

The Future of the Amazon: Critical Issues and Scenarios

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Critical Issues and Scenarios*

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1. INTRODUCTION

Zooming in from Berlin, the Amazon shows a very different picture at the local, regional, national or global scale. At the grassroots in a literal, biological sense, as well as in the sense of peasants' and farmers' behavior on their plots of land, you find a strong influence of the ecosystem on how the farm is managed and the resources are utilized. However, a closer look reveals that even at that level the various larger-scale social systems - from the local economy to land use legislation at the State level, from the national pension system to the regional fiscal incentives - intervene to such an important degree that an explanation of the farmers' decisions with regard to ecological sustainability, economic profitability and social stability would remain rather limited, if not utterly misleading, when those larger contexts and the inner logic of those systems were ignored. That is why the SHIFT (Studies on the Human Impact on Forests and Floodplains in the Tropics; bilateral Brazilian-German Research Program under the aegis of the Ministério de Ciência e Tecnologia and the German Ministry of Education and (BMBF) Project ENV 44 has always striven for a balance between conducting very local, close-to-nature research and an analysis of the larger social arrangements, up to the developmentalist *Avança Brasil Program* as well as to the *Pilot Program to Conserve the Brazilian Rain Forest* (because of the initial Group-of-Seven Initiative still abbreviated PPG7) which guide the conditions to which the peasants have to subdue when trying to eke out their living.

In addition, the general interest in the Amazon and its future has led to the participation in decision-making (by means of consultancy services) and public debate (through seminars, papers and speeches), in which the conference in Berlin on January 21-23, 1999 on "The Future of the Amazon" deserves special mention, since high-ranking Brazilian scientists took part in the seminar, such as the grand old man of Amazonian geography, Professor Aziz Ab'Saber, and the Brazilian scientific coordinator of SHIFT, Prof. Eneas Salati. Shortly before, and on that occasion, the book "The Amazon - Heaven

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of a New World”, edited by Maria de Lourdes Davies de Freitas, was presented, and a whole range of options and visions for the Amazon were discussed. The project to design scenarios had already been taken up earlier by the SHIFT collaborator Silvio Andrae who developed the idea further in his doctoral dissertation and presented it in a coherent and structured manner in his book in 2000. The following overview draws heavily on his work, but adds a "worst-case scenario" and develops his ideas a little further. The research results of our SHIFT partners in Belém are presented by themselves at this conference so that this lecture and the bibliography are confined to the Berlin side only (ANDRAE, KASPER, NITSCH, PINGEL, ROGGE and SCHWARZER).

2 ALTERNATIVE FUTURES FOR THE AMAZON

Scientists of all disciplines have great problems with the future, since the object to be studied is not more than an imagined virtuality, even though scientific laws might allow rather precise projections with regard to special features of reality. Nevertheless, modern science is driven by the principles of French positivism, namely *savoir pour prévoir* and *prévoir pour gouverner*. Strategic influence on the affairs of the real world and intelligent governance cannot do without a vision of the future, and the scenario method is one of the instruments to bundle a set of important variables into different visions of the future. Scenarios provide more or less coherent alternatives, regardless of the probability of their coming into being and materializing. They are also different from options, which presuppose a certain, single decision-maker or decision-making body, whose behavior determines the outcome. In complex situations and processes, a great number of actors and objects with their own trajectories and not always smooth, but "chaotic" conduct as well as their interdependence have to be reckoned with so that a range of holistic pictures of the future rather than an extrapolation or projection of a single variable, let alone a prophetic forecast with the preposterous claim to know and to show the future is envisaged when scenarios are being formulated. In a next step, probabilities and possible ways of behavior by various actors are to be discussed.

For the purpose of identifying the strategic causal processes and decision points, four scenarios for the Brazilian Amazon seem to cover the foreseeable range of events and outcomes. The last three have been suggested by SILVIO ANDRAE (2000, pp. 189 ff.), but I am taking his typology as an inspiration and basis for my own thoughts and the

following sketches rather than summing up what has experience of "closing the frontier" equally insinuates that already been published by him:

(1) Worst-case scenario: Rapid destruction of the forest and continuation of miserable living conditions for most of the population;

(2) Trend scenario: Persistence of peripheral status, dependency and gradual destruction of the forest, with some protected areas;

(3) Alternative scenario: Territorial archipelago with monetary economy and autonomous growth in and around the towns, and strict conservation of large tracts of land in the countryside;

(4) Contrast scenario: Moratorium on deforesting, largescale conservation and international compensation for the environmental services of the forest, with enclave growth poles in the cities and towns.

All four scenarios depart from the old caboclo saying "Deus é grande, mas a mata é maior" ("God <your white man's god> is great, but the forest is greater") which in a nutshell expressed the experience of nearly five centuries. From the *drogas de sertão* of the colonial times and the jesuits' civilizing efforts to the *soldados da borracha*, the rubber soldiers who revived the natural rubber boom of the early 20th century during the Second World War, when the rubber plantations of South East Asia fell under Japanese control, the waves of migrants to the Amazon had always been absorbed by the forest without really destroying it (somebody coined the word "caboclozation" for that process). Even the rather recent Transamazônica colonization program of the 1970's brought, at least in some stretches, the settlers again close to that fate, but since the 1980's, the gods of modern technology and settlement patterns undoubtedly turned out to be "greater" than the forest so that there is no hope any longer for reliance on selfrepulsion and self-repair by a resilient primary forest ecosystem.

3. WORST-CASE SCENARIO: RAPID FOREST DESTRUCTION AND HUMAN MISERY

For the last five hundred years, Brazil has experienced an expansion of the frontier from the coast to the interior. So it is only logical that the Amazon has been considered the "last frontier" to be conquered and converted to agriculture and cattle ranching, plantations and forestry, in short to be turned into a "civilized" area of human settlements similar to the rest of Brazil. The very term *fronteira* or *frontier* suggests a line between *kosmos* and

chaos, and the US no "wilderness" is to be left within the borders of the national territory. The high barriers to entry into the "green hell" and the century-long experience of "caboclozation" had given rise to massive fiscal and other incentives to overcome that resistance and to "integrate" the Amazon into the rest of the Brazilian nation according to the self-image of the *paulistas*, *cariocas*, *mineiros*, *gauchos* or *nordestinos*, all of which have a frontier history and a present identity which is definitely post-frontier and not very pro-forest. Like for most people in Asia, the disappearance of tropical primary forests would hardly be considered a problem but a solution to the needs of man, if the international discourse and interest in climate change and the circulation of water, biodiversity and the protection of indigenous peoples, greenhouse effects and debt for nature proposals had not changed the tide also in Brazil. The Brazilian Constitution of 1988 in its Article 225 declared the Amazonian Forest and others *patrimônio nacional* (national wealth) which ought to be protected, and after the big Amazonian wildfires in 1998, the former *fronteira*-speak has changed to a notable degree toward the expression *arco do fogo* (fire arch) which conveys the connotation of an injury or a scar in the face of the nation rather than a division line between *kosmos* and *chaos*.

However, the forces of deforestation are still present, and most of the transfer mechanisms which induce it without creating an economic environment which would be conducive to accumulation and economic growth, are also still in place. One of the most pernicious ones is the Fundo Constitucional do Norte (FNO) which receives around 300 Mio. R\$ (150 Mio US\$) per year from the national treasury for the purpose of extending cheap credit to peasants and small farmers as well as middle and large firms via the Banco da Amazônia (BASA). High arrears and lenient sanctions lead to a general attitude of considering loans as a gift, - but especially the small producer cannot be sure at all. A climate of uncertainty, corruption and give-me mentality is created that reproduces clientelistic practices and polarizing stagnation.

Another source of tension and underdevelopment is the land issue (see FEARNSIDE 1997). Because of unclear and conflicting legal rules, property rights and land titles are often subject the law of the jungle so that invasions by the landless on one side, and *pistoleiro sheriffs* paid by the landowners on the other, with all the misery and grief of violent social conflicts prevail. Deforested land is much easier to defend which induces cattle ranching even though it is often not profitable and offers very little employment, whereas small settlers are cut off from credit and product markets, because

they cannot provide the property titles and guarantees which are necessary for a profitable modern business.

In more macro-economic terms, the lavish transfers from the Union make possible imports which crowd out local producers reproducing unemployment for the working population, but easy rents for the powerful so that the result is what in Europe is called the *Mezzogiorno syndrome*: Local misery and *mafia*-type social structures which extend to Rome and Brussels because of the all-important transfer channels.

4. TREND SCENARIO: DEPENDENT PERIPHERY, GRADUAL DEFORESTATION - AND SOME PROTECTED AREAS

Most of the features described in the worst-case scenario are also present in the present status-quo trend. However, there is hope for at least some protected areas, including the indigenous reserves, - and even "ecological corridors" connecting some of them. As already mentioned, there is a certain change in attitude and discourse which embraces the forest as a national treasure instead of a hindrance to progress. In addition the demarcation of indigenous areas, national parks and other protected areas through PPG7 projects and a lot of local initiatives by non-governmental organizations (NGOs), local communities and social movements have left an impressive part of the Amazon region under more or less strict conservation regimes, for which continuous support by the local population as well as the national and international communities is crucial, if short-term interests in making money from logging and the outselling of land are to be kept in check.

Yet, the decimation of the forest is generally still seen with a kind of fatalism, - for instance, the objective of many PPG7 measures being defined as "reduction of the deforestation rate" rather than stringent preservation of the *patrimônio nacional*. The *Código Florestal* (national Forest Law) sends an ambivalent message: The provision to protect 80% of the native forest on private-property land implies that the rest can be cleared and converted into pasture, agriculture, plantations, commercial forestry or mixed cropping, and there remains a large range of possibilities to use the remaining 80% in a "sustainable" way, to let secondary forest and reforested areas take its place, etc. But still, that federal law remains one of the strongest bulwarks against outright deforestation.

Other legal defense mechanisms and academic arguments are rather weak, too. The massive absorption of all kinds of natural resources by the global economy, i.e. the "ecological footprint" of modern civilization is often still underestimated and not taken

seriously. Concepts like "carrying capacity" or "vocation of the local ecosystem" for this or that use of the land are still around which ignore the totally artificial world of modern cities and industries stamping their footprint on the countryside, including the subsurface, in landscapes close by and far away, without any concern for the local ecosystems. The modern world is based on mineral resources from all over the earth, modern man as *homo minerator* being seemingly aloof and independent from the local ecosystem around him. Of course, this is not a normative statement, but a rather frightening analytical one, and a warning, too. Mineral resources are by definition non-renewable, and the Earth certainly has a limited carrying capacity, - even though nobody knows for sure how large it might be. However, a reminder of the fact should be in order that nowhere else in the world "carrying capacity" is propagated as a criterion for land-use planning or the "vocation" of the ecosystem for determining spatial "zones" for agriculture, forestry or conservation, which means that land prices are affected to a very marked degree by this planning method. If mineral resources are taken into consideration, the carrying capacity of every place on earth can be extended nearly indefinitely. With its inherent maximizing bias, "carrying capacity" is furthermore, a particularly inappropriate criterion for establishing protected areas, since a small lodge, if not a modest and then an even somewhat bigger ecotourist hotel, can always be "carried" even by the most highly vulnerable area in a national park.

Similar arguments make "ecological-economic zoning (ZEE)", the main instrument for land-use planning at present in the Amazonian states, very problematical (see the broad discussion in MMA 2001). Trying to base "zoning" on the characteristics of the local ecosystem means that everything is possible, because with mineral resources, there is virtually no limit to the intensity of use. On the other hand, with biodiversity protection *in situ* in mind, almost every ecosystem can be considered highly valuable and untouchable so that it should fall into the category of "highly protected zone".

Since by definition, nature has no voice in human affairs, another pet word of the present discourse becomes questionable, namely "participation". Local people tend to have the value of their property in mind when deciding on local issues; that is why national parks are "national"! Locals would, of course, like to have a huge hotel complex on their real estate, and no national park would exist, if you let only the local people decide, since *ceteris paribus* land prices are lower in "protected areas" than in "productive zones". In spite of this, and with the advocacy of other, national voices, there are, of course, individuals on the local level who are not only engaged for their national park, but also have

benefits from it. That is why local embeddedness and acceptance is possible - and essential; however the basic decision cannot be expected from the local majorities but have to be taken elsewhere.

Present land-use planning procedures tend to follow the current *zoneamento* method which implies a strong bias *against* conservation and *for* intensive land-use (NITSCH 1998 and 2000). Thus, the initial intention to counter market forces with a powerful public-law planning tool has not materialized. On the contrary, zoning which is inherently "negative" because it prohibits owners of land certain uses, has to be complemented by a "positive agenda" promising public works beyond the otherwise rather slow and deficient infrastructure investments, or even worse, it has to promise relief from the already mentioned article in the *Código Florestal* which stipulates that 80% of primary forest must be left untouched on every property. This very conservationist piece of legislation is ardently fought against by the *ruralista* pressure groups, for which the zoning exercise which divides whole states into "productive" and "protected" zones on a large scale comes as a welcome argument, since it does not sound logical at all, when private property in "productive areas" are forced to keep 80% of their land under primary forest. Unfortunately, international donors such as the World Bank and GTZ seem to participate in that game. Finally, the present, in my view rather opportunistic and not very responsible philosophy of "protection by use" which prevails in the SHIFT community, follows the same line, since the enormous endeavors are overlooked which serious protection and conservation requires with respect to the non-use of timber and other resources in the Amazon region. Not only is the forest by itself no longer stronger than the gods of Western progress, but well-intentioned experiments in "sustainable" farming will also not be enough to prevent large-scale deforestation and to spur agroforestry development. As long as the proenvironmental measures are so weak and in themselves ambiguous, if not outright counter-productive, - what can one expect from the parallelogram of forces when the opposing, "developmentalist" programs such as *Avança Brasil* are as strong as they are!

Summing up, the status-quo scenario shows a certain slowing-down of deforestation, when compared with the worst-case, but still a gradual decline of environmental protection because of strong pressures for "development" in the traditional, anti-forest way, and weak and lenient lines of action from the side of the defenders of the environment, including the academic community and the international donors. An even

more sceptical outlook emerges when it comes to an evaluation of the economic and social statusquo trends.

The *mezzogiorno syndrome* is very much reproducing itself in the present set of incentives and transfer funds, as exemplified by the FNO, and very little is done to stop those trends. On the contrary, most of the local and regional pressure groups of all denominations are calling for more of the same rather than a turnaround. Hopeful signs for relieving the pressure on the forest come only from the Land Reform Institute INCRA which has recently promised to stop its migrate-to-the-Amazon propaganda and all its colonization projects in areas covered with primary forest.

5. ALTERNATIVE SCENARIO: TERRITORIAL ARCHIPELAGO WITH ECONOMIC DEVELOPMENT AND CONSERVATION IN DISTINCT AREAS

Not only in big cities, modern life has become so artificial that the protection of nature has to be as carefully organized as any kind of economic activity. It would be naive to expect conservation and protection as mere by-products of use. Even good and prudent use by knowledgeable proprietors would hardly take into account external effects such as biodiversity considerations or long-term uncertainty with regard to climate change. In the coming information age, territorial settlement and land-use patterns tend to become even less predetermined by the distance from town centers than in the present automobile age. After all, VON THÜNEN developed his famous concentric rings around towns in the age of horsecars in 1850 when relative transport costs were immensely higher than today, but with all its modifications through "intermediate centers", "axes", "poles", etc. the homogenous flat plain with a town in the middle and the wilderness at the periphery still tends to dominate our cognitive model of how the territorial pattern of human settlements and land-use is structured - and how it should also be in the future. Recent studies by VELTZ (1996) and HEIN (2000) suggest a radically different pattern using the metaphor of the archipelago. Modern man is seen as living on different islands, which are separated by large and small stretches of water in a big ocean. Global cities like New York, London and Tokyo are interconnected in most intensive networks of finance and information, with only minimal connection to local communities next to them. Instead of concentric intensity gradients and railway and highway-type axes connecting the centers, the archipelago model suggests the viability of large protected areas close to cities, high-tech islands surrounded by primary forest, biosphere reserves which, like city parks, remain largely

untouched and unsettled, only open for recreation and research. The "islands" are interconnected via satellite communication, tunnels or bridges which respect the totally different medium of the "sea". A welcome new dimension of thinking, planning and free decisions is opened with this approach, when applied to the Amazon. Of course, there will always be transport costs and concentric circles and axes, so that neither an absolutely different alternative way of looking at space nor a panacea is suggested here, but a new way of thinking and a reflection on what kind of ghost of the past might haunt our implicit knowledge and cognition as well as our planning concepts.

"Good fences make good neighbors," as the saying goes. Once the lines between protected areas and the islands and enclaves of development are drawn, the local communities in the bioreserves, national parks, forest reserves, etc. would be entitled to a certain infrastructure and to sustainable development in a rather strict sense as well as pensions and perhaps even some compensatory transfers as "salary" for the environmental services provided by their natural environment which, in turn, would have to be protected by them. However, no massive influx of migrants, colonization schemes, etc. would be allowed.

As "islands" of development, the cities and towns as well as mining centers, existing agricultural and agroforest agglomerations and other "enclaves" would aspire to the national Brazilian average with regard to comfort, employment and income. International experience shows that cheap credit with lenient enforcement of repayment is the least appropriate instrument to achieve that goal, since non-competitive enterprises are pampered and a general climate of rent-seeking, clientelism and corruption is created. Enterprises, large and small, including peasants and informal street pedlars should face the hard budget constraint of the monetary market economy, banking and insurance should follow strictly commercial lines (even if in public hands), and transfers and subsidies are to be channeled into old-age pensions, basic education and health services, infrastructure and communication as well as the promotion of exports to the rest of the country and abroad, and not into enterprises which would only lose or never gain competitiveness on the markets. All the arsenal of ways and means to foster competitiveness in the modern, globalized economy should be applicable in the Amazon just as everywhere else in the world. Special emphasis should and could be laid on ecologically certified products of all sorts, including eco-tourism in the protected areas. The *hinterland* should not be forgotten, but it should no longer be viewed as the area the resources of which would be essential to support the town.

6. CONTRAST SCENARIO: LARGE-SCALE CONSERVATION AND INTERNATIONAL COMPENSATION FOR ENVIRONMENTAL SERVICES

In the beginning of the processes in the late 1980's which led to PPG7, the idea was launched to provide debt relief and international compensation for the protection of the tropical rain forests (see the report of 1988 to the German Chancellor Helmut Kohl by the political scientist OBERNDÖRFER, published by the chancellery in 1989a). OBERNDÖRFER elaborated the idea further (1989b), stressed the need for "massive economic compensation" (p. 111) and ridiculed the foresters' vision to protect the primary tropical rain forest by using it and converting it into a managed forest as wishful thinking and as an "unrealistic 'Holzweg'" (p. 103; the German word has a double meaning: timber track and wrong tack). The massive grants which support PPG7 can thus be seen as some kind of "compensation" and as first steps toward a regime which would honor environmental services through transfers.

Meanwhile, the Kyoto Protocol of 1997 has developed the idea much further through the Clean Development Mechanism (CDM) so that immediate benefits could be drawn by Brazil (see FEARNSIDE 1997 and 2001b). However, the political, legal and administrative barriers are still immense, and it will take some time to implement that mechanism. The general line of thought and action is clear, and there is certainly a high willingness to pay on the part of the public in the industrialized countries, if a convincing way of collecting and channeling the compensatory transfers can be found.

As a contrast scenario for the Amazon, one could think of a moratorium on deforestation, a halt for all colonization projects, strict enforcement of the Forest Law and support for a 100% protection of the forest as *patrimônio nacional* against massive international compensation on the debt front and by funds and projects of different types in the protected areas. In order to avoid an outcry against the "internationalization of the Amazon" which has traditionally been a common denominator of nationalists from the Right and the Left in Brazil, very careful and transparent negotiations would have to take place respecting the national interest and confirming sovereignty.

In comparison to the alternative, archipelago scenario, the area of the "sea" could be a bit larger, and the development of the "islands" a bit less ambitious; otherwise, the same criteria and principles would apply. The re-orientation of the internal constitutional transfers should be enhanced by international funds, - not necessarily transfers to public and private households and firms in the Amazon because then the *Mezzogiorno* effect is

hard to avoid. Again, like in the case of national parks, the nation rather than the local population is probably called upon to decide on compensation schemes which unavoidably have a scent of forest guardians' salaries for the local communities instead of a developmental appeal. However, after Kyoto, time seems to be ripe for a broad discussion about that scenario within Brazil as well as abroad, particularly among donors and academics which are involved in Amazonian affairs, such as the SHIFT community.

7. CONCLUDING COMMENTS

The Amazon presents itself very differently, whether seen from a global environmental standpoint, a local view or a national perspective. Our SHIFT project tried to span all these levels. It has been of particular interest to learn that the various observers and participants have very different implicit or explicit views of the future of that region. Following the universal tradition and social function of the university as a privileged forum for the debate of important and controversial public affairs, classrooms and conferences such as this one should be the appropriate places to elaborate and discuss those views and visions, beyond detailed individual research projects. The four scenarios presented here certainly do not cover the whole range of possible futures, but they should provide enough width and sufficient food for thought for a balanced evaluation so that also the less probable and less realistic options and situations are drawn into the picture.

No prophecy will be tried at the end, except that there will be developments well beyond what we are imagining now. And we should remember that the parallelogram of forces never leads the individual actors toward exactly what they have in mind and what they are steering at. In addition, game theory and practice teach us that the player who shows his cards and articulates his strategy tends to lose against the pokerfaces. What that means in a global market economy, in a world of rival nation states, in an increasingly worldwide democratic civil society and in a conflict-ridden local and national *ambiente*, is again a difficult question which requires careful deliberations and a good sense of tact and flair in order not to compromise partners and to lose battles which could be won.

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