Reading 12
Rethinking Rain Forests: Biodiversity and Social Justice[1]

The buzz is unmistakable. A huge chain saw cuts effortlessly through the wood of a beautiful rain forest tree, slicing up the trunk it has just felled into smaller bits to be taken away on giant lumber trucks. That image is fixed in our minds. It drives us to the same distraction it has driven so many before us. The rain forests are physically beautiful and contain the vast majority of our relatives on this planet. What sort of person would not be haunted by the sound of chain saws decimating them?

Yet another image is equally haunting. The bulldozed wooden shack, formerly the home of a poor family, constantly reminds us that lives as well as logs are being cut in most areas of tropical rain forests. Hungry children wander among the stumps of once majestic rain forest trees. Their mother cooks over an open fire, and their father fights the onslaught of weeds that continually threaten to choke our the crops the family needs for next year's food. All live in fear that the bulldozers will come again to destroy their present home. What sort of person would not be haunted by the existence of such poverty in a world of plenty?

But for us the power of these two images lies in the way they are connected[2], a fact we are reminded of every morning we slice up bananas on our breakfast cereal. The banana cannot be grown in the United States, yet it is one of the most popular fruits here. As we all know, it is produced in the world's tropical regions, usually in the same areas where rain forests have flourished in the past. The link between the decimated forest and the hungry children is the banana. That is why it is so easy, as we slice up a banana in Michigan, for our thoughts to wander to the image of the chain saw slicing up the rain forest trees and the children who view the banana as a staple food rather than a luxury.

The majority of life on earth lives in the rain forest. Close to 80% of the terrestrial species of animals and plants are to be found there. And this cradle of life is disappearing at an enormous rate. This is what the popular press has labelled as the "biodiversity" crisis.

Some view the problem from only a utilitarian point of view. It is obvious that we depend on biodiversity for the most elementary aspects of existence—plants convert the sun's energy to a usable form, animals convert unusable plants to a product we can use, bacteria in our stomachs help digest our food. There are a host of other critical functions of life's diversity and furthermore, future utilitarian designs on biodiversity are most likely to follow the patterns of the past—medicines and genes for new crops being the obvious examples.

Yet even if these utilitarian concerns were absent, the spiritual concern that the world's biodiversity is being destroyed should be enough to drive us to action. Less than 50% of the original tropical rain forests of the world are left, and at the present rate of destruction almost all will be gone by 2025. Our families, our memories—indeed a piece of our humanness—will have been destroyed forever. For this reason many have sounded the alarm and called for action.

While we echo this same alarm, we are concerned that the calls for action may not be correctly placed. Indeed, many of these calls are based on one myth or another about what is causing rain forest destruction. We feel that these myths act to mask the true issue. Here we present arguments against the five main myths of rain forest destruction and argue that a more complex understanding is necessary to grasp what is causing the destruction of the world's rain forests. So we begin with an analysis of the five myths and conclude with a description of "the causal web," the *true* cause of rain forest destruction.

Myth One: Loggers and logging companies are decimating the rain forest.

Certainly the most immediate and visually spectacular cause of tropical rain forest destruction is logging. Cutting trees is nothing new. The use of rain forest wood has been traditional for most human societies in contact with these ecosystems. But the European invasion of tropical lands accelerated wood cutting enormously, as tropical

[1] John Vandermeer and Ivette Perfecto, *Food First Backgounder*, Summer 1995. Authors' references have been omitted, but footnotes are included.

[2] emphasis added

woods began contributing to the development of the modern industrial society.

The direct consequences of logging, apart from the obvious and dramatic visual effects, are largely unknown. Some facts are deducible from general ecological principles, and a handful of studies have actually measured a few of the consequences, but a detailed knowledge of the direct consequences of logging is lacking.

What can be deduced from ecological principles is not that tropical forests are irreparably damaged by logging, but quite the contrary: tropical forests are potentially quite resilient to disturbance. While this is a debatable deduction, most of the debate centers on how fast a forest will recover after a major disturbance, such as logging, not on whether it will. The process of ecological succession inevitably begins after logging, and the proper question to ask, then, is: how long will it take for the forest to recover?

In analyzing the effects of logging, we cannot assume a uniform process. There are a variety of logging techniques, some likely to lead to rapid forest recovery, others necessitating a longer period for recovery For example, local residents frequently chop down trees for their own use as fence posts, charcoal, or dugout canoes. Forest recovery after such an intrusion can be thought of as virtually instantaneous, since the removal of a single tree is similar to a tree dying of natural causes, a perfectly natural process that happens regularly in all forests. At the other extreme is clear cutting, the extraction of all trees in an area. Though the physical nature of a clear cut forest is spectacularly different from the mature forest, from other perspectives the damage is not quire as dramatic as it appears. The process of secondary succession that begins immediately after such logging leads rapidly to the establishment of secondary forest. A great deal of biological diversity is contained in a secondary forest. Indeed, a late secondary forest is likely to appear indistinguishable from an old-growth forest[3] to all but the most sophisticated observer, even though it may have been initiated from a clear cut. Large expanses of secondary forest may even con tain more biological diversity than similar expanses of old-growth forest.' No studies thus far have followed such an area to its return to a "mature" forest again,[4] but a reasonable estimate is that it would take something on the order of 40 to 80 years before the area begins to regain the structure of an old growth forest.

Probably the most common type of commercial logging is not the clear cutting described above but, rather, selective logging. In an area of tropical forest that may contain 400 or more species of trees, only twenty or thirty will be of commercial importance.[5] Thus, a logging company usually seeks out areas with particularly large concentrations of the valuable species and ignores the rest. Often the wood is so valuable that it makes economic sense to build a road to extract just a few trees. Yet these roads offer new access to the forest for hunters, miners, and peasant agriculturists. In most situations this aspect of selective logging contributes most egregiously to deforestation, but it is obviously an indirect consequence of the logging operation itself.

A selectively logged forest is damaged, but not destroyed. Even a single year after the selective logging the forest begins taking on the appearance of a "real" forest. If no further cutting occurs, the selectively logged forest may regain the structural features of old growth after ten or twenty years. Although the scars of selective logging will remain for decades to a trained eye, the general structure of the forest may rapidly return. But this is not to say selective logging is, in the end, benign. The roads and partial clearings are obvious entrance points for peasant agriculture, as described below.

[3] Some ecologists think that the actual number of species in an ecosystem increases as ecological succession proceeds, but only to a point. After that critical point, the diversity actually decreases, leading to the conclusion that a very old forest may be less diverse than a younger one.

[4] There is a problem with the definition here. Most ecologists today eschew the notion of a "mature" forest, and simply speaks of "old growth." The notion of maturity implies something about a directed developmental sequence that does not fit well with what we now know about tropical rain forest succession.

[5] There are exceptions to this rule. Many swampy forests are characterized by the presence of only a few species. The biggest exception are the Southeast Asian Dipterocarp forests, where the vast majority of trees in the forest belong to a single plant family, characterized by very large and straight trunks, a logger's delight.

[6] *Neo-Malthusians believe that current trends in resource exploitation—largely fueled by population growth—cannot be sustained indefinitely.* (CLS)

Myth Two: Peasant farmers are increasing in numbers and cut down rain forests to make farms to feed their families.

This myth is especially popular among neo-Malthusians.[6] The explosive growth in the population of poor people in most tropical countries of the world is seen as a consequence of the basic forces that cause populations to grow generally, and a simple extrapolation suggests that even if this is not the main problem now, it certainly will be if population growth is not somehow curtailed.

Debunking the neo-Malthusian myth is not our purpose here; that has been done well elsewhere. Rather, laying the blame for the destruction of the forest on the peasant farmer is really blaming the victim. Peasant farmers in most rain forest areas are forced to farm under circumstances that are unfavorable, to say the least, from both an ecological and sociopolitical point of view.

At the outset, we must acknowledge the temptation to assume that, in rain forest areas, the potential for agriculture is great. Since there is neither winter nor lack of water, two of the main limiting factors for agriculture in other areas of the world, it is easy to conclude that production might very well be cornucopian. The tremendously lush vegetation of a tropical rain forest only heightens this impression, and indeed this perception may ultimately be valid. The ability to produce for twelve months of the year without worrying about irrigation is definitely a positive aspect to farming in such regions. But, so far at least, the woes are almost insurmountable, as most farmers forced to cultivate in rain forest areas can attest.

The first problem is the soils. Rain forest soils are usually acidic, made up of clay that cannot store nutrients well, and very low in organic matter.[7] Even if nutrients are added to the soil they will be utilized relatively inefficiently because of the acidity, and then they will be washed out of the system because of its low storage capacity.

This problem is actually exacerbated by the forest itself. Because tropical rain forest plants have grown in these poor soil conditions for millions of years, they have evolved mechanisms for storing the system's nutrients in their vegetative matter (leaves, stems, roots, etc.) If they did not, much of the nutrient material would simply wash out of the system and no longer be available to them. This means that a vast majority of the nutrients in the ecosystem are stored in plant material rather than in the soil.

Consequently when a forest is cut down and burned, the nutrients in the vegetation are immediately made available to any crops that have been planted. The crops grow vigorously at first, but any nutrients unused during the first growing season will tend to leach out of the system. The "poverty" of the soil only becomes evident during the second growing season. This pattern is especially invidious when migrant farmers from areas with relatively stable soils arrive in a rain forest area. The first year they may produce a bumper crop, which creates a false sense of security. Then, if the second year is not a complete failure, almost certainly the third or fourth is, and the farmer is forced to move on to cut down another piece of forest.

A second problem is insects, diseases and weeds. The magnitude of the pest problem is often not fully anticipated by farmers or planners, and it is only after problems arise that the surprised agronomists become concerned. This is unfortunate, since one of the few things we can predict with confidence is that when rain forest is converted to agriculture, many pests arrive. The herbivores that used to eat the plants of the rain forest are not eliminated when the forest is cut. They are representatives of the massive biodiversity of tropical rain forests, and the potential number of them is enormous. Herbivores can devastate farmers' fields, and are able to destroy an entire crop in days.

A third problem is that because of the uniformly moist and warm environment, organisms that cause crop diseases find rain forest habitats quite hospitable. Consequently, the potential for losing crops to disease is far greater than in more temperate climates. Finally, just as the hot, wet environment is agreeable for crops, it is also agreeable for competitive plants. Since no two plants can occupy the same space, frequently the crop falls victim to the more aggressive vines and grasses that colonize open areas in tropical rain forest zones. Weeds are thus an especially difficult problem.

These, then, are some of the ecological prob-

[7]There is some debate about the question of organic matter in rain forest soils. The rate of decomposition of organic matter is about twice the rate it is in a normal temperate zone situation, and thus it is only natural to expect the standing crop of organic matter to be less in the rain forest. Some authors have questioned this basic assumption. On the other hand, all are in agreement that once the forest is cleared for agriculture, whatever organic matter was actually there rapidly disappears from the soil.

lems faced by the peasant farmer seeking to establish a farm in a rain forest area. Sociopolitical forces, however, are far more devastating. And most of those sociopolitical forces are associated with a different form of agriculture—modern export agriculture.

When a modern export agricultural operation is set up, it tends to do two things regarding labor. First, it purchases, or sometimes steals, land from local peasant farmers, thus forcing them to move onto more marginal lands, with the kinds of problems we described above. Second, it frequently requires more labor than is locally available, thus acting as a magnet to attract unemployed people from other regions. Indeed, in most rain forest areas this magnet effect is a far more important factor leading to increased local populations than population growth.

But the modern agricultural operation, as detailed in the following section, is subject to dramatic fluctuations in production, since it is usually intimately connected with world agricultural commodity markets. Thus, there is a highly variable need for this labor, which means that today's workers always face the prospect of becoming tomorrow's peasant farmers.

In the contemporary world most peasant farmers find themselves in this precarious position. While it is true that many indigenous groups have lived and Farmed in rain forest areas for hundreds of years and certainly deserve the world's attention and support in their attempts at preserving traditional ways of life, the vast majority of poor peasant farmers today are not indigenous. Rather, they are people who have been marginalized by a politico-economic system that needs them to serve as laborers when times are good, and to take care of themselves when times are not. As long as times are good, the banana workers of Central America have jobs. But when economies sour, many of those banana workers suddenly become peasant farmers.

So in the end, the myth of the peasant farmers causing rain forest destruction is perhaps true in the narrow sense that a knitting needle causes yarn to form a swearer. But little understanding of what really drives the process is gained from the simple observation that a peasant's ax can chop a rain forest tree.

Myth Three: The transformation of rain forests into large-scale export agriculture is the main factor leading to deforestation.

Given the above description of how peasant agriculture is driven by industrialized agricultural activities, it is no wonder that many have concluded that the modern export agricultural system is the ultimate culprit. Furthermore, the images of large cattle ranchers purposefully burning Amazon rain forests to make cattle pastures fuels this interpretation. Again, there is some merit to this position. However, we feel that it, too, is an inappropriate window through which to view the problem of rain forest destruction.

The direct action of large modern agricultural enterprises is not really as involved in direct rain forest destruction as is popularly believed. Burning Amazon rain forests to replace them with cattle ranches is certainly an example of the direct destruction of rain forests by "big" agriculture. But the vast majority of modern agricultural transformations in tropical areas are confined to areas that had already been converted to agriculture. Developers of expanding banana plantations of Central America claim, for example, to he cutting no primary forest at all. While we doubt their full sincerity, it does seem that about 90% of the current expansion is into areas that had long ago been deforested. Attributing direct deforestation to them is, as they argue, probably quite unfair. On the other hand, their activities are not totally unrelated to the problem, as can be easily seen from a closer examination of their underlying structure.

The basic structure of modern agriculture is frequently misunderstood because of an overly romantic notion of agriculture—the small, independent, family farm, rich with tradition and a work ethic that even a Puritan could be impressed with. Such romanticism is fueled by a confusion between farming and agriculture.

Farming is a resource transformation process in which land, seed, and labor are converted into, for example, peanuts. It is Farmer Brown cultivating the land, sowing the seed, and harvesting the peanuts. Agriculture is the decision to invest money in this year's peanut production; the use of a tractor and cultivator to prepare the land; an automatic seeder for planting: application of herbicides, insecticides, fungicides, nematodes and bactericides to kill unwanted pieces of the ecology; automatic harvest of the commodity; sale of the commodity to a processing company where it

is ground up and emulsifiers, taste enhances, stabilizers and preservatives are added; packing in convenient "pleasing-to-the-consumer" jars; and, finally, marketing under a sexy brand name. In short, while farming is the production of peanuts from the land, agriculture is the production of peanut butter from petroleum. Over the last two hundred years, and especially in the last fifty, much farming has been transformed into agriculture.

The consequence of this evolution is that modern agriculture is remarkably intrusive on local ecologies. Take, for example, the establishment of a banana plantation. When the banana export business began, local peasant farmers grew most of the bananas and sold them to shipping companies. Gradually, the shipping companies turned into the banana producers, with huge areas devoted to the monocultural production of this single crop. To establish a modern banana plantation it is often necessary to construct a complex system of hydrological control wherein the soil is levelled and crisscrossed with drainage channels, significantly altering the physical nature of the soil. Contemporary banana production even includes burying plastic tubing in the ground to eliminate the natural variability in subsurface water depth. Metal monorails hang from braces placed into cement footings to haul the bunches of bananas. To avert fungal diseases, heavy use of fungicides is required, and because of the large scale of the operation chemical methods of pest control are the preferred option. The banana plants create an almost complete shade cover and thus replace all residual vegetation. Pesticide application is sometimes intense, other times almost absent, depending on conditions, but over the long run one can expect an enormous cumulative input of pesticides, the long-term consequences of which are unknown but likely to be unhealthy for both workers and the environment.

A major social transformation is also required. Banana production tends to promote a local "overpopulation crisis" by encouraging a great deal of migration into the area. As the international market for bananas ebbs and flows, workers are alternatively hired and fired. When fired, there is little alternative economic opportunity in banana zones, and displaced workers must either look for a piece of land to farm, or migrate to the cities to join the swelling ranks of shanty town dwellers.

Thus, the direct effect of most modern agricultural activities is not inexorably linked with the cutting and burning of rain forests, despite some obvious and spectacular examples of where it indeed is. More importantly, the overall operation of the modern agricultural system is integrated into a bigger picture. It is that bigger picture that we must examine to understand the causes of rain forest destruction.

Myth Four: Local governments institute policies that cause rain forests to be destroyed.

Probably the most cited example of local government policy that promotes deforestation is that of the infamous transmigration programs of the Indonesian government, in which hundreds of thousands of Javanese farmers have been displaced to the exceedingly poor soils of Kalimantan. However, most local government programs in forestry and agriculture are frequently dictated by very specific economic and political forces that are effectively beyond the control of local governments. Once those forces are understood, it is difficult to lay the full blame on local governments. They may he corrupt, they may be inefficient, but in fact their hands are frequently tied by forces beyond their control.

Given today's global interconnectedness, in order to understand the Third World we must view it as embedded in the modern industrial system. In that system the people who provide the labor in the production processes are not the same people who provide the tools, machines and factories. The former are the workers in the factories, the latter are the owners of the factories. The owners of the machines and tools directly make the management decisions about all production processes. A good manager tries to minimize all production costs, including the cost of labor.

However, the owners of the factories face a complicated and contradictory task. While factory workers constitute a cost of production to be minimized, they also participate, along with the multitudes of other workers in society, in the consumption of products. In trying to maximize profits, factory owners are concerned that their factories' products sell for a high price. This can only happen if workers, in general, are making a lot of money. In contrast to what is desired at the level of the factory, the opposite goal is sought at the level of society. Factory owners must wear two hats, then: one as owners of the Factories, and another as members of a social class. Owners wish the laborers to receive as little as possible, but members of the social class benefit if laborers in general receive as much as possible (to enable

them to purchase the products produced in the factory). This has long been recognized as one of the classic contradictions of a modern economy.

The situation in much of the Third World appears superficially similar. For the most part we are dealing with agrarian economies in which there are two obvious social classes, those who produce crops for export like cotton, coffee, tea, rubber, bananas, chocolate, beef, and sugar; and those who produce food For their own consumption on their own small Farms and, when necessary, provide the labor For export crop producers.

The typical arrangement in the Developed World is an articulated economy, while that in the Third World is disarticulated, in that the two main sectors of the economy are not articulated or connected with one another. The banana company does not really care whether its workers make enough money to buy bananas; that is not its market. The banana company cares that the workers of the Developed World have purchasing power, because those are the people expected to buy most of the bananas. This disarticulation, or dualism, helps to explain the differences between analogous classes in the First and Third Worlds. Flower producers in Colombia do not concern themselves much over the fact that their workers cannot buy their products. On the other hand, the factory owners in the U.S., whether they be private factories or government owned and/or subsidized industries, care quite a lot that the working class has purchasing power. General Motors "cares" that the general population in the U.S. can afford to buy cars. Naturally they aim to pay their own workers as little as possible, but that goal is balanced by their wish for the workers in general to be good consumers.

Seeing this structure at the national level in an underdeveloped country causes one to realize that one of the main, sometimes only, sources of capital to create a civil society is from agricultural exports. Because of the disarticulated nature of the economy the dream of development based on internally derived consumer demand is pie in the sky, and any realist must acknowledge that the only conceivable source of capital to invest in growth must come from exports. And most frequently agricultural exports are the only possibility.

Herein derives the need for Third World governments to continue expanding this export agriculture. This need is an inevitable consequence of the underlying structure of the genera] world system. Thus to blame local governments for initiating policies that are ultimately damaging to rain forests may be technically correct in that those policies frequently do just what the critics say they do—destroy rain forests. But taking a larger view we see that local governments are effectively constrained to do exactly that. Indeed, we predict that most of today's critics would wind up promoting the very same programs the local governments are currently promoting, if they were suddenly pushed into the same position the local governments currently find themselves.

Myth Five: Decisions made by international agencies cause rain forest destruction.

As before, there is some truth to this position. As well documented, although not yet "retrospected" by Mr. McNamara, the World Bank has left a trail of rain forest destruction in the wake of its many socially and economically destructive programs in the Third World. From the point of view of the decision making agencies, they, along with other agencies involved in the overall problem, seem to be boxed in by circumstances.

The climate for investment is variable in the Developed World. There are times when it is difficult to find profitable investments at home. At such times it is useful to have alternatives to investment. The Third World is one source for those opportunities. The Developed World, because of its basic structure, tends to go through cycles of bust and boom, sometimes severe, other times merely annoying. During low economic times, where is an investor supposed to invest? The Third World provides a sink for investments during rough times in the First World. This is why the dualism of the Third World is a "functional dualism." It functions to provide an escape valve for investors from the Developed World. The West German entrepreneur who started an ornamental plant farm in Costa Rica, on which former peasant farmers work as night watchmen, invested his money in the Third World because opportunities in his native Germany were scarce at the time. What would he have done had there been no peasants willing to work for practically nothing, and no Costa Rica willing to accept his investments at very low taxation? Clearly Costa Rica is, for him, a place to make his capital work until the situation clears up in Germany. Union Carbide located its plant in Bhopal, India, and not in Grand Rapids, Michigan. U.S. pesticide companies export to Third World countries insecticides that have been banned at home. U.S. pharmaceutical com-

panies pollute the ground water in Puerto Rico because they cannot do so (at least not so easily) in the United States. In all cases, Third World people are forced to accept such arrangements, largely because of their extremely underdeveloped economy.

With this analysis, the origin of the Third World as an outgrowth of European expansion (while a correct and useful historical point of view), can be seen as not the only factor to be considered. Even today, the maintenance of the Third World is a consequence of the way our world system operates. The Developed World remains successful at economic development for two reasons. First, because it has an articulated economy, and second, because it is able to weather the storm of economic crisis by seeking investment opportunities in the Third World. The Third World, in contrast, has been so unsuccessful because its economy is disarticulated, lacking the connections that would make it grow in the same way as the Developed World. Yet at a more macro scale, the dualism of the Third World is quite Functional, in that it maintains the opportunity for investors from the Developed World to use the Third World as an escape valve in times of crisis. Indeed, it appears that the Developed World remains developed, at least in part, specifically because the Underdeveloped World is underdeveloped.

Given this structure, what really can be expected of international agencies? Their goal is usually stated in very humanitarian rhetoric. But their more basic goal has to be the preservation of the system that gives them their station in life. That is, above and beyond the stated goals of the World Bank or the IMF or the FAO, there must be a commitment to keep the world organized in its current state. Their activities can thus be viewed as trying to solve problems within the context of the current system. They thus become part of what preserves that system.

We should not expect large international agencies to be promoting such causes as land reform for peasant agriculture or labor standard regulations for export agriculture. Indeed, such proposals would be at odds with the manner in which the current world system is functioning, and would represent a legitimate challenge to the existence of the agency itself. Viewed from this perspective, the international agencies are just as boxed in as the local governments. The world system is functioning as well today as it was at the end of World War II—according to the standards adopted by those who benefit from its current structure.

The Web of Causality

In reading our demythologization of the above five myths, the reader has undoubtedly noted that there really is something valid about each of the myths. Loggers do cut trees down, peasant agriculturists do clear and burn forests, export agriculturists do cut down primary rain forests, local governments do encourage export agriculture, and international agencies do promote programs that destroy rain forests. But our attempt was not to disprove these myths *per se*, but rather to disprove the idea that any one of them could be the ultimate cause of rain forest destruction. Indeed, in each case we have emphasized not the direct consequences of the agency involved but, rather, the indirect connections that tie each of the agencies into a web of interaction.

We agree with Wallerstein's general assessment that the world is intricately connected, that it no longer makes sense to try understanding isolated pockets, such as nations, and, we add, that isolated thematic pockets are similarly incomprehensible unless embedded in this global framework. For this reason, attempts at understanding tropical rain forest destruction in isolation have largely failed. As should be clear by now, the fate of the rain forest is intimately tied to various agricultural activities, which are embedded in larger structures, some retaining a connection to agriculture, some not. Our position is that there is multiple causation of rain forest destruction, with logging, peasant agriculture, export agriculture, domestic sociopolitical forces, international socio-economic relations, and other factors intricately connected with one another in a "web of causality." This web is key to understanding why we face the problem of rain forest destruction in the first place.... Damaged rain forests will recuperate if not further damaged, but recuperate far more slowly if further modified. The damaged rain forests themselves are created by either logging or modern agriculture and further cleared by peasant farmers. But the latter's activities are a consequence of the opportunities created by logging as well as the ups and downs of the international market that cause the hiring and firing of workers. Modern agriculture needs those workers, as well as the land that it buys or steals from peasant farmers. Viewed as a web of causality, it is quite pointless to try to identify a single entity as the "true" cause of rain forest destruction. The true cause is the web itself. Yet even this is an oversimplified picture. The web of causality is

far larger and more complex. The farmers, loggers, modern agriculture and workers...represent just a sub-web. The sub-web is ultimately embedded in a larger web that includes the international banking system, national governments, the U.S. and other Developed World governments, as well as consumers and investors in the Developed World. This is the true web of causality, and it is complicated and interconnected. Tweaking one strand is not likely to bring the whole structure down. Fighting a concerted bank to restructure the entire nature of the web is the only alternative. Furthermore, seeing the entire web of causality enables those engaged in highly focused political action to see their actions in relation to other actions, perhaps evoking an analysis of consequences that may be dramatic, even though quite indirect. For example, organizing consumer boycotts can be seen as clearly attacking the connection between consumers and modern export agriculture. But following through the logic of the web also suggests that a successful consumer boycott may likewise reduce the need of modern agriculture for workers, thus creating more peasant farmers, who will likely clear more forest. If a careful analysis of this situation reveals that the loss of jobs will be severe, the political action agenda might then be expanded to form alliances with a local farm worker union calling for job security or a political movement seeking secure land ownership for the increased number of peasant farmers that will surely be created if the boycott is a success.

The Political Action Plan

This analysis is meaningless without a program of political action. Political action must focus on the web of causality and eschew single issue foci. Calls for boycotts of tropical timbers or bananas need to be coupled with actions to change investment patterns and international banking pressures. Above all, political action plans must be formulated so they do not make the situation worse—certainly a conceivable, perhaps even likely, consequence of any action, given the complex nature of the web of causality. It appears obvious that political action needs to be focused not only on rain forests and the subjects traditionally associated with them, but also on social justice. The same peasant farmers who formed the backbone of the Vietnamese liberation forces or the Salvadoran guerrillas are the ones who are forced into the marginal existence that compels them to continually move into the forests. So the same issues that compelled progressive organizers in the past to form solidarity committees and anti-war protests are the issues that must be addressed if the destruction of rain forests is to be stopped.

Just as the most effective political action in the past was organized in conjunction with and to some extent under the leadership of the people for whom social justice was being sought, so today political action should be coordinated with those same people. As that coordination proceeds, the alliances that grow will inevitably lead to the reformulation of goals, which the rain forest conservation activist must acknowledge and respect. Local people, quite obviously, must recognize something about the rain forest that is in their best interest to preserve, and it is the job of the progressive organizer to construct the political action so that such value is evident. In short, the alliance between the people who live in and around the rain forest and those from the outside who seek to stop the tide of rain forest destruction must be a two way alliance. If the people who live around the Lacandon forest in Mexico, for example, have as their major goal the reformulation of the Mexican political system, the rain forest conservationist must join the political movement to change that system—something that many would see as distant from the original goal of preserving rain forests. Political action to preserve rain forests, under the framework of the web of causality, will inevitably involve the serious preservationist in social justice issues, many of which initially may have seemed only marginally associated with the problem of rain forest destruction. Recalling the old slogan, "If you want peace, work for justice," we hope someday to hear, for example, "Save Mexican rain forests, support the Zapatistas," or "If you want to save Cuba's rain forests, break the illegal U.S. blockade."

Questions

1. List the five 'myths' discussed by Vandermeer and Perfecto in their essay about the tropical rainforests. Do the authors insist that these myths are completely untrue? If not, why are they referred to as 'myths?'

2. What is the authors' main point in this article? How do they develop their argument?

3. (a) The authors outline a number of problems that peasant farmers face in tropical rain forests. What are these problems?

   (b) The authors maintain that small-scale farms are *not* a true cause of rain forest destruction. Explain their reasoning.

   (c) What about industrial agriculture? According to the authors, how responsible is it for rain forest destruction?

4. Two industrial activities—logging and large-scale export agriculture—have long been associated with rain forest destruction. Based on this article, which of these do you think is more closely associated with the true causes of rain forest destruction? Explain your reasoning.

5. According to the authors, what roles do policies by Third World governments and international agencies play in rain forest destruction?

6. According to Vandermeer and Perfecto, the 'disarticulated' nature of Third World economies is an important cause of tropical rainforest destruction. Explain this cause in a little more detail.

7. Vendermeer and Perfecto believe that social justice issues lie at the heart of rainforest destruction. What is their reasoning?

8. What is the 'web of causality' referred to by the authors, and why is it important?