

**F**or at least the past decade, significant political actors, opinion-makers, and the general public (both in Brazil and overseas) have paid unprecedented attention to the Amazon region. They are primarily concerned with: (a) environmental protection of the area (as it becomes the backdrop for accelerated social and economic development); (b) exploration of natural resources; and (c) criminal activities with transnational implications. Reacting to internal and external calls for more efficient governance of the region, the Brazilian government argues that the country's new System for Vigilance of the Amazon (SIVAM) will, when fully implemented, play a key role in supporting the coordination of Brazilian federal policies in the region. Specifically, SIVAM is expected: (a) to help ensure Brazil's sovereignty over its portion of the Amazon; and (b) to provide greater means to generate geophysical, biological, and social data about the region as well as to improve the quality of sustainable development decision-making there.

Since 1985, the Brazilian government has been repeatedly shaken by contraband and security problems in the region and on its borders with other Amazonian countries such as Colombia and Venezuela. As a result, Brazilian authorities have

wished to expand the country's national air traffic control system (SINDACTA) into its Amazonian region. But a lack of investment funds and the dauntingly large area that would have to be covered



international “green money” lenders) and to justify expenses for the project. Of the total twenty-year SIVAM budget of US \$1.395 billion, the Export-

*Brazil.* It is the author's contention that such a mechanism would demand a model of openly providing and exchanging data with the scientific community. Finally, the article concludes that it is uncertain at best whether the well-established security purposes of the project can successfully coexist with its environmental management possibilities. The major risk is that the program will systematically generate data that may not "fit" the scientific needs of research programs. This mismatch would compromise

Brazilian air space. By the late 1980s, only the Amazon region had not been brought under SISDACTA. SIVAM will, in fact, become upon implementation the newest segment of this national system of air defense.

### **"Command and Control" of the Amazon**

One of the key arguments for SIVAM is that the

Madrid and St. Petersburg) (Dreifuss, 2000). On the Brazilian side, there are 11 federal states and 570 municipalities.

These enormous dimensions feed the Brazilian nationalistic imagination in many ways. Alexander López has argued that these preoccupations have two facets: “The first one refers to the nature of the physical space, and the second relates to the international valuation of the physical space” (López, 1998). Most contemporary Brazilian strategists or opinion-makers (exposed to values proposed by the geopolitical thinking that dominated the country’s elite during the twentieth century) share the notion that the Amazon is a natural asset reserved for Brazil and that this asset helps to define the country’s national power.<sup>5</sup> The prospect of SIVAM as an information generator about the region satisfies this mindset: the system is intended to permit Brazil to concentrate resources where needed to exclude other powers from the region as well as to expand the transformation of the Amazon’s natural resources into wealth for Brazilians.

In fact, over the past five years, a new set of expectations for SIVAM’s air traffic control capabilities and data generation have been hammered into the general public by the key government agencies, especially the Air Force. For example, at a government seminar in Brasilia, Ambassador Ronaldo Sardenberg—then Brazil’s Minister for Special Projects at the Presidency—argued that SIVAM will attend to many political aspects of national interest, such as:

- (a) the intense application of high technology that will change the face of the Amazon;
- (b) the integration of government in the federal, state, and municipal levels, involving Ministries and many other specific programs such as the Calha Norte,<sup>6</sup> the Economic Ecological Zoning and the Border Area Assistance to Municipalities;
- (c) the establishment of a very broad agenda for the region, from the integration of the Defense Ministry, the Ministry for Environment, the Ministry of Education, and the Ministry for Special Projects; and
- (d) the generation of new products as, for example, the addition of the Pro-Amazonia to the Promotec<sup>7</sup> that could generate results of dimension superior to that of SIVAM (Centro de Estudos Estratégicos, 1999, page 4).

At the same seminar, the Brazilian Minister of Environment, Mr. José Sarney Filho, argued strongly for those features of the system that would permit air

traffic control to aid in environmental protection, territorial defense, and curbing criminal activities. These two messages are representative of the Brazilian government’s aspirations for the project; therefore, these aspirations must also serve as a guide for future evaluation criteria.

The interest in implementing SIVAM on grounds of national security arises primarily from the notion that Brazil’s sovereignty is at risk from (a) foreign covetousness (*cobiça*) of the Amazon territory, (b) illegal cross-border activities, and (c) other potential consequences of conflicts currently observed in neighboring countries (such as Colombia). This overall argument for sovereign “command and control” is the catalyst mobilizing internal political support within the federal government for funding SIVAM. Simultaneously, the environmental monitoring and sustainability arguments have been persistently presented to the Brazilian political spectrum (both members of Congress and opinion-makers) to justify the program’s costs and to generate legitimacy.<sup>8</sup> In the words of SIVAM Chief Director Brigadier General José Orlando Bellon,

the problem with the Amazon has been that the state has not been able to make its presence felt sufficiently. SIVAM is a response to those who say we have not taken proper care of the Amazon. It will help us in the task of fostering renewable activities that will preserve the forest and clamp down on destructive forces (Gamini, 2000).

The idea that foreigners covet the Amazon has its roots in the continued interpretation of some events in 19<sup>th</sup> century Brazilian history, when agents of several foreign powers are reputed to have had schemes for taking control of the potential riches hidden under the tropical jungle cover. This view continued into the 20<sup>th</sup> century with the questioning (by politicians as well as agents of foreign governments) of Brazil’s capacity and will to retain, develop, and protect its Amazonian territory.<sup>9</sup> Today, this concern is still shared across the Brazilian political spectrum. Both the Brazilian Navy Commandant Chagas Telles and Deputy José Genoíno (member of the opposition Labor Party) share the view that foreign political interests want to take advantage of Brazil’s vulnerabilities and challenge the country’s sovereignty in the region by posing arguments to internationalize the lands in the Amazon (“Forças Armadas,” 2000; Genoíno, 2000). The notion is also strongly held in



lacked to date—thus addressing the perceived need for anti-drug operations over the Amazon region. A Brazilian federal law enacted in 1998 gives the country's president the authority (including delegation down the chain of command) to order the destruction of any aircraft that does not respond to identification requests or obey air traffic control instructions as it moves into Brazilian airspace.<sup>10</sup> This authority, a key feature of a future implementation of interception operations under SIVAM, is equivalent to measures enacted by Brazil's neighbors and could be an instrument of coercive measures against drug air trafficking. The new airborne early warning capability associated with the modernization of FAB's interceptors in the coming years will also provide Brazil with unmatched conventional warfare air defense in the region, fulfilling the long-held Brazilian Air Force aspiration for much greater combat effectiveness.

The additional possibility of foreign guerrillas moving across Brazilian borders—especially from Colombia—and seeking sanctuary, logistic support, or political sympathy offers yet another justification

authorities, bureaucrats, scientists, investors, individuals, and nongovernmental organizations) have to date been few or very narrow. Those that have occurred have certainly been not at all the kind of exchanges that will help establish the epistemological model necessary to link data generated by SIVAM with the information demanded by these potential consumers. As SIVAM is essentially managed by the Air Force with extensive supervision by the Defense Ministry, the traditional military culture of secrecy



recognizes as he calls for greater integration, for instance, regarding the need to protect against fires in the region (“*Presidente*,” 2000). But fragmentation has been the dominant feature of federal programs for the Amazon, and this will continue to be a challenge to SIVAM’s effectiveness.

The potential effectiveness of SIVAM could also be hindered if it is not vertically integrated with local and state governments. Since 1988, the Brazilian constitution has limited the actual authority of the federal government to command a centralized policy; greater power has been given to states and

### **A Lack of Bridging**

SIVAM’s other potential environmental disappointment regards its actual production of data for environmental monitoring. For example, the project promises to fund 200 stations to monitor water resources and 20 to monitor weather. But what more information will SIVAM provide than that already produced by other government agencies such as the National Institute for Space Research (INPE), the Ministry of Agriculture’s weather service, or the Brazilian Institute for Natural Environment (IBAMA)? Such inconsistencies and redundancies cloud the

---

## **The knowledge produced by a SIVAM oriented towards human and environmental security could even change perceptions about the scope of threat to the region—broadening it beyond organized crime or border control to include the possibility that human presence may destroy the ecology of the Amazon through unrestrained deforestation.**

---

municipalities. The Brazilian Amazon has nine federative political units with governors who control local politics and take advantage of a disproportionately superior representation in the National Congress. This devolution of power has hindered the balance that can be struck in the Amazon between local social development (driven by local politicians) and environmental protection efforts committed by the federal legislation and programs. Yet such a balance is becoming increasingly critical as market forces and new programs provide stimuli for new Amazonian economic ventures and continued traditional clearing of jungle areas for agriculture.

The vast areas of the Amazon, the limited means of transportation and communication available there, and the difficulties in setting up logistical infrastructure in the region have been factors limiting the intrusion of human presence. But migration into the Amazon continues. Consequently, federal investments, subsidies, assistance, and spending in the region that would address the need for environmental protection have suffered from budgetary limits, from bureaucratic disputes over scarce political attention, and from bottom-up exercises of local and state-level politics in the actual allocation of resources. Corruption scandals such as those under investigation in SUDAM (a major public agency for economic project financing in the Amazon) also dampen confidence in the role of the public sector to manage effectively the region’s policy.

prospects for SIVAM as an effective tool for conservation.

As noted above, little evidence is also available of effective bridging between scientific proposals and the project’s information modeling process. As Valter Rodrigues points out, the “sustainable development standards” SIVAM is supposed to be promoting have yet to be determined (Rodrigues, 2000). While one may find news from SIVAM that it is linking the project’s development with significant institutions in the scientific community in Brazil, the only evidence of these links is the promotion on SIVAM’s official Web site of regional seminars between the project’s core administration and local research institutions to “transfer technology” and “develop joint projects.” The scope and impact of such common efforts are left unspoken (SIVAM, 2001).

And contrary to the claims of SIVAM’s managers that there is increasing scientific participation in shaping the project, there are in fact important major scientific absences. The Internet home pages of organizations such as the Brazilian Council for Scientific and Technological Development (CNPq) (Conselho Nacional, 2001), the Brazilian Society for the Progress of Science (SBPC) (Sociedade Brasileira, 2001), or Brazil’s National Academy of Science (ABC)

participation of leading nongovernmental entities such as these should share both the burden of the intellectual logic of the system and the specification for scientific information needed.

In addition, if international cooperation is a mainstay in the conduct of Brazilian foreign policy in the Amazon region, what role does SIVAM play in support of this aim? This is another unanswered question regarding the information on and sharing of SIVAM's technology and "know-how." Given the great products the system is projected to provide, it would be helpful to extend participation and sharing of ideas with neighbors, even in the conception phase. But again, no significant efforts in this regard are identifiable.


The knowledge produced by a SIVAM oriented towards human and environmental security could even change perceptions about the scope of threat to the region—broadening it beyond organized crime or border control to include the possibility that human presence may destroy the ecology of the Amazon through unrestrained deforestation. The generation of knowledge regarding strategic human, group, and international interactions in the Amazon will have little utility unless it includes scientific information about the region's natural cycles and the management of its human presence with environmental sustainability efforts.

### THE NEED FOR BROADER PERSPECTIVES

Perhaps the greatest contribution made thus far to broadening the definition of security in the Amazon comes from an unexpected quarter: Senator Marina Silva, who represents the Brazilian state of Acre. She is a *cabocla*, a former farm worker who, after making her livelihood from extractive activities in the jungle, became a labor leader and then a representative both in the state house of Acre and later in the Federal Senate. Ms. Silva has a different perspective on security in the Amazon:

[I]n relation to the Amazon, as an asset threatened, I believe that one of the most important and significant threats we experience results from wrong policies implemented after the end of the extractive cycles and the introduction of models centered on large [agricultural] projects. The threat results from misleading perspectives. The first mistake is to consider the Amazon as

an empty demographic space. The second mistake is to consider the Amazon as a homogenous forest. The third mistake is to think of development in the Amazon and not of the Amazon. Development in the Amazon makes us think of defense policy in the Amazon as large projects in the Amazon, as actions of government in the Amazon, instead to think of a process of endogenous development, where the Amazon [environment] itself can generate its own responses. From this matrix of misleading perspectives results a series of mistakes that causes the Amazon [region] to be seen, not only by us *Amazonidas*, but also by all Brazilian people and even by those from abroad, as a [natural] asset under threat. The idea of such large projects produced the destruction of 13,000 km<sup>2</sup> [of forest] burnt in [1998]. If we continue at this destructive pace, in thirty or fifty years, and this is the truth, there will be no more Amazon [forest]. I am not the one affirming this, but these are the conclusions of technical research from alternative sources and from those conducted by the government through official research institutes themselves [such as INPE] (Silva, 1999).

The concept guiding SIVAM is a clever and practical approach both to preserving Brazil's sovereignty and law enforcement and to generating information for social and scientific development. As a result, it will vastly increase Brazil's air defense capabilities for both conventional and classic air defense as well as for law enforcement. But SIVAM's implementation risks being deficient for environmental purposes because of its uncertain model of information gathering and dissemination. Probing (a) how this model is set, and (b) how it could eventually function in harmony with information needed for scientific development and local management are keys to ensuring SIVAM's success as a tool for environmental security. As the program stands, however, SIVAM's full utility as an instrument for human security in the Amazon region is being endangered by the lack of transparency in its conceptualization and implementation. How the evaluation process of the program evolves is a key to its success in meeting the expectations of the Brazilian taxpayers, citizens, and others concerned with the protection of the Amazon as a unique and significant natural environment on the planet. 

---

## ENDNOTES

---

<sup>1</sup> For detailed information provided by the administrators of the program, see “Raytheon” (2000).

<sup>2</sup> As of May 2001, the first ERJ-145s had been delivered and are under operational testing, regional centers were being constructed and equipped, and first radars were under experimental testing.

<sup>3</sup> Representatives of the Labor Party have echoed the doubts expressed by the Brazilian Society for the Progress of Science (SBPC) with regard to the project’s relative lack of Brazilian technology suppliers. For example, Senator Eduardo Suplicy has argued that “scientist members of SBPC are warning that SIVAM...could avoid spending US \$1.438 billion dollars, as proposed by Raytheon, and [could] be undertaken [for] US \$927 million using both national industries and technology” (Suplicy, 1996).

<sup>4</sup> In the early development of SISDACTA in the 1970s, the absence of an effective air control system (especially for commercial aviation) made it politically easy also to construct an intelligence component to the program, yielding a “dual-use” system.

<sup>5</sup> The classical Brazilian geopolitical views are fundamentally derived from Couto e Silva (1967).

<sup>6</sup> The Calha Norte (“North Arch Project”) is an effort to increase state control in the border region from the Atlantic coast to Peru. Since most federal agencies, particularly the Ministries of Education, Health, and Economy, do not assign priority to investments or to posting officers in that region, Calha Norte has evolved to be a Brazilian Army-run administration. Local municipalities are assisted with sanitation, health, education, and management activities. Financial resources have been continuously shorter than actual budgetary demands.

<sup>7</sup> Pro-Amazonia and Promotec are programs run by the Ministry of Justice to increase law enforcement in the

Amazon region.

<sup>8</sup> For arguments emphasizing the environmental promises of SIVAM, see for example the words of Brigadier General José Orlando Bellon, SIVAM’s Chief Director, in “SIVAM funcionará” (1999).

<sup>9</sup> The perception that there are forces or conspiracies that want to internationalize Brazilian Amazonian territory has been part of the Brazilian political vocabulary for some time. The United States is considered a key conspirator in this reputed Amazonian internationalization effort. Advocates of Brazilian vigilance against such an effort identify U.S. Navy Captain Mathew Fawry’s suggestion in 1817 to the U.S. Secretary of State about forming a sovereign country in the Northern Amazon as the first overt manifestation of U.S. interest in controlling the region. Between 1989 and 1992, many indirect and direct comments of U.S. officials (such as those of then-Senator Al Gore challenging Brazil’s sovereignty in the region) have given credence to the perception of this threat. Original documentation regarding these allegations is not forthcoming. No primary sources are provided by those who hold these fears. But references to the past feed present arguments, and periodically new fears are raised as the issue reappears on the agenda of strategic debates in many circles—especially in more nationalistic ones such as the Escola Superior de Guerra and its alumni associations throughout the country, or the Military Club, a social club of retired military officers in Rio de Janeiro. The arguments are presented by Chagas (1997).

<sup>10</sup> For the transcript of this law and comments on it, see Correia (2000).

<sup>11</sup> For the official argument of current scientific participation, see Site Oficial (2001).

---

## REFERENCES

---

Academia Brasileira de Ciências (National Academy of Science). (2001). [On-line]. Available: <http://www.abc.org.br/>

Álvares, Élcio. (1999, November 16). “A Amazônia—patrimônio ameaçado?” [The Amazon—asset under threat?]. Comissão de Relações Exteriores e Defesa Nacional, Senado Federal, Secretaria-Geral da Mesa, Subsecretaria de Taquigrafia, Serviço de Comissões, SC-2. Author.

Câmara, Gilberto. (1999). “O projeto SIVAM e a biodiversidade Amazônica: Há espaço para a ciência nacional?” [Project SIVAM and biodiversity: Is there space for the national science?]. Paper presented at the

annual meeting of the Brazilian Society for the Progress

- Conselho Nacional de Desenvolvimento Científico e Tecnológico (National Council for Scientific and Technological Development). (2001). [On-line]. Available: <http://www.cnpq.br>
- Correia, José Aparecido. (2000). "Pena de morte, em vôo." ["Death penalty in flight"]. In *Revista Brasileira de Direito Aeronáutico* 81. [On-line]. Available: [www.sbda.org.br/revista/Anterior/1690.hrm](http://www.sbda.org.br/revista/Anterior/1690.hrm)
- Couto e Silva, Golbery. (1967). *Geopolítica do Brasil* [Geopolitics of Brazil]. Rio de Janeiro: José Olympio.
- Dreifuss, Renné. (2000). "Strategic perceptions and frontier politics in Brazil." In Anthony Hall (Ed.), *Amazônia at the crossroads* (pages 215-232). London: University of London Institute of Latin American Studies.
- "Forças Armadas temem internacionalização da Amazônia." [Armed Forces fear the internationalization of the Amazon]. *O Estado de São Paulo*, 11 June 2000. [On-line]. Available: <http://www.estadao.com.br/agestado/nacional/2000/jun/11/115.htm>
- Fortes, Leandro & Krieger, Gustavo. (2000, December 4). "Segredos da floresta" ["Forest's Secrets"]. *Revista Época*. [On-line]. Available: <http://epoca.globo.com/edic/ed04122000/brasil1a.htm>
- Gamini, Gabriela. (2000, December 19). "Race to Save Amazon Basin." *The Times*. [On-line]. Available: <http://forests.org/archive/brazil/rasaamba.htm>
- Genoino, José. (2000, June 8). "Acordo militar e política de defesa." *O Estado de São Paulo*. [On-line]. Available: <http://www.estado.com.br/editorias/2000/06/12/pol140.html>
- López, Alexander. (1998, September). *Environment, security and conflict: Exploring the links in the Brazilian Amazon*. Paper prepared for annual meeting of the Latin American Studies Association, Chicago. Author.
- "Presidente: Código Florestal deve assegurar preservação da Amazônia." [President speaks: Forest code must assure preservation of the Amazon]. (2000). [Online]. Available: [http://www.radiobras.gov.br/presidencia/palavra\\_1505.htm](http://www.radiobras.gov.br/presidencia/palavra_1505.htm)
- Presidential Directive. (23 February 1996). [On-line]. See reference to this classified document at: [http://www.planalto.gov.br/publi\\_04COLECAO/PRO9618.HTM](http://www.planalto.gov.br/publi_04COLECAO/PRO9618.HTM)
- "Raytheon: SIVAM: Background and benefits." (2000). [On-line]. Available: <http://www.raytheon.com/c3i/c3ipproducts/c3isivam/sivam01e.htm>
- Rodrigues, Valter. (2000). "SIPAM." Paper presented at the seminar "Brazil's SIVAM Project: Implications for Security and Environment Policies in the Amazon Basin." Washington, DC: The Latin American Program and the Environment Change and Security Project, The Woodrow Wilson International Center for Scholars. Author.
- SIVAM: Eventos. (2001). [On-line]. Available: <http://www.sivam.gov.br/INFO/eventos.htm>
- "SIVAM funcionará como um Banco Genético." [SIVAM will work as a genetic bank]. (1999). *Mérito. Revista do Superior Tribunal de Justiça* 1(2), 16-19.
- Silva, Marina. (1999, November 16). "A Amazônia – patrimônio ameaçado?" [The Amazon—asset under threat?]. Comissão de Relações Exteriores e Defesa Nacional, Senado Federal, Secretaria-Geral da Mesa, Subsecretaria de Taquigrafia, Serviço de Comissões, SC-2. Author.
- Site Oficial do Projecto Sivam. (2001). [On-line]. Available: <http://www.sivam.gov.br/info/press.htm>
- Sociedade Brasileira Para o Progresso Da Ciências (Society for the Progress of Science). (2001). [On-line]. Available: <http://www.sbpcnet.org.br/>
- Suplicy, Eduardo. (1996, January 19). "SIVAM: Quem avisa amigo é" [SIVAM: A friendly warning]. *Folha de São Paulo*. [On-line]. Available: <http://www.senado.gov.br/web/senador/esuplicy/publicacoes23.htm>
- Zaverucha, Jorge. (1995). "The SIVAM affair." [On-line]. Available: <http://lanic.utexas.edu/ilas/brazctr/publications/papers/zaverucha/sivam.html>