities are usually limited to pre-existing data. Unlike geographic information systems, desktop mapping packages do not include operations for generating new data from existing data.
Differential Correction	A technique for improving the accuracy of GPS positioning. Errors introduced by selective availability are recorded by a stationary receiver at a well-defined location. Errors detected by the stationary receiver can be used to cancel out errors recorded at the same time by a mobile receiver in a different location.
Electromagnetic Energy	Radiant energy emitted by all matter whose temperature is greater than absolute zero (0° K). The warmer the radiant object, the shorter the frequency of electromagnetic waves it emits. Types of electromagnetic waves includes electric currents, heat, radio waves, microwaves, infrared radiation, visible light, ultraviolet radiation, x rays, gamma rays, and cosmic rays.
Ellipsoid	A three-dimensional mathematical model which

	<p>approximates the shape of the geoid. Many different ellipsoids have been developed for continents or individual countries to minimise local deviations from the geoid. The standard global ellipsoid is the World Geodetic System of 1984 (WGS 84).</p>
Feature	<p>A set of positions that specifies the location and extent of an object or phenomenon.</p>
Geocoding	<p>The process of assigning geographic locations to attribute data. For example, the area can be classified under its postcode reference.</p>
Geographic Coordinate System	<p>A system for specifying positions on the globe. North-south positions are specified in degrees of latitude, and east-west positions are specified in degrees of longitude.</p> <p>Geographic coordinates may be expressed either in degrees, minutes, and seconds, or in decimal degrees.</p> <p>To convert -89.40062° from decimal degrees to degrees, minutes, seconds:</p> <p>Subtract the number of whole degrees (-89°) from the total. (The minus sign indicates that the value is a west longitude or a south latitude.)</p> <p>Multiply the remainder by 60 minutes ($.40062 \times 60 = 24.0372$).</p> <p>Subtract the number of whole minutes (24') from the product.</p> <p>Multiply the remainder by 60 seconds ($.0372 \times 60 = 2.232$). Round off. The result is $89^\circ 24' 2''$ W or S.</p> <p>To convert $43^\circ 4' 31''$ from degrees, minutes, seconds to decimal degrees:</p> <p>Divide the number of seconds by 60 ($31 / 60 = 0.5166$).</p> <p>Add the product of step (1) to the whole number of minutes ($4 + 0.5166$).</p> <p>Divide the result of step (2) by 60 ($4.5166 / 60 = 0.0753$).</p> <p>Add the product of step (3) to the number of whole number degrees ($43 + 0.0753$). The result</p>

	is 43.0753°
Geographic Information System	Information is data, which has been selected and organised in response to a question. Information systems are computerised tools that assist people in transforming data into information. Geographic information systems (GIS) enable people to integrate geographic data sets produced by different technologies and organisations, to interrogate the data, and finally to produce information, often in the form of a map.
Geoid	A complex three-dimensional figure used as a basis for extremely precise surveys of positions on the surface of the Earth. The geoid is the surface on which sea level gravity is everywhere equal. Gravity at mean sea level varies due to local differences in topography and the density of materials in the Earth's interior.
Gerrymander	To manipulate voting district boundaries with intent to influence electoral outcomes.
Graticule	The grid formed by lines of latitude (parallels) and longitude (meridians).
Great Circle	A line which divides the Earth into two hemispheres. The shortest path between two locations on the globe.
Ground Truthing	The process by which data accrued from remote sensing or other external sampling methods is verified, identified or updated, by fieldwork on the ground.
Hyperlink	Coloured and underlined text or a graphic that you click to go to a file, a location in a file, or executable program or file.
Map Overlay	A GIS procedure by which the features and attributes of two or more data layers are combined. When performed on vector data, the operation is called polygon overlay. The merger of two or more raster data layers is called grid overlay. In both cases, data layers must be spatially registered prior to overlay.
Map Projection	A systematic transformation of locations on the globe to locations on a plane.
Metadata	Documentation of the characteristics of a data set, such as sources, creation date, ownership, datum, ellipsoid, projection type and parameters, and

	data model.
Positioning	The processes and technologies used to specify positions in space. Positions are specified with reference to a co-ordinate system, a datum, and an ellipsoid.
Precision	A measure of how exactly a position is defined. For example, the precise of geographic co-ordinates specified as degrees, minutes, and seconds is $(360^\circ)(60')(60") / 40,000$ km, or about 30 meters.
Proportional Symbol Map	A type of thematic map in which the areas of symbols are varied in proportion to the value of an attribute.
Radiometric Resolution <i>(ref: Remote Sensing)</i>	This is the sensitivity to small differences in the radiation of an observed object.
Reapportionment	The process and result of allocating electoral seats to territories.
Redistricting	The periodic revision of electoral district boundaries.
Reference Map	A graphic display which shows the geographic distribution of many different attributes.
Registration	Alignment of multiple superimposed spatial data layers. Data layers which are "in registry" are alike with regard to scale, datum, ellipsoid, and projection.
Remote Sensing	The collection of technologies and procedures by which electromagnetic radiation can be recorded from a distance.
Resolution	In general, the least detectable difference in a measurement.
Selective Availability	Intentional degradation of the accuracy of the Global Positioning System (This error was removed on 1 st May 2000 by the US government. They can now apply it to specific areas or countries).
Spatial Resolution <i>(ref: Remote Sensing)</i>	This represents the ability of the sensor to detect and distinguish small objects and fine detail in larger objects. Depends on the instrument's sensitivity and distance from the object, and defines the pixel size of a digital image.

<p>Spectral Resolution <i>(ref: Remote Sensing)</i></p>	<p>This refers to the number of bands in the spectrum in which the instrument can take measurements.</p>
<p>Standard Line</p>	<p>In the context of map projections, the line or lines of tangency between the globe and a projection surface (cylinder, cone, or disk). A parallel, meridian, or other line along which there is no distortion.</p>
<p>Temporal Resolution <i>(ref: Remote Sensing)</i></p>	<p>Represents the frequency with which a satellite can re-visit an area of interest and acquire a new image. Depends on the instrument's field of vision, and the satellite's orbit.</p>
<p>Thematic Map</p>	<p>A graphic display that highlights the geographic distribution of a particular attribute, or relationships among several selected attributes.</p>
<p>Topology</p>	<p>Spatial relationships among features, including adjacency and connectivity. Relative position, as opposed to absolute position specified by co-ordinates, angles, and distances.</p>
<p>Toponym</p>	<p>A place name; a descriptive place name, usually derived from a geographical feature; a name derived from a place name, e.g. a place of origin.</p>
<p>Waypoint</p>	<p>A waypoint is a user-defined position in space, referenced by a co-ordinate system such as Latitude – Longitude.</p>

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