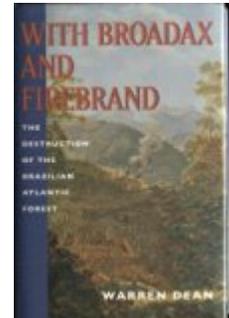




Warren Dean. *With Broadax and Firebrand: The Destruction of the Brazilian Atlantic Forest.* Berkeley: University of California Press, 1995. xx + 482 pp. \$38.00, cloth, ISBN 978-0-520-08775-0.



Reviewed by Jose Augusto Drummond

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"Masterpiece" is a word that reviewers must use with care. If nothing else it may create excessively high expectations among readers. Reviewers often use the term for books that they would have gladly written themselves. I, for one, admit that I would like to have written this book, but I am confident that classifying it as a masterpiece will not frustrate readers. This is an exceptional text, one of the best achievements of environmental historians. It deserved a posthumous award given by the ASEH. The book was also translated into Portuguese, in 1996, with solid editorial success. It also has the merit of generating controversy about basic issues, as I shall show. For all this, it is still a fresh and stimulating text, despite having been published five years ago.

Sadly, Dean is no longer among us for research or controversy, having died in a tragic accident in Chile in 1994. This was his densest incursion in Brazilian environmental history. It surpasses his *Brazil and the Struggle for Rubber* (Cambridge University Press, 1987), and has more remote origins in his earlier texts about plantation systems (*Rio Claro: A Brazilian Plantation*

System 1829-1923) and industrialization of the state of Sao Paulo (*The Industrialization of Sao Paulo*). This text is unique in its interdisciplinary approach, in its chronological and geographical breadth, in its masterful handling of hundreds of sources of information, and most of all in its topic – the virtual destruction of an entire tropical rain forest biome.

This is the history of the uses and many abuses of the Atlantic Forest biome, perpetrated by different groups of inhabitants of the Brazilian territory. This grand scope required the use of equally large time scales, both geological time to account for the natural history of the forest, and cultural time for dealing with the anthropogenic changes in pre-historical and historical times. The geographical scale is also large, as the Atlantic Forest, around the year 1500, was very extensive. It ran for about 3,000 continuous kilometers of coastline, from the state of Rio Grande do Sul to the state of Rio Grande do Norte. It also penetrated deeply into several stretches of the southern-central Brazilian territory, reaching land-locked parts of states such as Mato Grosso do Sul, Minas Gerais

and Goiás, and even Paraguay. Experts estimate that it covered somewhere around 1.1 million square kilometers, mostly continuous, more than one eighth of the current Brazilian territory, affecting seventeen of the current 28 Brazilian states. Dean concentrated his research on the three richest states of contemporary Brazil - Sao Paulo, Minas Gerais and Rio de Janeiro but also examines sections of Espirito Santo, Bahia and Parana.

According to updated estimates, today less than ten percent of this grand floral formation remains in a native or quasi-native state. The Atlantic Forest was the largest tropical rain forest biome erased by human activity in historical and pre-historical times, anywhere on the planet. This is enough to justify the importance of the forest and of the book. However, it is useful to have in mind that much larger areas of temperate forests in several regions of the world were also destroyed, in early or contemporary times, and in some cases this happened in much faster and thorough manners than in Brazil (such as in the Eastern US). This type of comparison, as I shall argue, is not a minor detail.

For some reason, Dean does not remind the reader about these two latter historical trends. Temperate forest destruction in today's developed countries is a fairly well documented phenomenon, and tropical rain forests are under well publicized, multiple sieges in a few dozen non-developed countries. These two facts or processes are at the core of Dean's motivation to write this book, but only the second one is clearly stated by him. He probably did so because he was convinced that the destruction of tropical rain forests is "irreversible" in any human time frame (p. 5), which is plainly true. However, the destruction of native temperate forests in North America, Europe, and Asia was not at all a minor ecological matter, nor can anybody suggest that it was even partially "reversed" by natural or cultural factors. It is thus fair to state that Dean discounted the biological

and ecological losses caused by extensive temperate forest destruction. This introduces analytical limitations with which I will deal later.

Dean starts out with the natural history of the Atlantic Forest, combining in a simple and legible way information and analysis from the fields of geology, geomorphology, botany, climatology and ecology. A layperson can understand the basics of the tropical rain forests as a complex combination of ecosystems in which year around heat and abundant water combine to produce so many interconnected species and specimens. But early in the book (p. 10) Dean sets out to study the "relationship between the forest and humans," his real subject. Dean is probably the first environmental historian to admit in writing something that repeat visitors of tropical rain forests soon learn but rarely pass on to their mostly urban circles -- the tropical rain forest is a frightening place for human beings of all places and cultures. In order to live in these forests, humans by necessity make openings in them. Only in "despair" do human societies live in closed tropical rain forests. The Atlantic Forest draws words such as "awesome," "chaos," "wreckage" (p. 10-12). Dean lets go of any romantic or aesthetic appeals in favor of the forest, and this is for the better.

This unusual appreciation provides the basic tone of Dean's narrative he shows the irrepressible human urge to create clearings, ever larger, to establish several forms of livelihood in the domain of the Atlantic Forest. Dean looks at how different "waves" of human occupation, over the last 8,000 years or so, added anthropogenic factors to the natural ones that shaped the Atlantic Forest. For example, fire used by Paleolithic peoples to aid hunting and by gardeners to open fields for manioc or corn spread and gained in scale rather quickly throughout the South American lowlands, culminating in the grand conflagrations used to open forested land for pastures and plantations of sugar-cane and coffee. Later, fire was aided by "modern" activities such as logging, construction

of cities, trails, roads, railroads, transmission lines, and hydroelectric dams. From indigenes to contemporary urban populations, Dean "absolves" no one. Each group used or uses the forest in its own ways, and all groups contributed to its transformation in some degree. Dean takes time to show how the life styles of poorer rural populations or detribalized natives and *caboclos* (a general name for miscigenated rural dwellers) created lesser pressures on the forests. However, he stresses that even these two groups still use fire for their slash-and-burn, itinerant agriculture, changing the forest.

In most chapters Dean examines in detail each and every human use of the forest, its lands, its waters, and its products -- agriculture, ranching, hunting, gathering of food, medicinal, ornamental and other useful plants, opening of trails and roads, mining, construction of dams, consumption of charcoal, collection of firewood, and reforestation projects. For each use, Dean presents data or estimates on cumulative deforested areas. He singles out the most aggressive uses for more detailed examination, particularly the ones that did not allow for natural forest recovery. It is a shame that the author did not pull together these estimations (see, for example, p. 90, 176, 294-296) in a table or diagram, because the more inquisitive reader soon starts to search back and forth seeking to compare these scattered figures among themselves.

This focus on uses is one of the assets of the text, providing a detailed "ethnography" of how people lived their daily lives in the midst of abundant forests, without developing any special concern about their eventual elimination. This line of examination reminds the reader of the classic books by the Brazilian historian Sergio Buarque de Holanda's (*Caminhos e Fronteiras*, and *Moncoes*, cited by Dean), particularly in respect to the influence of tropical conditions on Portuguese colonial efforts and the cultural intermingling between Portuguese colonizers and natives. On the

other hand, Dean's stress on the indifference of colonizers in relation to the fate of the forests is a fundamental part of the findings of Michael Williams' *Americans and their Forests* (Cambridge University Press, 1989), a fairly similar book from which Dean does not seem to have drawn any inspiration, missing the opportunity for many useful comparisons and some contrasts.

Dean shows that Portuguese colonial efforts affected forests in many ways besides direct felling of trees. One of the most pervasive generator of pressures on the forests were the long distance expeditions aimed at enslaving indigenes - the so called "*bandeiras*". They eliminated or displaced indigenes, opening lands to more intrusive uses. Not the least, the geographical information gained through these expeditions made the Portuguese discount the value of the coastal Atlantic Forest even more, because of the news about the extensiveness of the heavily forested backlands. Dean stresses how the Portuguese were unimpressed by the value of the tropical forests of Brazil, but he does not discuss in any depth why this happened. I believe that he missed making an important point -- that the extension itself of the forest was so impressive that it made the Portuguese and, later, Brazilians, enduringly indifferent to its fate. As we have all learned from Roderick Nash's *Wilderness in the American Mind*, the positive "value" given to nature is typically linked to its scarcity, or to the perception of its scarcity. Just as in the US, very few Portuguese and Brazilians thought of the Brazilian forests as finite until the early nineteenth century. In this sense, Brazilians, far from being an exceptionally destructive or insensitive people, actually followed the rule.

Another specifically social factor of deforestation studied by Dean was the colonial system of land tenure, which endured until the late nineteenth century. Portugal's land grant system in Brazil was intentionally designed to create a small class of male, European or Europeanized, Catholic and politically loyal owners of large tracts of land,

who also owned slaves. Large holdings worked by slaves were environmentally destructive in themselves, but they also precluded the establishment of classes of independent small farmers who might have used resources in a less predatory manner. However, Dean points out that residual small farmers, despite their smaller scales of operation, were actually as destructive as the large plantations.

All this led to a deep-rooted tradition of weak control of public authorities over the uses of private and public lands. The occupation of new large plots of public land was always cheaper for the individual farmer than the adoption of more intensive or rational farming practices on established plots, creating a destructive and mobile frontier. Here we find Dean again following a suggestion of Sérgio Buarque de Holanda, who in his best-known book (*Raizes do Brasil*) scolded Portuguese and early Brazilian agriculture as a special mode of itinerant "mining" of the land.

Again, Dean could have made meaningful comparisons with the US about the matter of the swiftly moving agricultural frontier. Dean is of course right about this, but he fails to mention that the quintessential democratic land distribution system adopted in so many sections of the Norte-American frontier also induced many episodes of unwise use and agricultural itinerancy. Williams' *Americans and their Forests* and John Opie's *Nature's Nation* are just two of the more general accounts of US frontier or environmental history that record numerous and recurrent wasteful uses of the democratically distributed small holdings, and related human rootlessness. There seem to be, therefore, other factors besides land tenure policies that affect the potential for environmental destruction. One of them, already mentioned here, would be the perception of abundance of forested lands, prevalent for a long time in both Brazil and the US. Actually, one can ask if the restrictive land tenure system, combined with a much lighter load of European immi-

gration, slowed down forest destruction in Brazil's Atlantic Forest biome, instead of accelerating it. Despite the gloomy picture given by Dean, his findings lend some support to this contention.

Among the strictly natural factors leading to agricultural failures and/or forest destruction (excessive rain and humidity, poor soils, excessive heat, permanent growing season), Dean provides the most colorful account when he deals with the leaf-cutting ants of the *Atta* genus (p. 107-111). Their fierceness and amazing capacity to survive and expand discouraged farmers, large and small alike. Plots attacked by these creatures were immediately abandoned. The leaf-cutters were thus a genuinely natural factor that combined with the land tenure system, with slavery and with the abundance of land to shape the nomadic pattern of agriculture and its constant demand for new plots recently recruited from native forests.

A most interesting natural issue dealt with is the one about the extinction of species in the Atlantic Forest biome (p 350-354). Mostly foreign naturalists initiated the scientific inventory of species almost 300 years after colonial agricultural regimes began to disturb the forests more deeply. Possibly many species disappeared before this. But Dean stresses that until today there is not definite scientific evidence that a single species of plant or animal was extinguished in the biome, despite the allegations of contemporary environmentalists to the contrary. Of course, in the Atlantic Forest biome today there are threatened or sensitive species, and over time there were countless local extinctions. Dean does not deny the evidence, but is not comfortable with it. He argues convincingly that there are so many species recorded in tropical rain forests everywhere, and that so many of them have fairly limited ranges, that it is statistically improbable that no extinction ever occurred in the all-but-gone, enormous Atlantic Forest biome. Thus, Dean cites the scientific evidence that suggests no extinctions, but

points out its weak points in the face of state-of-the-art knowledge about tropical biodiversity.

Another highly relevant topic is tree farming (especially pp. 236-238). Brazil had a late and shy start in commercial reforestation, in the late 1960s, and it actually managed to add a new layer of waste, as many areas of native or mature secondary forests were erased for the introduction of homogeneous tree farms of eucalyptus and pinus. The earliest attempts in reforestation were made by Sao Paulo railroads, because early in the twentieth century they were already in need of cheap wood for fuel, construction, and crossties. However, these early areas planted with eucalyptus were ridiculously small when compared to deforestation figures and even to railroad consumption needs. Poorly conceived or mutant laws dealing with land tenure and taxation increased the propensity for clear-cutting and eliminated incentives for reforestation (these two phenomena are also recorded by Michael Williams in many states and instances in the US).

Dean shows also that the choice of exotic species of eucalyptus and pinus in both early and contemporary reforestation efforts unfortunately led to an enduring resistance of Brazilian environmentalists to any sort of reforestation and reclamation. They became rather aloof to the entire issue, but Dean sternly states that any degree of rationality in the use of Brazilian native forests would have depended on a better reforestation effort, combined with a less mobile agricultural frontier. This issue is actually a current one, because Brazil continues to have both immense native forest reserves and a highly mobile agricultural frontier, not to mention extensive tracts of deforested lands that require reclamation.

Several other topics treated by Dean should be mentioned just to give an idea of the scope of the book: Brazil's strong dependence on firewood as its major industrial fuel all the way up to the 1950s; the best account of Brazil's early environmental movement and thought; the coinci-

dence of Brazil's most industrially developed areas with sections Atlantic Forest biome (I will comment on this later on); a brief, dramatic account of the grave environmental disasters of Cubatao, a coastal port in Sao Paulo, once deemed to be "the capital of pollution in Brazil."

The 75 pages of bibliographical references are in themselves a lesson in environmental history. Dean used mainly contemporary accounts and reports written by governors, administrators, clergy, explorers and travelers, besides texts by scientists and ethnographers. The academic literature on Brazil's colonial history is another major class of sources. Dean used also reports and studies made by agronomic institutes, technical manuals for farmers, proceedings of scientific meetings and societies, rare farmers' memoirs and journalistic materials (only for the 1950s through the 1980s). The entire set of sources is massive and Dean used them masterfully.

I stated that Dean's text also has the merit of generating controversy. In several passages Dean lets go of environmental history proper and, especially in the closing paragraphs of each chapter, or in longer sections of the last chapters, he poses basic issues that deserve comment and, in some cases, refutation. Let us examine two basic points. First of all, he uses his study of forest destruction to evaluate the end results of the peculiar mode of production on the basis of which Brazil was built. This mode of production combined abundant natural capital, scarce labor and even scarcer capital. Dean asks if natural capitals were efficiently transformed and accumulated as social wealth and social capital. His answer is negative, with the exception of the more recent surge of Brazilian industrialization. Brazilian wastefulness and social inequality make an outraged Dean dot his text with a many exclamation points, not to be seen so frequently in his previous texts. In Dean's view, therefore, the long history of the destruction of the Atlantic Forest co-existed with blatant social inequalities and with a low level of accumulation

of wealth. For him, this destruction was not justified or compensated by the building of a prosperous and fair society.

Admittedly, this is explosive territory. Dean is partially right, but his conclusion must be qualified and partly refuted. The topic of natural richness versus social poverty shows up early in his narrative, when he cites European documents that commented on the poverty of most free proto-Brazilians, not to mention slaves, in the midst of a rich natural setting. Of course, Brazil had and still has a lot of poverty, with or without forest destruction. But Dean knew that Brazil's economy, which has been among the planet's ten largest for at least two decades, had all of its dynamic centers and major activities in areas of the Atlantic Forest biome. Also, for decades much more than half of Brazil's GNP has been coming from areas "taken" from the Atlantic Forest biome.

Are these two facts coincidences, or meaningless? Dean does not even pose the question. These important facts allow the inference or at least the hypothesis that whatever Brazilian economic growth and development there has been came in the immediate wake of the destruction of the Atlantic Forest. Dean knew that the Brazilian economy is big and that most production comes from areas of the Atlantic Forest, but he would disagree with the connection of these two facts with growth and development. After all, he states that the forest's natural capital was not adequately transformed by Brazilians into social capital. Dean was simply wrong about this matter. The transformation was not environmentally or socially adequate, but transformation into social capital did occur indeed, even if it was and remains poorly distributed. Of course, this statement is also not watertight. There are areas of the Atlantic Forest biome that are secularly poor (such as the valleys of the Paraíba do Sul, Ribeira and Jequitinhonha rivers, located in or between Brazil's three richest contemporary states). But

the statement is not absurd, and should be given a chance for scientific research.

Let us examine the flip side of this issue. All currently developed countries, with the partial exceptions of Canada and the Community of Independent States (CIS, ex-USSR), also consumed avidly all or most of their native forests, besides non-negligible amounts of forest products coming from colonies or commercial partners. This happened before or during their "take-offs" towards development. In this sense, their development was also dependent on the destruction of forests. If this is so, should these countries and peoples also not be called for the destruction of their forests, such as Dean calls Brazilians? Is the fact that these countries are developed enough to "absolve" them? And what about the persistent pockets of poverty that can be found in most developed nations? Many of them are precisely resource-depleted regions that have fallen into persistent poverty. They can be taken as one indicator of inefficiency in the transformation of natural capital into social capital in those developed countries.

The point that I am building up to is the following: The destruction of the Atlantic Forest in Brazil was exceptional only because it was a tropical biome. After the invention or adoption of agriculture, humanity has not co-existed well with dense and extensive forests, in any latitude, nor in any time frame. As I said earlier, the destruction of extensive temperate forests in currently developed countries (including the richest sections of Canada and of the CIS) is a well-documented fact. It is undeniable that there were and still are scandalous wastes in the use of Atlantic Forest resources, and that there is much poverty in contemporary Brazil, but it does not follow that Brazil is exceptionally destructive of forests, nor that its people is exceptionally poor. The equation simply does not hold.

My feeling is that Dean was simply unmerciful with Brazilians of all times and places, from

anonymous native hunter-gatherers to modern environmentalists. Even if Brazilians had spared the Atlantic Forest, Brazilian society would not be a model of social justice. And if it had not used the resources of the Atlantic Forest, it would not be one of the ten largest economies of the world. Ultimately, an untouched or rationally used forest is not a guarantee of social justice. Most of the Amazon tropical forest biome is still standing today, but the Brazilian Amazon region is not exactly a model of prosperity or of social justice.

The hard truth is that not a single developed country spared its native forests -- and other natural resources -- before they became scarce or could be substituted by imported commodities. This holds even if forest products and other resources were used by them with more rationality or productivity -- a debatable assertion, at least in some cases -- and duly transformed into social capital. These rather straightforward considerations are not made by Dean in this text, and the result is that he singles out Brazilians as exceptional destroyers of forests and less than average producers of goods. Neither assertion is true. Dean himself studied one of the most successful conversions of natural capital into social capital in the contemporary world -- the industrialization of Sao Paulo, a process based on goods (mainly coffee) generated by the agricultural soils taken from the Atlantic Forest.

What type of society would Brazil have anyway if it had not used the Atlantic Forest resources? What was the true viability, technical or social, of using these resources in the rational manners explicitly demanded by Dean, and absent in every recorded historical process of contemporary development? He does not ask or answer these questions, and they are not purely rhetorical. They go to the marrow of the issue.

I make these arguments not to absolve Brazilians of past, present or future destruction of resources. However, it is not a minor matter that Brazil still has the planet's largest remains of

tropical rain forests -- a fact that Dean emphasizes in an almost somber tone in his last paragraph. He puts the matter as if Brazilians have in the Amazonian rain forests a chance to "redeem" themselves from the destruction of the Atlantic rain forest. However, the fact that Amazonian forests are still standing can also be taken as an environmental plus for Brazilians, and not only as a biome waiting to be erased by an allegedly extraordinary impulse for forest destruction.

Brazilians indeed owe themselves a more rational treatment of their forests, and this will possibly aid in the building of a richer and less unequal society. So far, private and public management have had mostly disastrous results. New rules, models and practices are required and Dean's book helps realize the primitive stage of Brazilian forest management.

This brings up a second controversial topic, the role of natural resources in development. This one is entirely absent from Dean's analysis. However important it is for Brazilians to deal better with their forests and other natural resources, it is necessary to go beyond the naive notion that the rational use of natural resources will carry the day of Brazilian development. It is highly improbable that in the years and decades to come natural resources will make the difference between nations that develop and those that do not develop.

It is certainly helpful for a developing country to have an adequate supply of local natural resources and to use them rationally, but for about 100 years, at least, productive factors that are not resource-intensive have become decisive for achieving and maintaining development: capital-intensive industries, knowledge-intensive activities and goods, efficient private and public services, education, public health, financial stability, qualified workers, and so on. It is true that Brazil still lacks rationality in its resource-intensive activities, but it is also true that further development actually depends much more on capital-or knowledge-intensive industries and services.

Among non-developed countries, Brazil is probably the one that has the largest and most diversified industrial and service activities. These are the really crucial activities for any nation nowadays to climb the remaining steps towards development. Brazil's situation in terms of its stocks and variety of natural resources is from good to excellent, but resources are only a complement to much needed innovations and expansion of industries and services. Natural resources carried Brazil development for many decades, but now they play an ancillary role to industries and services.

My point is that Brazil will not become developed without more efficient industries and services, even though it can also use massive doses of rationalization in its natural resource sectors. Dean's text unfortunately misses this point completely, and it is not alien to his analysis and conclusions. Maybe Brazil would have become a member of the closed club of developed countries if in previous centuries it had used its natural capital in wiser manners. But in present times this requisite no longer holds. Rational uses of natural resources will help in Brazilian development, but longer are they a "locomotive" to pull the wagons of development. Natural resource prices are stale or declining, the financial returns of their exploitation are slow and low, and even rational production of forest goods, oil, natural gas, or minerals will not make the difference in national accounting or in social welfare indicators. The modern world economy seems to have shut the doors for transitions towards development based on capital converted from natural resources. The Sao Paulo case studied by Dean himself in a previous book may have been the very last of these transitions.

Although it remains important for Brazil to use natural resources in a more rational way, the time has passed for this to make a decisive difference in economic development and social welfare. However, Dean wrote this book with the op-

posite perspective. He seems to believe that natural resources are decisive for the fate of today's developing countries, or at least Brazil. The last one hundred years of world economic history have shown that this trend is over.

Brazil's status as destroyer of the largest tropical rain forest biome recorded in detail by Dean's book - is surely nothing to be proud of. However, the proper context for reading this book includes two facts: (1) Brazil is not an exceptional destroyer of forests and (2) Brazil's remaining forests and other abundant natural resources are no longer major assets for its development.

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