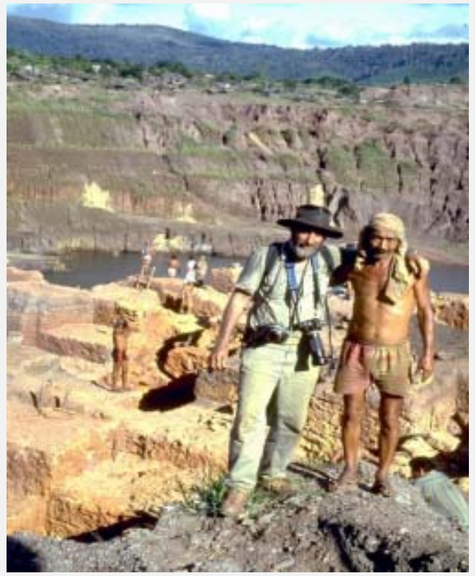
AFTERTHOUGHT

"So, I would really like to know what is really going on. Thank you."

— Erin Hayes, Bremerton Middle School

The Great Sleep is over. It's time to awaken from the dream. The myths and romantic notions which have shrouded the Amazon for five hundred years are evaporating like the morning mist rising in the tropical heat. The mystery of God's Green Hell, like the million undiscovered species of Amazonian life, is in danger of extinction.

Nature's last sanctuary has been violated. We must gather our tools and our wits. Time is precious. We must struggle not against Nature, but with it, to preserve what may be the earth's last Eden.



The author in the Serra Pelada Gold mines, 1990

I ventured into the deep Amazon Jungle over twenty years ago when only Indians, gold miners, road-builders and settlers inhabited *God's Green Hell*. I wanted to be part of a great adventure — the building of the Transamazonic highway across the great Amazon jungle. I was one of the first to document the construction of the famous highway — a dirt road cut through the heart of the jungle connecting the farthest reaches of western Brazil with the Atlantic coast. The jungle was practically untouched then. The rivers were crystal clear and full of fish. The forests were uninhabited except for gold miners, settlers and Indian tribes, many of which were still undiscovered. The land was primordial, untouched.

I heard a colonist once say, *Where there's a road, there's a fire*. That was certainly the case for the Transamazonic highway, and I thought then that the road spelled the beginning of the end of Eden, as it were. When I returned to New York, I was told by practically everyone that I was naive to think that anyone, much less a handful of Brazilian gold miners and settlers, could destroy the Amazon Jungle. No-one was interested in the story and few really believed it. That was in 1972. It took them, and the world, twenty years to catch up. Now they believe.

Much has happened in the Amazon since I first saw those great Forest Giant Buttress trees felled to make way for the Transamazonic highway: Hydroelectric dams have flooded millions of acres of virgin forest. Railroads have been built. Gold, manganese, iron ore, copper, nickel, cassiterite, lignite, natural gas, tin, and aluminum are being mined. The Transamazonic road which, when finished was 3000 miles long, now has less than 700 miles of passable roadbed. Indian tribes have been "civilized" practically out of existence. In the state of Rondonia, an area the size of Belgium has already been incinerated and the world waits in suspense to see if the burning will continue into the next decade and through the neighboring state of Acre. National Parks have been established. New States have been created crisscrossed with new roads. Indian Reservations have been delineated — at least on maps. Gas and oil have been discovered in great quantities. Long and short term scientific studies have been launched. Thirty thousand new species of animal and plant life have been recorded. Cultures have collided; Indians mix with Whites, impoverished homesteaders have become land barons overnight, gold miners are fighting Indians, cattle ranchers are fighting farmers who are fighting the rubber tappers who are not fighting Indians any more. New religions have been exported from the verdant forests to the concrete jungles of the south where a growing number of Faithful are following the decrees of Santo Daime, a cult built around a powerful hallucinogen used for centuries by the Amazonian Indians, and only recently discovered by the White man. Even rock 'n roll found its way into the forest in the form of Sting, an English chap who brought the savage Raoni, Chief of a tribe of 398 Indians, and the Pope, head of 300 million Catholics, together for the sake of saving Eden. The event was more ecological than ecumenical for, although it was perhaps the first time in history a Protestant led a Savage to a Catholic, it was for the sake of saving not his soul, but his soil.

The Amazon has been a busy place.

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Construction of the Balbina Dam north of Manaus began in 1974 and took three years longer than expected to complete. It's turbines began turning in 1988. It cost $750 million and was designed to provide Manaus with 90% of its present energy needs. The man-made lake behind the dam submerged 1,400 square miles of virgin forest yet produces only 13 megawatts of electricity. The problem with Balbina is that there's not enough water in the rivers to turn all five turbines at once. Politically, it's a case of poor planning. Technically, the dam is a disaster. Ecologically it's a tragedy, since there's enough natural gas in the area to drive thermal-electrical turbines for 30 years.

"It's easy to speak now," said Miguel Nunes, president of Eletronorte, the company responsible for the dam. "However, when the project was first conceived no one knew that there was abundant gas in the area." But, did anyone look?

The mistakes of Balbina were not ignored. The Tucurui' dam was well-planned and when finished, produced a lake on the Tocantins River the size of the one behind Balbina, yet it generates sixty times more electricity.

But there were more hard lessons to be learned. Today, skin-divers armed with underwater chainsaws work day and night to harvest a fortune of wood which was submerged and left to rot beneath Tucurui' lake, as much by the blunders and disorganization of the bureaucrats as by the construction of the dam. There's still time to save most of the 1500 square miles of underwater forest; the trees behind Balbina will never see the light of day.

With each new project, Brazil learned that the only way to prevent future ecological disasters is through proper study and planning. At the dam in Cachoeira Porteira, scheduled to begin operation in 1995, the virgin wood of the future lake is already being cut down and taken from the land. An enormous clearing is growing daily which will ultimately be submerged under the waters of the Rio Trombetas.

Mining has become the focal point of the progress in the Amazon. Unlike other industries which require excessive amounts of deforestation to turn a profit, such as farming and cattle raising, mining can be done with a minimum of environmental destruction. To extract one million dollars worth of minerals per year from the sub-soils of the Amazon it's necessary to defoliate only .017 square kilometers, an area about the size of three football fields. To make the same amount of money raising cattle more than 65 square miles of forest would have to be razed.

In 1967, Breno Augusto dos Santos, a geologist, set his helicopter down on a small area of forest lost in the center the state of Para', called the Serra dos Carajas. He had heard numerous reports of pilots whose compasses would go crazy as they flew over this particular parcel of land. What he discovered hidden beneath the serene green canopy of trees was what was to become the world's largest mineral reserve. Last year the mine produced 35 million tons of high-grade iron ore. Nearby, in an area yet untouched, lies untold amounts of copper, bauxite, manganese and gold. The mining companies spent over $100 million in ecological measures to build and operate what has been called the cleanness mine on the planet, and promises to continue to provide profits well into the next century.

But not all the mining in the Amazon has been so pristine or lucrative. Six years ago, more than 14 tons of gold was carried out, one sack at a time, from the open-pit of the Serra Pelada. A multitude of mud-covered bodies crawled up the steep, red cliffs of the mine, each with a sack of earth slung over his shoulder. Every ounce of earth in those sacks contained precious amounts of the yellow ore. From a distance, the ground itself seemed to move, as thousands upon thousands of men climbed like ants up and down wooden ladders. The scene was reminiscent of the building of the great Pyramids. Today, less than five thousand men continue to labor around the great hole in search of gold, and only 800 kilos of gold was extracted last year. Less and less each year.

When an Exodus of 25,000 families from Parana' and Rio Grande do Sul reached the Promise Land of Rondonia where it was said free land and a new life would be waiting for them, they planted coffee, cocoa and beans in lands whose level of productivity were some of the poorest in the world. To increase its productivity, they cleared the land by fire. In 1989 they set so many fires it filled the skies with more carbon than all the active volcanoes on the planet.

Only 12% of the soils of Rondonia are productive. After they were all parceled out or ceased to be productive, thousands of would-be farmers turned to mining gold. Today there are over 100,000 prospectors in Rondonia. Last year they produced fifteen tons of gold by dumping over eight tons of mercury into the Madeira River and another twelve tons into the atmosphere.

The White man is not the only one who has profited from the yellow ore. There are 10,000 Yanomami Indians in the North who have all but sold out to the 20,000 gold miners. These miners land 450 planes daily on seven-dozen airstrips, guaranteeing the flow of gold out of, and all the trappings of modern society into, the Indian Reserve.

The legal limit of gold allowed to be taken from the land is 700 kilos, or 1500 pounds per month. In actuality, over four tons of gold leave the region in the same amount of time. Some say that this is progress, the ultimate integration of the Indian into Brazilian society. Others watch in dismay as the cultural identity of whole tribes is irreversibly altered or lost completely to modern society. Today it is not uncommon to see a tribe of "good savages" sitting naked in front of a television watching soap-operas.

These are just a few examples of the progress and growing pains Brazil has experienced in the Amazon. There are many more. The mistakes of the past — indiscriminate burning of land, drowning of large tracts of virgin forest behind dams, the uncontrolled influx of colonists to the north, the pollution of rivers and sky with mercury and carbon — are difficult lessons from which Brazil, and the world, must profit.

The statistics are impressive. They can also be alarming, misleading or informative, depending on where you get them and how you read them:

More than 90% of the soils of the Amazon are deficient in nitrogen and phosphorous making agriculture practically impossible.

Only 13% of the state of Rondonia has been burnt to the ground.

Less than one-tenth of a percent of the deep forest has been cut down.

To make one McDonald's hamburger you have to destroy seven square meters of virgin forest to make room for the cattle.

One-thousand square hectares of cattle ranch can support only five workers. The same amount of land can employ 1500 employees if the land is used in other ways such as mining or industry.

All the dams built so far, and those planned to the end of the next decade, will cover only .02% of the region. Piled all together, the wood taken from this amount of land would exceed 430 million cubic meters — enough wood to fill over 200 Shea Stadiums.

To make one megawatt of electricity 10,000 trees must be inundated.

There are over two million kinds of animal and plant life in the Amazon. Of these, we have recorded less than 30% so far.

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Five hundred years ago, there were over 2 million Indians in the Amazon forest. Today there are less than 136,000. They are dispersed in an area larger than 83 million square hectares.

If you spread out the entire Indian population throughout the three million square miles of Amazon, each Indian would own 6 square kilometers of land. If every white man in Brazil owned that much land, the country would have to be larger than all the continents put together.

The United States pollutes the atmosphere with 1300 million tons of carbon each year. All the burning in the Amazon for the past ten years has not exceeded 336 million tons.

An area of virgin forest the size of your boot-print contains over 1500 species of plant and animal life — counting fungus and micro-organisms.

It takes four-hundred square kilometers of forest to provide enough wood to furnish a ten-story building. That's an area one-third the size of the city of Sao Paulo, the world's second-largest city.

The World Bank appropriated only 3% of the $320 million loan used to build BR-364 for ecological study and preservation of forest along the road.

More than 25% of the world's pharmaceutical drugs are made from ingredients extracted from plants and animals in the Amazon forest.

An area of forest the size of the state of Sao Paulo has been burnt down in the past ten years. That's like burning down Montana border to border.

Only 3% of the land mass of the Amazon is designated as National Parks and protected by law from any form of exploitation.

I could go on, but why bother? The mathematics of the forest tell us little about how to proceed.

While most scientists may agree that over 90% of the ecosystems of the Amazon jungle are still untouched, the controversy begins just here: What parcel of forest will be decimated next for the sake of economic gain? Studies like the one started by Thomas Lovejoy ten years ago have shown that the smaller an area of forest shrinks the faster the animal life and bird population becomes extinct. According to one model, 80% of the deep Amazon should be left completely untouched. That's an area equivalent to the Eastern Seaboard of the United States.

The international scientific community continues to fight for the establishment of laws which will regulate and protect the vast natural resources of the Amazon valley without prejudicing the demands of National progress. But it's difficult for the Brazilian government to defend the interest of foreign conservationists when its own people are starving and living in misery. To them, the Amazon signifies a solution to the abject poverty of millions and the possible normalization of a floundering economy which has plagued Brazil for years.

Cutting down on square acre of virgin forest before studying the extraordinary life it contains is like tearing up a book before reading it. "Burn down an entire forest and you will have burnt down an entire library," said Daniel Janzen of the University of Pennsylvania. Not to make light of the analogy, it would be nice if we could go into the forest and, as with a library book, sign out the vast wealth it contains. The only problem is that we would not be able to return it, not in two weeks or two lifetimes.

The Amazon is a fragile place. It needs us as much as we need it. Worldwide attention has been focused on the Amazon jungle precisely because of a growing awareness of planetary ecology and the need for wisdom and concern for our environment. The time has come to correct the mistakes of our past.

When I return to the Amazon -- and I will -- I hope that it is still shrouded in primordial mist and mystery. I hope it will always be what it was from the start: a big place filled with giant trees and rivers so wide you can't see the other side; with birds and fish and insects of infinite variety; with strange sounds in the night, in the day, always; with wonder hues and shades of color that make rainbows poor; with mist and towering clouds, with rain and great winds. With deep silence. With Presence. The Amazon is filled with Presence.

Forty-four ouces of gold, 95% pure, worth about $15,000, dredged from the Madeira river in twenty four hours.

It is presumptuous to think we could "develop" the Amazon. It is already perfect. Its perfection lies in its terrible beauty, its timelessness, its life. Along the rivers, there are so many butterflies that you can't see ten feet for all the fluttering of design and color about you. My favorite is the Morpho, whose iridescent blue wings are brighter than the backsides of kingfishers. It doesn't flutter like most butterflies. It glides until it loses altitude and then, with one intermittent flap of its great wings, catches another current and soars until it loses altitude again. It looks more like a bird in a thermal than a butterfly. And that's what I love most about the Amazon: nothing is really the way you imagine it to be, the way you were told things were. It's always bigger, brighter, more beautiful.

Twenty years ago, the idea of man destroying the forest, the entire Amazon Jungle, was as absurd as the possibility of polluting the Pacific Ocean. Who could ever cut it down? By the time we got to the other side, it will have all grown back again. How could a thousand, or even a million gold miners make a dent in the forest? It would swallow them up in no time. Afterall, the Amazon was immortal. That's what I thought, then. That's what everyone thought.

Well, almost everyone. But the truth is much different. Once cut down, once burnt, once polluted, it will never be the same. It will never grow back again like before. Never.

There's a majesty about the jungle. Torrential storms rage across the sea of green trees like land-locked hurricanes. From the air you can see two or three, even four at a time, rolling over the flat plains of the green canopy, like great tall ships, driving all manner of birds and animals before them. In the rainy season these isolated storms gather together and fill the sky with clouds so thick and dark it blots out the sun for weeks. Thunder rolls back and forth and lightning ignites the skies with frightening regularity. This goes on for weeks until the heavens open up. In the Amazon it doesn't rain. Water simply falls from the sky in biblical proportions.

On the eve of the Third Christian Millennium, and the one-hundredth since the advent of man on the planet, Brazil is faced with what may be the greatest challenge of its history. But the responsibility Brazil faces in protecting the Amazon while utilizing its natural resources are not Brazil's alone, they are everyone's. Perhaps Thomas Lovejoy's words are more true today than ever before: *Where Brazil goes, there goes the world.*

June 28, 1989
1340 Shorewood Drive
Bremerton, WA 98312

United States Ambassador for Brazil
Brazilian Embassy
Washington, D.C. 20013

Dear Brazilian Ambassador:

Hi, my name is Erin Hayes. I'm a student at Bremerton Middle School. I'm very concerned about how you are allowing your rain forest to be cut down. Recently my friends and I have had a walk-out protesting the cutting of the Brazilian rain forest. We all got suspended. Some for 2 days, some for the rest of the school year. Those of us who got suspended had to go to summer school (or extended school). About 180 were suspended. So I would really like to know what's really going on. Thank you.

Sincerely yours,
Erin Hayes

Erin Hayes is not alone. The entire world is protesting and would really like to know what is going on in the Amazon. Her letter, which was published in newspapers all over the world, speaks eloquently of the confusion, alarm, and dismay which is growing daily over the cutting and burning of the Amazon forest. Brazilian embassies around the world are being inundated with letters like this one. Most of them come from the United States, but an increasing number of letters are being sent by concerned citizens in other countries like Italy, Russia, England, France and Pakistan. Their anxiety belies an expanding consciousness about the ecological problems of our fragile planet.

"If Erin is so worried about forests being cut down, why doesn't she write a letter to her own Governor and tell him to stop cutting down the trees in the State of Washington where he lives!" said my friend after I showed him Erin's letter.

My friend's indignation is shared by every Brazilian who, feeling unjustly accused for the ecological ills of the planet, cite other man-made disasters around the world like Valdez, Chernoble, and Three-Mile Island, not to mention the killing of whales, the burning of fossil fuels and the unending flow of styrofoam into the food-chain. All this, however, seems to fall on deaf ears and the world continues to point an accusing finger at Brazil.

The irony is that if Erin knew about the forests being cut down in her own backyard she might indeed write a letter to the Governor of Washington State. The fact that she doesn't may cause astonishment for some but, like all of us, she is a victim of the media. The Amazon has become the "hot spot" of the world, something worth writing home about. There's something more dramatic about burning down the world's greatest tropical rain forest than cutting a few trees on the slopes of the Cascade Mountains. The trees of the Amazon aren't just any old trees. They are the arboreal Giants of the Primordial Forest, the forest we all know and heard about since childhood, the greatest tropical rain forest on the planet. Somehow, it's the biggest and greatest and oldest things which command our attention. The Amazon is no exception.

If all the pages of tall tales, exaggerations and outright lies written about the Amazon were piled up and set afire, the world would be in danger of another ecological disaster. The speculations, beliefs and absurdities perpetuated about the region are no longer part of the great tradition of legend and lesson given to us over the years by poets and pioneers. Now, they are grounded in pretentious scientific arguments, bursting with copious numbers, complicated and confusing statistics and, worse yet, formidable names like the Ozone Hole or the Greenhouse Effect.

The Amazon is immediately associated with the Greenhouse Effect for reasons other than the obvious parallel with growing plants. The theory holds that increased levels of CO^2 in the atmosphere creates a barrier of gas which traps infrared light, raising the earth's temperature which, in turn, will melt the polar ice-caps and swamp the world's coastal cities. Since burning trees spews carbon dioxide gases into the atmosphere, the world continues to throw stones at Brazil for the great fires which rage across the Amazon. The accusations are sometimes comical, such as the one that Brazil is accelerating the eventual flooding of New York City under ten feet of Arctic run-off.

It's estimated that 25% of the world's total carbonic emissions is caused by tropical forests burning around the globe. That figure may cause alarm for some, but for most of us, it's an meaningless statistic which has little real

significance in our everyday life. Not many of us have set fire to a tropical forest or even seen one burn. Most of us can't imagine what it's really like, and having nothing to compare it to, we pretend we really understand what it all means: Brazil is out to destroy the world.

It happens, however, that most of the CO^2 put into our atmosphere comes not from the tropical forests, but from the industrialized countries of the world. The United States alone is responsible for more than 22% of all the CO^2 in the atmosphere, followed by the Soviet Union, with 18.8%, and then Western Europe, with 14.7%. Brazil's share, including all the industrial pollution and the fires in the Amazon, accounts for only 5% of all the CO^2 in the atmosphere.

Figures such as these do little, however, to calm the growing fear that Brazil will destroy the earth's atmosphere if it continues to burn down the Amazon forest which, in the minds of many, is the "lungs of the planet." Even Jacques Yves Cousteau's recent revelation that the oceans, not the rain forests, produce the world's oxygen, has had little impact on international opinion. But opinion is not always rational and the hysteria which surrounds the ecological issues in the Amazon may allow us to deflect, if not ignore, our own responsibility for the problem of pollution by other means throughout the world. In the USA, the major sources of CO^2 come from everyday necessities like heating houses (14%), industrial manufacturing (23%), thermoelectric power plants (32%), cars, trucks, buses, trains, planes (29%) and a periodic volcano (2%). Unfortunately, these are figures we've learned to live with. Indeed, we have learned that we can't live without them.

"Let ye who is without sin..."

The Brazilian Amazon jungle has become a metaphor for the ecological woes and human-rights abuses of the planet. Cutting a tree down is as much an emotional as it is an environmental issue. A tree is the symbol of life; whoever destroys a tree destroys Life itself. This is not to belittle the seriousness of the situation in the Amazon. But the world is tired of hearing how we are polluting the planet with nuclear waste, oil spills, plastic, chemicals, fertilizers, and everyday garbage. That's boring stuff. Cutting down a tree, now that's another story. It makes for good press and congenial conversation.

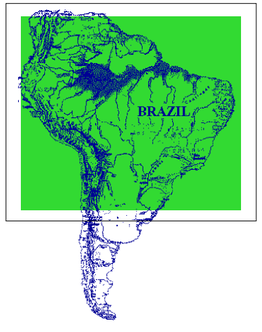
The image of an isolated Indian tribe being threatened with extinction by either a raging inferno or an advancing civilization causes indignation in even the most jaded of us. Perhaps the haunting memory of abuses to our own Native American has made us a nation of Human Rights Activists. Perhaps it's more than our own history: the world has suffered millenniums of man's inhumanity to man, and now it's time to speak up. The Amazonian Indian, like the virgin forest he lives in, stands as the supreme example of the Natural Man, the last Innocent, the Good Savage, the incarnation of Adam. The Indian, like the Amazon itself, has become a metaphor and a powerful symbol in the eyes of the world. How else could a mismatched pair like the rock star Sting and the savage Raoni get an audience with the Pope? The idea would be ludicrous if it weren't so newsworthy.

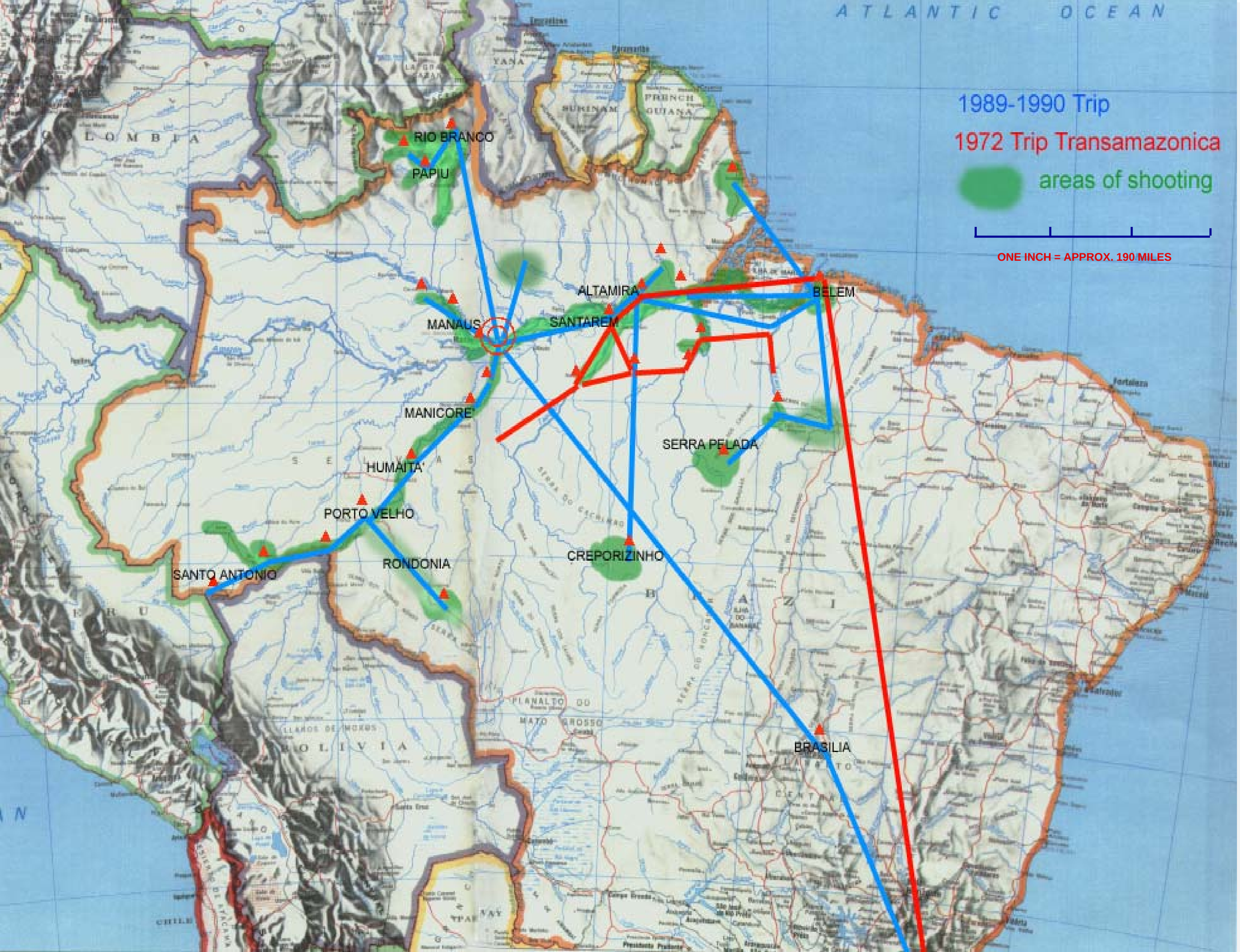
It has been said that the dead are sometimes more useful than the living. This is certainly the case of Chico Mendes, the leader of a group of Rubber Tappers in the state of Rondonia. To some, he was one of many unknown unionists, a trouble-maker, a "nobody going nowhere" until a bullet landed him in a grave and on the front page of practically every newspaper in the world. His story scandalized and then electrified the world. His life, and death, have become synonymous with man's struggle for justice and freedom in a hostile environment. Chico Mendes is no longer a "nobody going nowhere". He's a hero who, posthumously, is headed for Hollywood.

In the end, we're left with myths and stories which make for good reading but tell us little about really what's going on in the Amazon. And while all this provides us with sufficient fuel to kindle the flames of social, ecological and political indignation,— and an excuse to walk out of school — in truth we really are only reacting out of fear and ignorance.

The real tragedy isn't that forests are burning or that the rivers are being polluted, or that Indians are being swallowed by the modern world, or even that some have met an untimely end. The tragedy is that, with all the hysteria and our penchant for sensationalism, Erin Hayes and millions like her may never find out what's really happening in the Amazon jungle until it's too late.

The author, age 23, on the Front Line of the Transamazonic highway, October 1972, between Itaituba and Jacareacanga, 200 km south of the Amazon River.





Map of Brazil showing the trips taken by Boccaccio and the areas where photographs were taken. The first trip, in 1972, in shown in red. The second, taken in 1989-90 is in blue.