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Appropriate Technology and Christian Belief: A Case Study of Amazonia

The Amazon region is being destroyed because of the use of technologies that are inappropriate for the region. Examples of this bad stewardship of the most diverse part of creation are given followed by some examples of how a more appropriate technology could achieve a balance between conservation and sustainable use of the region. This is related to the need for a christian concern for better stewardship of the earth based on strong biblical principles.

Keywords: Appropriate technology, agroforestry, Amazonia, Creation theology, justice, Amazon Indians.

Introduction

In order to address the topic of appropriate technology and Christian belief I will draw mainly from examples of the situation in Amazonia where I have the most experience. However, a great many of the environmental problems that the world is facing today are the result of the use of inappropriate technology in both the tropical and temperate regions of the world. The use of inappropriate technology leads not only to environmental degradation but also to injustice, both of which should be of major concern to the Christian believer. Christians must also develop a sound biblical theology of creation before becoming too deeply involved in the environment to ensure that they continue to worship the creator and not the creation which has become the god of so many secular environmentalists.

Inappropriate Development of Amazonia 1970–1985

A good (or bad) example of the inappropriate use of technology took place in the opening phases of the development of the Amazon region of South America which really began seriously about 1970. The fifteen years that followed are a chapter of errors, albeit building on some earlier failures such as Henry Ford's disastrous rubber plantation at Fordlandia in the 1930's. This plantation failed due to the rubber trees being aggregated together into monoculture plantations. Under these conditions, diseases native to Amazonia, especially a leaf rust fungus, spread easily from one tree to another. In nature the trees are spread out amongst the other species of the forest. However, when rubber was introduced to tropical Asia the diseases were not transferred and it grows well in plantations in that

region.[1] A few examples are enough to show how the development of Amazonia was carried out by powers external to the region and with a general disregard for local culture and local ecological knowledge. During this period many people suffered and the church was only a minor force for good within the region.

(a) The TransAmazon Highway

In March 1970 President Medici of Brazil made a visit to Northeastern Brazil when it was in the midst of a serious drought. He was obviously moved by the grief and poverty which he encountered in this semi-desert region of the country. He returned to his capital Brasília and developed a plan for a massive resettlement of northeasterners in the humid rainforest region of Amazonia. By July 1970 legislation had been passed to build a highway east to west across Amazonia, together with a series of villages, towns and cities for the new colonisers from the northeast. Construction began by October and settlers were moving in by 1971. The plight of the northeast gave the military government the ideal excuse it wanted to open up Amazonia because of its paranoia that it would be invaded by foreign powers if the region was not occupied.

Settlers were given plots of land to farm, small houses with government loans and agricultural extension advice about how to cultivate upland rice in the areas of rainforest which were cut and burned. The poor of northeastern Brazil flocked to Amazonia with great expectations of a prosperous future in a land of abundant forests and water. Many factors contributed to the abysmal failure of the TransAmazon colonisation project, but especially important was the poor harvest from the rice crop. The flow of new settlers stopped, and disappointed people returned to the northeast. Instead of the million settlers a year planned for the project, less than ten thousand reached Amazonia. Even if the plan had succeeded for a million, that is still less than the annual growth in the population of northeastern Brazil, and so this ecologically destructive plan would have done little to alleviate the poverty of the northeast.

In the meanwhile the government of Brazil appointed a new President, Ernesto Geisel, and he admitted the failure of the colonisation plan and blamed it on the lack of capital and technological knowledge of the northeasterners. Instead he initiated a new plan which involved giving huge tax incentives to large companies for the creation of enormous cattle ranches in the region. The fiscal advantages were so great that soon vast areas of forest along the highways were burning to convert it into pasture. The small farms had proved a failue, and now it was the turn of large-scale ranches owned by industry or by private businessmen. Subsequent analysis has shown that these ranches only survived on tax incentives and subsidies. While some produced cattle and a few even continue to produce at a low rate, many never sent a single cow to market because the tax breaks

1 Galey, J. 'Industrialist in the wilderness: Henry Ford's Amazon Venture', *Journal of Inter-American Studies* (1979) 21, 264–289.

and land value speculation were enough to make them worthwhile to their owners. The farms that still survive have less than one beast per hectare and are constantly fighting infestations of weed and poor pasture. There are now many more abandoned pastures than actively productive ranches.

Neither the colonisation programme by small farmers nor the ranching by capital-rich industrialists could be called examples of good stewardship of the region. Both approaches were not economically viable and caused much damage to the fragile Amazon ecosystem. However, a visit to the TransAmazon highway region in 1985 gave me some hints about the reasons for failure and the social problems caused by fifteen years of so-called development. I was surprised to find a few small farms that were prospering and productive, especially one that was producing a fine crop of citrus fruit. It was soon apparent that the successful small-holders were largely Amazonian natives who had got into the programme either by deception or by buying out disappointed settlers from the northeast. These people selected the exact plot of land they wanted rather than accepting a random lottery for land. They used their knowledge of the existing forest and the soil to choose areas that were likely to be productive. They then applied their years of accumulated knowledge of management of the Amazon ecosystem to create viable farms. In all regions of tropical rainforest there is a big difference in the level of productivity and of environmental destruction between areas occupied by local shifting cultivators and areas settled by shifted cultivators that have been brought in from another region without any understanding of the local ecology. Both the shifted cultivators and the cattle ranchers were victims of the use of inappropriate technology, and were responsible for damaging the Amazon rainforest because of government incentives.

The creation of large ranches, some as large as British counties, has subsequently led to many other social problems and Amazonia has been gripped by much tension over property rights. The ranchers have gradually evicted small farmers, especially those settled by squatting on their land. The fact that so much of the developed area is owned by huge ranches has led to many problems. There are countless well documented examples of hired gun squads being used to evict the poor from the land owned by the rich. There is no land made available for the much more ecologically aware small farmer to settle. Most of those who have dared to oppose, including even city lawyers and politicians who have defended the rights of the small farmers, have been assassinated by gunmen. I saw myself an advertisement by gunmen in a newspaper in Maranhão State. They offered to assassinate anyone, giving different prices for a squatter, a union leader and a lawyer. It was perhaps a good sign of the church's activity in the cause of justice that the highest price was demanded for a priest![2]

2 For further details about the TransAmazon History see Prance, G. T. 'The dilemma of the Amazon rainforests: biological reserve or exploitable resource?' In: B. Cartledge (ed.) *Monitoring the environment. The Linacre Lectures 1990–91*, Oxford University Press, pp. 157–192.

(b) Goldmining

Over the past decade there has been a huge gold rush in Amazonia that has attracted over half-a-million people in pursuit of a fortune. The gold miners or *garimpeiros* use crude methods of extracting gold that do much damage to the environment and to the native people. The situation is further exacerbated by an increase in tin and diamond mining. The miners use pumps to churn up river beds, causing much damage in the process but, worst of all, they use large quantities of mercury to extract the gold. In the process mercury is evaporated off and much of it is released into the environment. Toxic levels of mercury have been recorded in many Amazonian rivers, and doctors in the cities are regularly treating city children who have been poisoned by the mercury in fish bought in the markets.

The working miners are poor people who have been forced into the region through desperation. They often work for syndicates, the owners of which reap most of the profits and dictate their work locations. The most publicised disaster was the invasion of the territory of the Yanomami Indians by 45,000 gold-miners. They took diseases such as malaria and hepatitis to the Indians, did not hesitate to kill Indians who opposed them and as a consequence caused the death of over three thousand Yanomami. Fortunately the current government of Brazil has evicted miners from Yanomami territory and declared it a reserve. Today only a few miners remain, but they have already done irreversible damage to the Yanomami and their environment. This is another example of human greed and the use of inappropriate techniques that have caused much grief both to the Indians and to the poor miners themselves.

(c) The Balbina Dam

Hydroelectricity is a good clean source of energy that does not generate the pollution caused by the use of coal nor lead to the dangers of radiation of atomic energy. In Amazonia some dams, such as Tucuruí and Curuá-una, are functioning well with a reasonably small amount of environmental damage caused by the damming of the rivers Tocantins and Curuá. However, the Balbina dam is a different story, and was only built because a governor of Amazonas State in Brazil staked his political reputation on it and was able to obtain international funding to execute his dream to supply electricity for the city of Manaus by damming the small Uatumã river. The dam flooded much of the territory of the Waimari-Atroaris Indians and today produces much less energy than predicted because there is not enough drop to drive the turbines well. The lake behind the dam is a shallow mass of dead trees where beautiful rainforest has been flooded. Balbina produces only eight percent of the energy that the Tucuruí dam generates yet it floods a larger area of forest. It was a tragedy that the building of this dam was allowed, with the consequent loss of so much forest and distress to the Indians in exchange for such a small quantity of energy.

Many other examples of bad stewardship of Amazonia could be described, such as the development of pig-iron smelters along the Carajás railway, or the over-exploitation of valuable timbers, such as mahogany and virola, that could be managed by sustainable methods. However, the purpose of this paper is to examine more the positive side of the question and to focus on appropriate technology and on the basis for Christian involvement in such technology. The three examples given above should be sufficient to illustrate the results of a fallen human nature that have led to much selfishness, greed and destruction of a part of creation that is vital to sustenance of life on earth.

Appropriate Technology

Some guidelines for a more appropriate technology (AT) emerge from the examples of environmental damage given above. Above all AT is based on principles of justice for all those involved. It is also a system that does minimal environmental damage and is sustainable in the long term. The problem with most destructive uses of the environment is that they are usually based on short term profit without any thought for the future or for the environment. AT is based on sustainability and involves respect for local cultures and often employs their methods. It emphasises the needs of individuals and concentrates on the small unit rather than large-scale projects. It is based on the well-demonstrated fact that many individual farmers who manage intensively small plots of land are far more productive per unit area than their counterparts in large ranches. They tend to use organic methods and rely less on toxic chemicals to control disease or on quantities of chemical fertilisers to replenish their soil. Some of the basic features of AT are low capital cost, low energy input and small family units. With these points in mind we will return to examples from the Amazon.

Research in recent years has provided several good examples of the management of agricultural systems by the indigenous peoples of Amazonia and of their successors, the peasant farmers, called *campesinos*, *caboclos* or *ribereños* in different Amazon countries. These people have developed methods of land use that are sustainable and appropriate for the region. Indigenous peoples that have been studied in detail include the Bora Indians of Peru,[3] the Kayapó Indians of Brazil,[4] and the Huastec Mayans of

3 Denevan, W. M., Treacy, J. M., Alcorn, J. B., Padoch, C., Denslow, J. & Paitan, S. F. 'Indigenous agroforestry in the Bora Indian Management of Swidden fallows', *Intersciencia* (1968) 9, 346–357; Denevan, W. M. & Padoch, C. (eds) *Swidden fallow agroforestry in the Peruvian Amazon*, Adv. Econ. Bot. (1988) 5, 107 pp.

4 Hecht, S. B. 'Indigenous soil management in the Amazon Basin: some implications for development', in J. O. Browder (ed.) *Fragile Lands of Latin America: Strategies for Sustainable Development*, Boulder, Westview Press (1989) pp. 166–181; Posey, D. A. 'The keepers of the forest', *Garden*, (1982) 6(1), 18–24; Posey, D. A. 'Indigenous ecological knowledge and development of the Amazon', in E. F. Moran (ed.) *The Dilemma of Amazonian development*, Westview Press, Boulder, Colorado (1983), pp. 225–258; Posey, D. A. 'A preliminary report on diversified management of tropical forest by the Kayapó Indians of the Brazilian Amazon, *Adv. Econ. Bot.* (1984) 1, 112–126.

Mexico.[5] All of these peoples have developed systems of agroforestry that control the process of regeneration of the forest after cutting and burning has taken place. The original clearing is planted with a mixture of herbaceous and woody crops and is gradually turned from a field to a useful forest through a carefully managed process. These indigenous systems have been adapted by local peoples and are much more productive than the large-scale projects described above. The success of these indigenous systems is based on a number of different factors:

1. It is an agroforestry system with herbaceous crops interspersed with perennial arboreal crops right from the initial planting.

2. The use of a great diversity of different crops rather than a monoculture.

3. The use of many varieties of most of their crops which maintains genetic diversity in the system.

4. The use of small clumps of each crop scattered throughout a field, rather than large areas of monoculture. This inhibits the spread of disease and reduces predation by insects and other animals.

5. Small areas are cleared at a time giving the chance for soil microorganisms to recolonise the area and reducing the loss of nutrients.

A detailed study has been made of the agroforestry system of the Bora Indians of Peru.[6] An inter-disciplinary team studied a series of former fields of different ages from three to nineteen years since felling. The results (see figures 1 and 2) show that the initial fields are planted with a mixture of herbaceous and woody crops arranged in small patches. Crops are interspersed rather than planted in monocultures, and areas that initially produce manioc or cassava gradually become small orchards of fruit trees such as umari (*Poraqueiba sericea* Tul.). At any moment in time the Bora have a series of fields and forests of different ages from which they can harvest different products. As natural regeneration takes place and the fields return to forest they still yield food, fibre, medicines and other products used in the daily life of the tribe. For example, a nineteen year old forest contained 22 useful species as well as a small orchard of the edible fruit macambo (*Theobroma bicolor*).

A similar system to that of the Bora Indians has been created by the residents of the small Peruvian town of Tamshiyacu. They use the same crops as the Bora Indians and go through thirty-five year cycles of land use between each clearing. The system yields a good income for the residents of the town because of the proximity of the market town of Iquitos. It

5 Alcorn, J. B. 'Development policy, forests and peasant farms: Reflections on Huastec-managed forests' contributions to commercial production and resource conservation', *Econ. Bot.* (1984) 38, 389–406; Alcorn, J. B. *Huastec Mayan Ethnobotany*, Austin: Univ. of Texas Press (1984).

6 Padoch, C., Chota Inuma, J., de Jong, W. & Unruh, J. 'Amazonian agroforestry: a market-orientated system in Peru', *Agroforestry Systems* (1985) 38, 47–58.

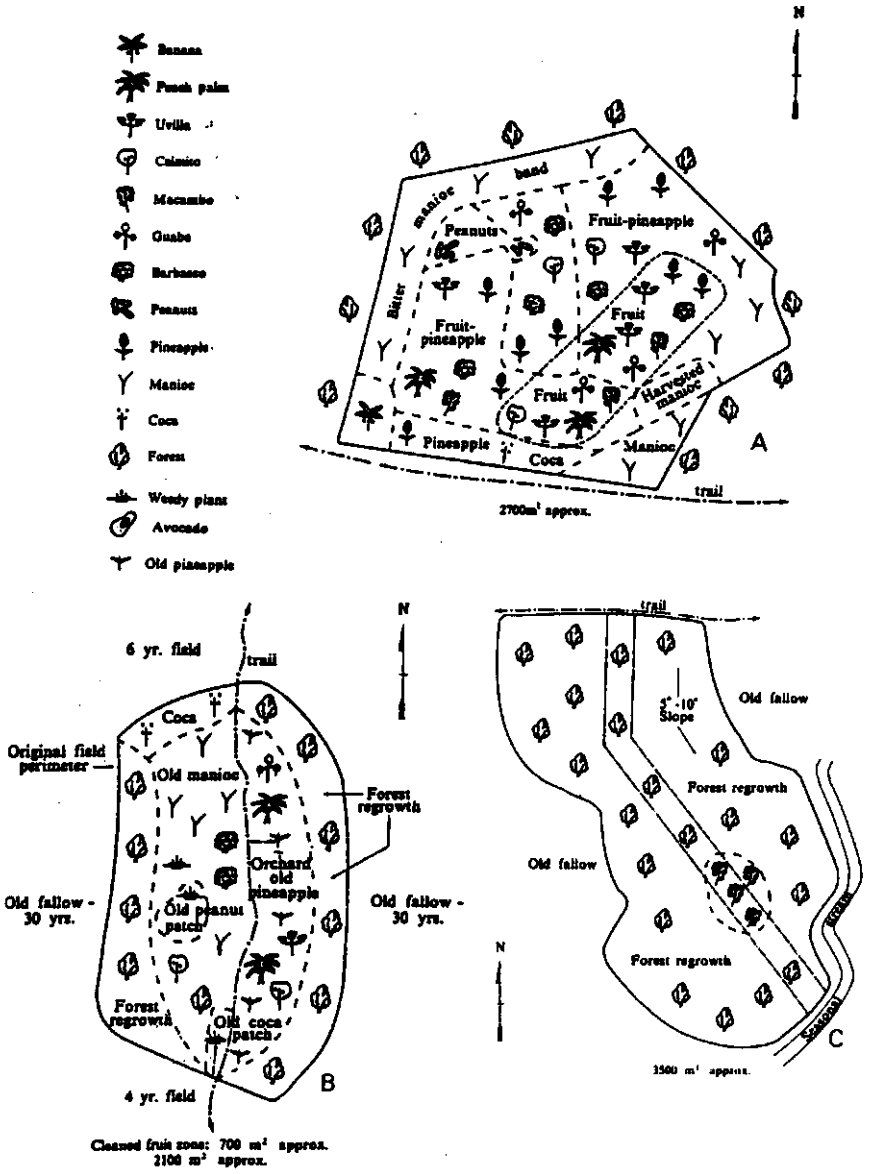

Fig. 1 A, three year old Bora Indian field showing their species diverse agroforestry; B, a five year old Bora field; C, a nineteen year old Bora field (Adapted from Denevan and Padoch, 1988).

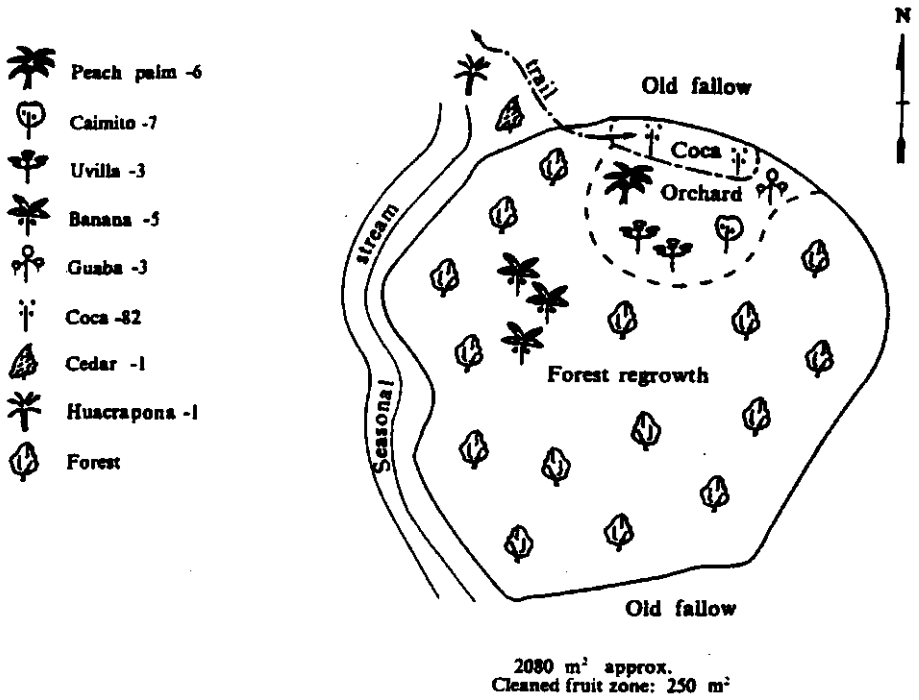

Fig. 2 A five year old Bora Indian transitional orchard fallow (Adapted from Denevan and Padoch, 1988).

produces a great variety of crops for their daily needs, so removing the necessity of buying many products. For example, the oil from the seeds of *Couepia dolichopoda* provides a cooking oil which can also be burned in lamps. One of their most marketable fruits is the umari fruit, and one finds small orchards scattered within their agroforestry areas. When, after about 35 years, the mature area is to be refelled, the umari trees are used to make another highly marketable product, charcoal. Brazil nut trees are also planted at Tamshiyacu and when the forest is recut some trees are left standing as shade and to continue productivity into the next cycle, whilst others furnish an excellent timber for house-building.

In addition to farming the upland forest by this system of agroforestry, the Tamshiyaceños grow rice on muddy river banks. The rice is planted as the river level falls in the dry season and is harvested before the area is flooded again. These natural fields are refertilised annually by alluvial matter deposited by the river and so the same area can be used repeatedly. Remarkably, the 1987 income of a Tamshiyacu family was just over $5,000, a good income anywhere in Peru. These people have adapted an indigenous system of agroforestry to create a sustainable and productive livelihood from the poor soils of Amazonia.

One of the strengths of the Bora Indian and Tamshiyacu agriculture system is the use of a large number of varieties of each of their main crops. They have several named varieties of umari and a larger number of manioc cultivars. The use of these varieties maintains adequate genetic diversity in their crops which makes them less prone to disease and predators and more flexible for improvement. All groups of Indians I have studied use many varieties of manioc. Chernela[7] found 137 cultivars amongst the Tukano Indians of the upper Rio Negro, Boster[8] described 50 cultivars in use by Jivaro Indians of Peru and Carneiro[9] listed 50 cultivars for the Kuikuru Indians of Brazil. The use of such genetic diversity is normal in indigenous agriculture. The tendency of modern agriculture is for uniformity of crops both genetically and phenotypically. The systems that maintain genetic diversity have a much greater long-term future in the tropics.

More than two thousand miles from Tanshiyacu, in the Amazon Delta region, Anthony Anderson and a team of Brazilian scientists have studied the economy of the Amazon estuary *caboclos* who depend upon the açaí palm (*Euterpe oleracea*) for their livelihood.[10] These farmers extract the fruit pulp and the heart-of-palm from açai, raise pigs that feed mainly on the kernel of the açai that remains after the pulp is removed, tap wild rubber trees, and manage the forest to maximise the number of useful plants. The results of a study of a family on Ilha das Onças, near to the city of Belém, is given in Table 1. This peasant farmer is gaining a substantial income without clear cutting the forest. The salary of a post-doctoral scientist at the Natural History Museum in Belém where the farmer sold his produce was $7,500 in 1986 while the farmer sold $24,618 of produce!

The Aymara people of the Altiplano of Bolivia serve as a good final example of appropriate technology. These people live in the highlands of the Andes in an area with rich fertile soil and have developed a production system of agriculture based on many local crops, such as quinoa and amaranth, spinach and grain, many varieties of potatoes and other tubers, such as the oca, a species of sorrel (*Oxalis*) related to common wood sorrel in the U.K. The Aymara families own their own land, but it is the village council that decides what to plant each year. A farmer will be told to plant

7 Chernela, J. M. 'Os cultivares de mandioca na área do Uaupés (Tukano)'. In D. Ribeiro (ed.) *Suma Etnológia Brasileira* 1, Etnobiologia, FINEP, Petropolis (1986) pp. 151–158.

8 Boster, J. J. 'Classification, cultivation, and selection of Aguaruna cultivars of *Manihot esculenta* (Euphorbiaceae)', *Adv. Econ. Bot.* (1984) 1, 34–47.

9 Carneiro, R. L. 'The cultivation of manioc among the Kuikuru of the Upper Xingu', in R. B. Hames and W. T. Vickers *Adaptive responses of native Amazonians*, Academic Press (1983) pp. 65–111.

10 Anderson, A. B. *Adv. Econ. Bot.* (1988) 6, 144–154; Anderson, A. B. 'Extractivism and forest management by inhabitants in the Amazon estuary', in Anderson, A. B. (ed.). *Alternatives to Deforestation: steps towards sustainable use of the Amazon rainforest* Columbia University Press, (1990) New York, pp. 65–85; Anderson, A. B. & Jardim, M. A. G. 'Costs and benefits of floodplain forest management by rural inhabitants in the Amazon estuary: a case study of açaí palm production'. In J. Browder (ed.) *Fragile Lands of Latin America: The Search for Sustainable Uses*, Boulder, Colorado, Westview Press (1989) pp. 114–126.

Table 1 Commercial products sold in local markets between January and December 1986 by a family on Ilha das Onças, Pará, Brazil.

Product	Quantity	Unit	Weight (kg)	Value ($US)
Fruits of açai palm (*Enterpe oleracea*)	5,259	15 kg can	78,885	15,533
Timber	180	m^3	–	3,143
Palm heart of açai	35,026	individuals	–	2,917
Shrimp	1,037	kg	1,037	1,371
Rubber latex	1,812	kg	1,812	1,294
Pigs	7	individuals	–	300
Cocoa seeds	50	kg	50	57
Bananas	3	bunches	–	3.21
				$24,618.21

quinoa one year and potatoes another, but occasionally he will be told to plant nothing. It is then his turn to leave the land fallow and give it a rest. During that year his family will not starve because the others will provide all the grain, the potatoes and leaves they need, knowing that he will reciprocate when it is their turn for fallow. Some years ago the Bolivian government tried to interfere with the Aymara system because of the wasteful lack of use of so many of their fields. Once fallow was stopped the system began to crash and the fields became less productive because it was the Aymara that were using an appropriate technology rather than the government extension officers. The wisdom of the principles given in the books of Exodus and Leviticus are apparent.

'For six years you shall sow your land and gather in its yield; but the seventh year you shall let it rest and lie fallow, that the poor of your people may eat; and what they leave the wild beasts may eat. You shall do likewise with your vineyard, and with your olive orchard' (Exodus 23:10–11).

'Six years you shall sow your field, and six years you shall prune your vineyard, and gather its fruits; but in the seventh year there shall be a sabbath of solemn rest for the land, a sabbath to the Lord' (Leviticus 25:3–4).

Fortunately the situation of the Aymara was changed through the action of an interdenominational group of missionaries who realised what was happening and persuaded the government to allow the Aymara to revert to their traditional system of agriculture. Here a group of alert christians intervened at the right time. The verses from Exodus about the fallow are important not only for the land but for the sense of justice that they include because the fallow was so that the 'poor may eat; and what they leave the wild beasts may eat'. We have here an integrated and comprehensive ecological system.

Some theological reflections

The contrast has been made between the rich who think nothing of destroying the land and create ecologically wasteful systems, and the poor who, when they are allowed to have land, manage highly productive small plots. We must now ask the question why the church has so often sided with the rich rather than the poor in spite of the many biblical reasons for better stewardship of creation and justice for all peoples. Much of the agricultural land in the third world is controlled by wealthy landowners and large companies who practice monoculture and employ techniques that are basically western and were developed in the northern temperate region. These techniques are susceptible to disease, predators and drought in the tropics. By contrast local people around the tropics have developed methods of farming that reduce the effects of disease and predators through the use of many crops, maintain genetic diversity through the use of many varieties of each crop and use combinations of plants adapted to the eventualities of the weather such as drought. The first system is motivated by greed and short term profit and the second by a love, care and understanding of the land and a respect for the integrity of creation. The rich want to displace the poor with their temporary systems that are destructive and unsustainable.

Many peasant farmers in Brazil and also rubber tappers who have resisted eviction from their small farms or the forest where they tap rubber trees have been assassinated by the wealthy land owners. The leader of the rubber tappers of Acre State in Brazil, Francisco (Chico) Mendes, was gunned down in December 1988 for seeking to conserve the forest so that he and other tappers could make their livelihood from the forest by tapping rubber and gathering Brazil nuts. He did not die in vain because extractivist reserves are now being set up in several areas of Amazonia where the tappers are allowed to work but the forest is not felled. The rubber tappers movement has been greatly helped by the local churches. To attend one of their meetings and see them studying scripture and praying what to do about their desperate situation is a moving experience.

Isaiah wrote:

'The earth mourns and withers,
the world languishes and withers;
the heavens languish together with the earth.
The earth lies polluted under its inhabitants;
for they have transgressed the laws, violated the statutes,
broken the everlasting covenant.
Therefore a curse devours the earth,
and its inhabitants suffer for their guilt;
therefore the inhabitants of the earth are scorched, . . .
. . . the vine mourns, the vine languishes' (Isaiah 24 vv. 4–6).

These verses are true today since the moral pollution and sinful nature of humankind, spoken of by the prophet, leads to the injustice and senseless

use of the earth that is described here. We have lost our original God-given purpose for the land: 'The Lord God took man and put him in the garden of Eden to till it and keep it' (Genesis 2 v. 5). We are happy to till but have forgotten the meaning of keeping the land. The Hebrew word *Shamar* means to preserve. Appropriate technology keeps the land and preserves genetic diversity; it does not allow the soil, nor the plant species and their varieties to be destroyed.

A major challenge to the missionary is to become involved in appropriate technology and to assist local peoples to keep and develop their systems of land use. Missionary earthkeeping[11] is a term which describes this, and the way in which the church helped the Aymara Indians of Bolivia is a good example of success.

In Romans 8 vv. 19–23 we read:

'For the whole creation waits with eager longing for the revealing of the sons of God; for the creation was subjected to futility not of its own will but by the will of him who subjected it in hope; because the creation itself will be set free from its bondage to decay and obtain the glorious liberty of the children of God. We know that the whole creation has been groaning in travail together until now and not only creation, but we ourselves who have the first fruits of the spirit groan inwardly as we wait for adoption as sons, the redemption of our bodies'.

These verses described the agony of what has happened to creation through the entry of sin into the world. The whole of creation is affected, not just humankind alone. Yet there is a note of hope and liberation in these verses from Romans that can be understood better through reading Colossians chapter 1:

'Christ is the image of the invisible God, the first-born of all creation, in heaven and on earth visible and invisible whether thrones or dominions, principalities or authorities, all things were created through him and for him. He is before all things, and in him all things hold together . . .

For in him all the fulness of God was pleased to dwell, and through him to reconcile to himself all things whether on earth or in heaven, making peace by the blood of his cross' (Colossians 1 v. 15–17, 19–20).

The New Testament repeatedly emphasises that Christ's death was to reconcile all things to himself. 'For God so loved the *cosmos* that he gave his only son' (John 3 v. 16). Those people who are reconciled to the creator through their personal faith in Christ should be the people who are most concerned about the fate of both the rest of creation and of our fellow human-beings who are oppressed by the greed of some. The application of appropriate technology is one way in which we can help to bring about justice in the world. The challenge to Christians is to be involved in the reduction of the exploitation of our fellow human-beings. This will involve

11 De Witt, C. & Prance, G. T. (eds.) *Missionary earthkeeping*, Mercer University Press (1992).

seeking to promote small-scale projects of appropriate technology that grow out of local cultures. The Christian can learn and respect local cultures and their use of the land without compromising belief. There has been a tendency to fear this approach because of the influence of the New Age movement which embraces all beliefs. But we have a rich theology of creation of justice and freedom in the Bible. If we have grounded ourselves in a truly biblical theology we can learn from local cultures without compromising our faith and thereby enrich our ability to assist them. It is Christ we want to take to the mission field not our culture. The challenge to us is not only to learn when and where to apply appropriate technology, but to be deeply grounded in the biblical teaching about the land and about creation. We then become christian earthkeepers.[12]

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12 Wilkinson, L. (ed.) *Earthkeeping in the 90's: stewardship of creation*, Eerdmans, Grand Rapids, Michigan, (1991).