

Lessons from the modernist project for the Amazon

Lições do projeto modernista para a Amazônia

Lecciones del proyecto modernista para la Amazonia

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Abstract

In 1972, the Brazilian government implemented a colonisation scheme and a series of new towns along the Transamazonian Highway, then under construction. The state-driven project aimed for regional development, economic growth, and national integration, which legitimised the military regime. Despite robust funding, it was abandoned as a failure a couple of years later. Since then, deforestation and a low Human Development Index have marked the region. This paper analyses the governmental colonisation project and its manifestation through historical interpretative method and urban morphology, based on original documents, a site visit, and economic, political, social, environmental, and agricultural studies. The paper introduces the notion of national development and modernisation, closely related to the physical transformation of the natural environment. It then examines the colonisation scheme and the new town layouts. It also compares them with a successful precedent, the private colonisation enterprise in northern Paraná state. Finally, the paper points out some of the constraints of the Amazonia project and sheds light on this town and country planning fiasco. The general argument is that architectural and urban design was treated as a sign of modernity insofar as it implied a radically different outcome from both the contested urban reality and the natural environment to be subjugated. Modernist thought and functionalist layouts materialised the aspiration to completely transform the habitat instead of adapting to it.

Keywords: Colonisation; Deforestation; Design; Planning diffusion; Transamazonian Highway.

Resumo

Em 1972, o governo brasileiro implantou um esquema de colonização e uma série de novas cidades ao longo da rodovia Transamazônica, então em construção. O projeto estatal almejava desenvolvimento regional, crescimento econômico e integração nacional, o que legitimava o regime militar. Apesar de investimentos robustos, o projeto foi abandonado como fracasso um par de anos depois. Desde então, desmatamento e baixo Índice de Desenvolvimento Humano têm marcado aquela região. O artigo analisa o projeto de colonização e sua materialização através do método histórico interpretativo e da morfologia urbana, com base em documentos originais, visita de campo e estudos econômicos, políticos, sociais, ambientais e agrícolas. Apresenta a noção de desenvolvimento e de modernização nacional fortemente ligada à transformação física do ambiente natural. Em seguida examina o esquema de colonização e o *layout* das novas cidades propostas, comparando-os com o empreendimento privado de colonização do norte do Paraná, modelo para o projeto transamazônico de colonização. Por fim, o artigo aponta problemas deste empreendimento de ocupação da Amazônia e considera o fiasco deste planejamento. Argumenta-se que o projeto urbano e arquitetônico foi tratado como sinal da modernidade na medida em que ele implicava um resultado radicalmente distinto tanto da realidade urbana contestada quanto do ambiente natural a ser subjugado. O pensamento modernista e os traçados funcionalistas materializaram a aspiração de transformar completamente o habitat ao invés de adaptar-se a ele.

Palavras-Chave: Colonização; Desmatamento; Projeto; Circulação de Ideias; Transamazônica.

Resumen

En 1972 el gobierno brasileño implantó un esquema de colonización y una serie de nuevas ciudades a lo largo de la carretera Transamazónica, entonces en construcción. El proyecto estatal aspiraba a desarrollo regional, crecimiento económico e integración nacional, lo que legitimaba el régimen militar. A pesar de inversiones robustas, el proyecto fue abandonado como fracaso un par de años después. Desde entonces, deforestación y bajo Índice de Desarrollo Humano han marcado aquella región. Este artículo analiza el proyecto de colonización y su materialización por medio del método histórico interpretativo y de la morfología urbana, basado en documentos originales, visita de campo, y estudios económicos, políticos, sociales, ambientales y agrícolas. Presenta la noción de desarrollo y modernización nacional fuertemente conectada a la transformación física del ambiente natural. Después examina el esquema de colonización y el trazado de las nuevas ciudades propuestas. Aún los compara con el emprendimiento privado de colonización del norte de Paraná, que sirvió de modelo para el proyecto transamazónico de colonización. Por fin, el artículo apunta problemas del proyecto de ocupación de la Amazonia y considera el fiasco de aquella planificación urbana y rural. El argumento general es que el diseño urbano y arquitectónico fue tratado como señal de la modernidad en la medida en que implicaba un resultado radicalmente distinto tanto de la realidad urbana contestada cuanto del ambiente natural a ser subyugado. El pensamiento modernista y, particularmente, los trazados funcionalistas materializaron la aspiración de transformar completamente el hábitat al revés de adaptarse a él.

Palabras clave: Colonización; Deforestación; Proyecto; Circulación de Ideas; Transamazónica.

1 Introduction¹

One can open any colonial hygiene code. The briefest reading shows the incomparable efforts of the modern missions and their complex doctrine which, contrary to the old ones, do not aim to bring a transfigured barbarism into civilisation, but to transplant civilisation itself entirely into the harsh and rude bosom of barbarian territories.

Euclides da Cunha (2009, p. 141).²

In 1972, the Brazilian government implemented a colonisation scheme and created a series of new towns along the Transamazonian Highway, then under construction. A modernist, Miesian monument – now abandoned – was erected near Altamira, in the state of Pará, in 1970 to celebrate the launch of the three-thousand-mile national highway construction, which would traverse the equatorial north of Brazil from the Atlantic coast to the Peruvian border. In the modernist monument, a chopped tree trunk held a metal plaque. It declared that “on the shores of the Xingu River, in the midst of the Amazonian Forest, mister President launch[ed] the construction of the Transamazonian [Highway] in a historical push for the conquest and colonisation of this gigantic green world” (Figures 1 and 2).

Figure 1: Monument to the Transamazonian Highway, Altamira, 1970.



Source: Arquivo Nacional.

The stump of the felled tree and the expression ‘conquest of the gigantic green world’ attract the attention of the viewer (Figure 2). The preservation of the forest has only recently

¹ This paper develops ideas discussed at the online *International Seminar Landscapes of Power*, promoted by the Faculty of Architecture and Urbanism, University of Brasília, in June 2022.

² From the original: “Abra-se qualquer regulamento de higiene colonial. Ressaltam à mais breve leitura os esforços incomparáveis das modernas missões e o seu apostolado complexo que, ao revés das antigas, não visam arrebatar para a civilização a barbaria transfigurada, senão transplantar, integralmente, a própria civilização para o seio adverso e rude dos territórios bárbaros”.

become a pressing concern for Brazilian government. In fact, the deforestation we see today in the Amazon was first the direct result of government policies and then the result of a lack of control over the territory (Salles, 2024, p. 125-141; Tavares, 2012, p. 208; see Hecht; Cockburn, 1990, p. 111). Preservation and sustainability were not part of the strategies used to transform the natural environment into cultivable, habitable areas.

Figure 2: The President-General and his wife (centre) at the launch of the Transamazonian Highway construction.



Source: Folha Press, 1970.

The state-driven *colonisation* project that followed the launch of the ambitious highway construction was to endorse regional development, economic growth, and national integration. Despite robust funding, it was abandoned as a failure a few years later. Since then, deforestation and a low Human Development Index have been the region's main concerns.

The Amazon was not well imagined by the foreigners who wanted to conquer it. The forest has been the victim of a failure of ideas that cannot be confused with a lack of courage. It has been compared to “a portrait of disharmony” as the natural landscape had been replaced by another, less congruent one (Salles, 2020, 2021, 2022). Its development under authoritarian capitalism has been highly destructive (Hecht, 2012, p. 14). As Durán Calisto (2019) has rightly pointed out, the Amazon “can be described as a graveyard of modern planning ideas”. The colonisation scheme and overall urbanisation project carried out along the Transamazonian Highway in the state of Pará from 1972 to 1974 have been specifically portrayed as a planner's nightmare.

From the perspective of architecture and urbanism, this paper examines the ill-fated governmental settlement project for the Transamazonian Highway implemented in Pará State between 1972 and 1974 as an input for planners to learn from past mistakes and thus improve the worlds they help to imagine and shape. Based on the method of historical interpretation, this paper gathered information from original documents, a 2015 site visit to the remains of the new towns built along the highway between Altamira and Rurópolis, and a recent literature review examining narratives related to economic, political, social, environmental, and agricultural studies. It presents the ideals of national development

and modernisation associated with the physical transformation of the natural environment that underpinned the Amazon enterprise. It then examines the Transamazonian settlement project, the colonisation scheme, and new town layouts. Since this plan was inspired by a similar initiative in Southern Brazil that was considered “a planner’s dream of success” (Katzman, 1977, p. 69), the paper then contrasts the two planning schemes and outcomes to provide a more vivid picture of the disastrous Amazonian project. Finally, the paper considers some of the constraints and causes of the fiasco of the Amazonian colonisation enterprise. The paper argues that a late modernist design approach, typical of the machine age, with little regard for the physical context and social milieu, was one of the causes of the overall failure.

2 Ideals of national development and modernization

The 1964 *coup d’état*, as Hecht (1985, p. 667) notes “inaugurated a variety of changes, if not in kind certainly in emphasis, in the Brazilian economic scene. These transformations were reflected in increased international investment, the strengthening of entrepreneurial capital and significant modifications in the role of the Brazilian State in national and Amazonian planning.”³ As such, “the new agricultural frontier in the Amazon was to provide a solution to vital economic and ideological questions, and thus served important political and legitimizing functions to the new regime” (Hecht, 1985, p. 668).

According to Salles (2022, p. 14), “great movements of occupation are always supported by ideological constructions.” Official propaganda proclaimed the Amazon as “a land without men for men without land” (Salles, 2020; Oliveira, 1994, p. 8). On the one hand, the forest was seen as a “place without a past, virgin of events and waiting for whoever will give it a destiny” (Salles, 2020; Hecht; Cockburn, 1990, p. 36-37). It was conveniently taken as an uninhabited space, since the recognition of the presence of the original people, their territory and their supra-nationality would jeopardize the border control and the Brazilian nation-state (Oliveira, 1994, p. 5. Figure 3).

On the other hand, the construction of a particular geographical idea as a symbol of the nation was part of Brazilian social thought in the twentieth century, regarding the hinterland in general and the Amazon in particular – a “land without history” according to Euclides da Cunha (2009; see Maia, 2008, p. 136, 2012). This geographical idea framed the Brazilian “society under construction, capable of inventing and projecting itself without having to pay excessive tribute to any kind of cultural ontology” (Maia, 2008, p. 191).

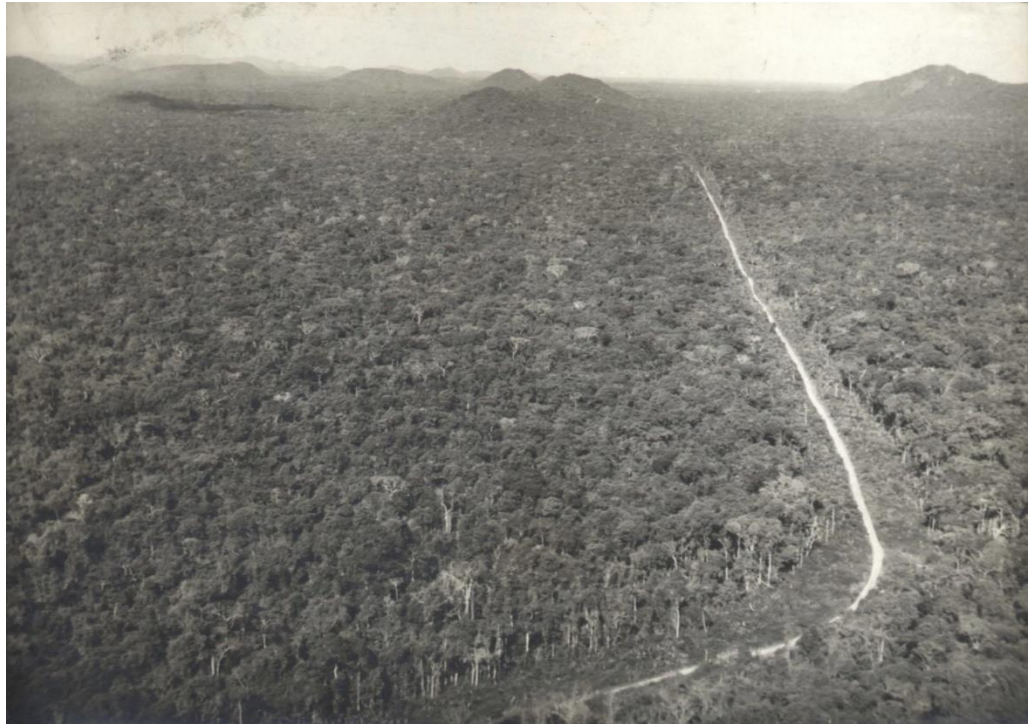
The Amazon was a territory to be conquered and occupied. Hecht (1985, p. 668) noted that the “military language characteristic of development rhetoric also contributed to the sense of Amazonian occupation as the moral equivalent of war”. The initiative of the military regime in the 1970s revived aspects of colonialism in late twentieth-century Brazil, and the aims of Brazilian colonialism were directed inward, towards the invasion and conquest of its own territory. ‘Self-imperialism’ has had a powerful rhetorical impact on the country’s nation-building discourse (Moser, 2016, p. 105-106).

In the country’s history, to colonisation-civilisation-modernisation has meant the

³ President Goulart administration (1961-1964) was marked by social tensions and economic crisis. Goulart was considered a leftist and reformist, at a time during which the Cuban Revolution (1959) was a threat to North American continental influence. Goulart was thus deposed by a military coup in 1964.

empowerment of territorial expansion, reaffirming the determinations of the colonial conquest, that is, the appropriation of land and subjugation of 'the natural'. The transformation of the natural environment, the provision of equipment and territorial occupation have been taken as clear signs of modernity and development (Moraes, 2008; Risério, 2012, p. 137-139; Tavares, 2012, p. 192; Almandoz, 2015).

Figure 3: The Transamazonian Highway across the rainforest before the implementation of the settlement project.



Source: Arquivo Nacional.

The capital cities planned from scratch in the Brazilian hinterland in the twentieth century – namely, Goiânia (1933), Brasília (1960), and Palmas (1989) – embodied the government's efforts to occupy the territory, develop the country and build the nation (Rego, 2020a, 2020b). Typically, the transfer of capitals to the hinterland of countries was associated with territorial integration, modernisation of the country, regional development, and the construction of national identity (see Vale, 2008; Gordon, 2006). It was no different in Brazil, where planned new towns preceded and advanced rural settlements in the country's hinterland (Risério, 2012, p. 71). Planned new towns were only a sign of hegemony, as deliberate, calculated acts (see Wakeman, 2016; see also Trevisan, 2020). They were the instrument for the (artificial) launch of the modern world in pioneering agricultural frontiers (Gorelik, 2005, p. 49; Rego, 2017, p. 251).

Mirroring the U.S. frontier ideology of manifest destiny, the government of President Vargas (1933-1954) launched the 'March to the West' program in 1938 to encourage the colonisation of the countryside. Settlement efforts were then concentrated in the Central-Western frontiers of the country, supported by the international coffee trade, global capital, the creation of new towns, and the construction of new railroads. Modernisation and progress were then identified with the image of the advancing agricultural frontier and the transformation of the natural environment.

The government of President Vargas sought to establish an urban, industrialised, and modern country, promoting a shift from an agro-export economy to an urban-industrial

one (Gomes, 2013, p. 43). The cultural component was fundamental to the new national identity as evidence of social transformations (both real and intended); and modernist architecture (like that of the Transamazonian Monument) became one of its most emblematic symbols. As such, rationalist architecture also proved to be a remarkable, celebrated piece of government propaganda. Brazilian modernist architecture of the 1940s was projected internally and externally as the image of the modern country.

Likewise, Brasília was the blueprint for a government that was once again committed to modernising the country and developing its hinterland. After the Second World War, it was understood that only a truly modern culture could bridge the structural gap that separated Latin American countries from the great powers. President Kubitschek (1956-1961) implemented an economic model that favoured the association of Brazilian private companies with multinational and state corporations, which was successful in the short term, as the annual national economic growth rate peaked at 10%.

Inaugurated in 1960, at the beginning of the “Decade of Development”, Brasília was intended to create a new social order through an innovative urban form. The justifications for the transfer of the Brazilian capital city showed a close relationship between territorial defence and occupation; a demiurgic government sought to develop the hinterland and transform society with the new capital, which was to play a colonizing, civilizing role (Rosa, 2023). The city’s revolutionary, progressive, and pedagogical vocation flourished (Moreira, 1998). Brasília epitomised the shared belief of Brazilian architects and town planners in the political, transformative power of architecture and urbanism. To play this role, urbanism had to express order and rationality. This idea also prevailed in the Transamazonian new towns, despite contemporary international criticism of rationalist architecture and the functional city (see Risério, 2012, p. 139; see also Tavares, 2012, p. 199).

The military dictatorship (1964-1985) renewed the nation-building project, aiming at regional development, economic growth, and national integration. Geopolitical concerns also played a role in the state-led frontier expansion into the Amazon. National security – amid the Cold War and *guerrilla* movements – was presumably threatened if the Amazon were not quickly integrated into the body of the nation. The 1970s was considered the “decade of colonisation,” with the large-scale mobilisation of government resources to “conquer” the Amazon (Almeida, 1992).

According to Brazil’s First National Development Plan, published in 1971, expanding the country’s economic frontiers would fulfill its growth potential (Brasil, 1971). It would also address the contrasts between urban and rural areas and between the industrialised South-Central and the impoverished North of Brazil. Thus, frontier development drove the expansion of southern industrial capitalism into this remote corner of the country. The National Development Plan mentioned “accelerated and self-sustaining *growth*” but was silent on environmental sustainability (Brasil, 1971, p. 25).

The Legal Amazon was established in 1953 as an arbitrary boundary that included the rainforest as well as the swampy Pantanal, parts of the Cerrado, and the pre-Amazonian palm forests of Maranhão. The Legal Amazon aimed to transform the vast forest into an area for development, and in the 1970s this region was subjected to a technocratic, centralised, and authoritarian developmentalism that focused on regional migration into, and occupation of, this demographic vacuum. The social consequences of dramatic drought of 1970 in north-eastern Brazil were mitigated by the resettlement of the destitute

population in the Amazon (Rego, 2017, p. 252; Moran, 1981, p. 75; Cardoso; Müller, 2008; Almeida, 1992).

Efforts to build the country once again focused on territorial organisation and occupation, especially in the Legal Amazon. The motto *Brasil Grande* (Great Brazil) was embodied in the form of colossal infrastructure projects such as the Transamazonian Highway (Figure 2), the Rio-Niterói Bridge (1968-1974) and the Itaipu Dam (1973-1982). These projects not only stimulated economic growth and regional development, but also portrayed progress as a transformation of the physical environment. The early 1970s have been called the “age of the economic miracle” (when Brazil’s GDP leapt from 9.8% in 1968 to 14% in 1973 and the urban population outnumbered the rural, even as wealth concentration, inflation, fiscal imbalance, and inequality increased).

The Transamazonian Highway project combined capitalist interests, geopolitical strategies, modernisation theories, regional planning diagrams, nation-building discourses and the vocabulary of modernist architecture and urbanism already consolidated in the country (Tavares, 2012, p. 192). In a sense, the construction of the highway revived the euphoria of Brasília’s creation.

3 Shaping an urban world along the Transamazonian Highway

In 1966 President Castello Branco elaborated the idea of occupying the Amazon through ‘development poles.’ The concept of development poles had been formulated in the mid-1950s by François Perroux, who advocated a deliberately unbalanced approach to development incentives. Other objectives outlined by the President included the promotion of immigration and settlement in the region. The Superintendency of Development for the Amazon (SUDAM) was then created to promote the regional development and attract private investors with special credit lines opened by the Bank of Amazon (Hecht; Cokcburn, 1990, p. 119-120).

The regional planning and colonisation scheme for the occupation of the six-mile-wide strips on both sides of the Transamazonian Highway was implemented during the administration of President Medici (1969-1974. New government, new plans – and with the end of the Medici administration this plan was also dropped). The scheme was prepared by architect and town planner José Geraldo da Cunha Camargo, an official of the National Institute of Colonisation and Agrarian Reform (INCRA) in Rio de Janeiro. Camargo had prepared an initial diagram that resembled both Ebenezer Howard’s social cities formation and Walter Christaller’s central place theory structure. It was soon adapted to the linearity of the Highway. Called Rural Urbanism, Camargo’s scheme ‘borrowed elements’ from the territorial organisation experienced in the private settlement enterprise of northern Paraná, particularly the hierarchical, interconnected, and regularly spaced urban settlements, and the connection between town and country (see Katzman, 1977, p. 80). Unlike the urban forms of northern Paraná, the layout of the new towns he designed for the Transamazonian relied on the functionalist urbanism and the philosophy of the Charter of Athens.

New towns are usually planned elsewhere, more often in the core of developed societies and in metropolitan centres, as a response to urban experiences and problems that belong to specific contexts. Planners and designers have looked to other places for good practices. However, ideas from elsewhere can become a graft of a particular culture onto an alien site and end up being rejected, if they are not selectively perceived and locally

reimagined according to local cultural sensibilities (see Rego, 2021; Rego, 2017). As we will see, this was largely what happened to the Transamazonian new towns.

Camargo's proposal included social, economic, and physical planning for the settlement of migrants along the Highway. By determining the dimensions, zoning and use of the rural areas associated with the hierarchical urban settlements, the spatial organisation of Camargo's scheme introduced four complementary urban settlement types, namely: *agrovila*, *agrópolis*, *rurópolis*, and towns. This hierarchy concerned the social, cultural, and economic infrastructure, each with its own specific function.

In the network of satellite settlements of Rural Urbanism, *agrovilas* were the smallest urban forms designed to provide housing and basic social interaction for rural workers. These townships were to have a central park grouped with a primary school, a social centre, a basic health centre, a small administrative office, an ecumenical temple, and some recreational facilities. Rural workers were to live on their village plots, which would be big enough for a vegetable garden and a small quantity of livestock. Rural plots were to be 250 acres, requiring a labour force of three to five heads of household. This meant an average density of 10 families per square mile of agricultural land (half the population estimated for the northern Paraná colonisation scheme, where rural plots ranged from 60 to 120 acres). The population of an *agrovila* would be determined by the number of children needed to establish an elementary school, which meant between 500 and 1500 inhabitants – or 100 to 300 families. According to Camargo, each *agrovila* should function as part of a system, so that a cluster of *agrovilas* would act as satellites of an *agrópolis*, complementing its social and economic needs.

The *agrópolis* thus consisted of a small agro-industrial urban centre with administrative, cultural, social, and economic influence over an area within a radius of almost six-miles, in which eight to twelve *agrovilas* were located (Figure 4). In addition to the basic structure of an *agrovila*, the *agrópolis* would include secondary schools, small industries, a market centre, a cemetery, a small hospital, and a communications centre. It would house between 300 and 600 families, resulting in a population of 1,500 to 3,000 people. The distance between the *agrovilas* and their *agrópolis* was to be commutable by bicycle so that a student could cycle to the secondary school. The average distance between two *agrópolis* would be about twelve miles, a distance that could be travelled by bus, truck, or car.

Even more elaborate was the *rurópolis*, the main centre of a large rural community, built near the *agrovilas* and *agrópolis* that existed within a radius of 45 to 90 miles. Hierarchically more important, the *rurópolis* would have more urban infrastructure and services, supporting up to 20,000 inhabitants. To complete the urban network, the few existing towns were expected to become 50,000-inhabitant urban centres within a sphere of influence of 300 miles.

By 1973, thirty rural *agrovilas* and one *agrópolis* had been built; eleven more *agrovilas* were being created, and the first *rurópolis* was under construction, all along nearly 700 miles of highway. *Rurópolis* was inaugurated in 1974 by the Brazilian president of the time, to the sound of *Pra frente Brasil* [Forward Brazil] – the 1970 national football team song and a popular anthem during the dictatorship.

Camargo articulated the nineteenth-century positivist ideal of 'order and progress' and the

functional city organisation in the layout of the new towns.⁴ The complex constitution of cities was dismissed. The world could be organised on the drawing board, as Le Corbusier believed (Fishman, 1977, p. 205). In Camargos's rationalist design, urban forms resulted from simplification, standardisation, and segregation, thus cutting urban life into pieces. Their unfamiliar, modernist urban layout was to transform social behaviour and ultimately create "a new civilisation" via an unbiased urban environment (see Holston, 1993, p. 24 and 62; Camargo, 1973, p. 1).

Figure 4: Aerial view of an agrópolis.



Source: Arquivo Nacional.

Rurópolis was planned as a loose grid, due to the topographical conditions. The town layout consists of a grouping of neighbourhood units along an informal central axis. More than a decade after Brasília was built, the neighbourhood unit still seemed innovative and revolutionary as a promoter of a new urban way of life. However, despite Clarence Perry's intention to improve social life and promote civic spirit, the American idea of the neighbourhood unit was meaningless in the middle of the forest. In the Amazon the green open spaces of *Rurópolis* were perceived less as a bucolic vision than as a source of danger. The cul-de-sacs of *Rurópolis*' soon disappeared as the dead-end streets were extended and the original green spaces were parcelled off. Over time, the neighbourhood units simply vanished from the *Rurópolis* urban form.

The utopian Transamazonian settlement project stipulated that all settlers should be considered equal. Their houses were to be identical – even the same colour. This egalitarian society was to be heterogeneous with people deliberately selected from different regions of the country and, if possible, from different racial and ethnic backgrounds (Camargo, 1973, p. 6). Camargo recommended that the transfer of entire social groups that had previously formed elsewhere should be avoided to prevent the

⁴ According to Camargo (1963, p. 299), "within order we will reach progress".

transfer of their “original vices, taboos, and habits”, which would make it “too difficult to modify their previous behaviour”. Moreover, the citizens of the planned new communities were to conform to the social and cultural prescriptions of the project. Orientation to social behaviour, morality, religious and communitarian spirit would make them “cohesive, happy and progressive” (Camargo, 1973, p. 6).

A large-scale propaganda campaign was launched on radio, television and in the press to attract settlers to the Amazon. Government technicians approached anyone they thought would be a good candidate; Protestant church leaders used their pulpits to make the congregations aware of the opportunities to seek a ‘promised land’; letters from the first pioneers to those back home encouraged many to apply (Moran, 1981, p. 79; Smith, 1982, p. 15). The reported number of families settled by this time varies between 1,500 and 6,000, depending on the source, but in any case, it was much less than the 100,000 families predicted by the government in 1971.

The successful private colonisation of northern Paraná state, which began in the early 1930s, had influenced Camargo’s scheme as has been noted elsewhere (Katzman, 1977, p. 80; Rego, 2017). The transformation of the forested landscape of northern Paraná into habitable urban environment was the result of a land development project carried out by a British company. The company’s main objective was to sell rural land for coffee production. However, the success of the financial investment depended entirely on the urban facilities offered to settlers. Town and country planning was drawn up and gradually implemented before the territory was occupied. The land was then parcelled into small rural plots, which not only avoided the problems of large estates, but also determined a larger number of settlers (Rego, 2020, 2017, 2011).

The parcelling of land in northern Paraná followed the system known as ‘long plots’, which had the advantage of creating a grid along the natural lines – ridges and streams. Each rectangular plot had access to both water and transport, as the roads always followed the ridges. Natural forests near rivers and streams were preserved by law, which somewhat mitigated deforestation. In contrast to the ‘organic’ grid created by this geometry, based on natural lines, Camargo’s scheme established a rigid, orthogonal parcelling on both sides of the Transamazonian Highway, creating a more artificial landscape.

In the colonisation scheme of northern Paraná, nearby new towns were positioned along the railway line to serve as commercial and service centres. Land speculation, not to mention the whole colonisation enterprise, depended on the transport infrastructure, which in turn depended on passengers and agricultural production. The railway was conceived both as the backbone of the territorial occupation and as a channel through which modernisation could penetrate the undeveloped hinterland. The planning scheme adapted the British diagram of social cities to a new agricultural region, proposing independent, equal, equidistant, and interconnected new towns surrounded by green belts.

In the mid-1940s, the colonisation scheme was then redesigned according to the satellite town scheme. (The satellite town idea was later adapted for the regional planning of the Federal District. See Derntl, 2020; actually, northern Paraná colonisation was a reference for the proposal to move the federal capital to the hinterland; see Rosa, 2023). Taking into account the hierarchy of the satellite town scheme, major towns (of 100,000 inhabitants) were built every 100 kilometres along the railway in northern Paraná. Between them were dependent, regularly spaced (no more than ten miles apart), closely connected small

towns (for 20,000 inhabitants) and townships (for 10,000 inhabitants).

The town layouts of northern Paraná are quite different from the urban forms designed for the Transamazonian settlement project, more in keeping with post-Brasília functionalist planning. The new towns of northern Paraná have a traditional layout, except for the two largest towns – Maringá and Cianorte – which have adapted garden city features to the local context (Rego, 2020a).

The international colonisation company marketed the Paraná settlement overseas, particularly in present-day regions of Poland and Germany. Immigrants were encouraged to settle and re-establish their original social ties and foster a sense of belonging – something that had not been considered in the Transamazonian plan. Indigenous people however did not participate in the colonisation of northern Paraná, as if they had never existed in the region – or in the Amazon. By the 1970s, when the Transamazonian colonisation was being discussed, nearly two thousand miles of roads had been built in northern Paraná, and thousands of immigrants had settled there. The population in this region then grew faster than that of any other region in Brazilian history (Katzman, 1977, p. 59).

In Paraná, new towns, infrastructure, good transport links, fertile soil and abundant coffee harvests encouraged immigration and settlement in this promising but remote and unpopulated area. Five decades later, the northern-Paraná colonisation enterprise had settled one million people in what was “the largest private colonisation experience in Brazil” (Tavares; Considera; Silva, 1972, p. 32). Between 1950 and 1960, the number of cities in the state of Paraná more than doubled and the population growth rate reached 103%, while the Brazilian population growth rate for the same period was 37%. (For comparison, between 1970 and 1980, the population growth rate in the state of Pará, where the Transamazonian colonisation scheme was implemented, was 60%, while the Brazilian rate was 28%).

The colonisation of Paraná was soon hailed as an ‘outstanding example of planned economic development in subtropical areas’ and ‘the most successful experiment to date in coordinated regional planning and colonisation’ (Dozier, 1956, p. 318). It succeeded in creating a more middle-class society than the Brazilian norm (Katzman, 1977, p. 66). In fact, the creation of urban centres and their connection to the immediate rural hinterland and to the outside world was the keystone of the planned colonisation of northern Paraná (Dozier, 1956, p. 325). This successful enterprise had an impact on the Transamazonian settlement, especially at the regional organization level (Rego, 2017; Almeida, 1992; Katzman, 1977). However, the urban design, social aspects and management skills were quite different.

4 Constraints of the Transamazonian Project

The Transamazonian colonisation scheme was abandoned as a failure in mid-1974, with no time to adapt to micro-level variations in habitat and socio-economic conditions. The Brazilian authorities had set their sights very high in projecting the achievements of the colonisation scheme and highway construction, but a series of problems undermined them, despite the apparently extensive preparation and planning. It was promptly criticised as ‘bold improvisation’ (Transamazônica, 1970, p. 117), based on superficial preliminary reports and the basic data provided. Early critics questioned whether this urgent national integration should follow the parallels or the meridians; whether the most

economical method of integration method was by road or inland waterway, or even a combination of the two; and whether the creation of concentrated growth poles was more convenient than the dilution of infrastructure.

The central problem of Amazonian development has been the ‘tendency to solve all problems at once rather than in a gradual and sequential way that allows for adjustment and learning’ (Moran, 1984, p. 299). Had the highway been built in smaller sections, it would have ensured that adequate all-weather feeder roads were in place; areas with low agricultural potential could have been restricted; and the provision of services would have recognised the most fundamental issues for producers at each stage of the process. As noted by Rego (2017), the colonisation of northern Paraná was a staged process, progressively implemented in terms of infrastructure and territorial expansion. It seems that what had been achieved in northern Paraná in more than four decades was to be achieved in the Amazon in just a few years.

The colonisation plan altered the traditional regional urbanisation pattern of river towns and inland waterways transportation systems (see Becker, 1985). The location of *agrovilas* followed a geometric layout pattern that did not take physiography into account. Rationalist town layouts differed from traditional urban settings, and proper urban environments with their commercial and social attractions, never materialised among the desolate open spaces and precariously dispersed buildings (Rego, 2017). The rationale of modernist town planning prevented dense, diverse, and vibrant urban environments. Aspects of functionalist town planning also seemed pointless in small towns in the middle of the forest; separation between pedestrians and cars, functional zoning and neighbourhood units were surely more appropriate for more complex, dense, and developed urban areas. Fortunately, urban forms can be resilient, and the surviving Transamazonian new towns transformed themselves into more traditional settlements.

Environmental constraints were also a shortcoming. Large areas of soil also turned out to be of poor quality, as no prior micro-level geological surveys had been carried out to reveal their natural endowment or to suggest which areas should be selected for agricultural activities. In fact, preliminary soil studies had shown that the Transamazonian Highway would cross some good agricultural areas, but that few patches of medium to high fertility soils would be found among the more common low fertility soil in other areas. Although the forest may appear uniform, it turns out to be a mosaic of different forest types and its soils are mostly poor by temperate zone standards (Hecht; Cockburn, 1990, p. 17, 21 and 125; Salles, 2022). In summary, it was a large agricultural settlement with little technological basis.

Cultural limitations, such as the lack of community organisation/ leadership and social class differences, were also a constraining factor. Throughout the process, the scheme also suffered from problems related to the formation of new communities and societies, such as difficulties with the initial agricultural labour, problems with the selection of settlers, conflicts between settlers and natives, low population density, lack of sanitation, prostitution, as well as problems related to remote wilderness, such as the potential threat of wildlife and disease (Rego, 2017; Almeida, 1992). Another flaw was that the settlers were required to live in the *agrovilas* and not on their rural properties, as was the case in northern Paraná, but the commute from their village dwellings to their rural workplaces affected family unity and prevented family members from helping with agricultural work. In addition, animals and equipment were usually left unprotected in rural areas and considerations of care and protection of property made the permanent

presence of farmers on their land desirable. Later, empty village houses confirmed that settlers preferred to live in the countryside, closer to their places of work. Moreover, few of the *agrovilas* offered the amenities and recreational facilities that had been promised, making them unattractive to potential new settlers. Finally, despite their initial motivation, few settlers had any prior knowledge or experience of agricultural work and, some argued, they also lacked entrepreneurial skills, resulting in a large and steady exodus of workers from the area, huge losses to public investment and a negative impact on the whole colonisation process (Hecht; Cokcburn, 1990, p. 125). Salles (2022, p. 138-141) also reports the movement of settlers when the natural fertility of the land was exhausted and abandoned; new fertile soils were abundant elsewhere.

While in Paraná the motivation of profit and emancipation fuelled free initiative, in Amazonia the state-run enterprise did not instil a similar disposition in its settlers. Interestingly, although Rural Urbanism was designed along utopian, socialist lines by a right-wing military dictatorship, it achieved better results when implemented in smaller, private enterprises, as later in the northern state of Mato Grosso (see Rego, 2015).

The total cost of colonisation of the Amazon in the 1970s was about \$7.5 billion. More than half of this amount was spent on road construction, a third on transplanting social and institutional infrastructure, and only a small percentage on actual settlement projects (see Almeida, 1992). The cost of building the highway ended up being at least three times the amount budgeted, leading to a decision to reduce the construction of the feeder roads connecting the farms to the main road (Moran, 1985, p. 94). Government bureaucracy also played a role. The Transamazonian Highway is still paved today, but at the time the unpaved road through the rainforest was often impassable for long periods during the rainy season and required costly maintenance. Secondary roads were not built immediately, making it difficult to transport the first harvests. In addition, the long distances to the final market meant that farmers had to be guaranteed minimum prices at a level that would force the government to subsidise the freight. Much of the deforested land converted to pasture was only temporarily productive; within a few years of conversion, the productivity of these lands began to decline (Hecht, 1985; Hecht; Cokcburn, 1990, p. 125).

A large dose of utopia permeated the colonisation project. Camargo's town layouts discarded traditional urban configurations and established functionalist/rationalist forms of community outline, aiming to reform the physical urban environment in order to transform social life. In contrast, in the northern Paraná settlement, cultural and affective ties were not only respected but defined the creation of new towns, such as the immigrant communities which even had German names until the Second World War.

Although a utopian perspective looks beyond the reality it seeks to transform, it should not ignore the contribution of local, incremental initiatives that are no less idealistic in their own way. Camargo's Rural Urbanism presented utopian ideals as imposing as they were illusory, especially those that authoritatively dictated community life. Thus, this idealistic model of colonisation was unrepresentative, inflexible, and not very conducive to local contributions. All in all, regional development was not achieved as planned, and the expensive and cumbersome settlement scheme never worked intended.

Today, there is little trace of the *agrovilas*. As the *agrovilas* disappeared, the few remaining *agrópolis* grew to two to four times their planned population. The one-off *Rurópolis* has 50,000 inhabitants – twice its planned population, while some of the neighbouring *agrovilas* that were implemented have virtually disappeared. The growth of the pre-existing

river towns was thus as spectacular as it was disorderly.

The second National Development Plan launched at the end of 1974 aimed to create agro-mineral and agro-livestock poles – thus vigorously implementing François Perroux’s theory of development poles. The widespread acceptance of Perroux’s theory was due to its underlying idea that economic growth, interregional balance, and the integration of underdeveloped regions could be achieved through a strategy of decentralised development. The Amazonian territory was still seen as a key region to be developed, under a new approach to regional planning and territorial organisation.

5 Concluding remarks

In retrospect, the down-to-earth northern Paraná enterprise benefited from fertile soil, a favourable coffee trade, relevant and improving infrastructure and, finally, strategic regional planning. The northern Paraná scheme involved a process of systematic colonisation and deliberate urbanisation, creating a unique territorial arrangement that formed the basis for steady regional development. Comprehensive planning, appropriate urban infrastructure, an effective transport network, adequate investment, and profitable agricultural choices contributed to the success of the settlement scheme. In northern Paraná the enterprise was characterised as ‘incremental, comprehensive, market-oriented, and long-term’ (Rego, 2017, p. 266).

Conversely, management problems, infrastructural and environmental constraints and some misguided planning decisions undermined the state-led enterprise in the Amazon which was prematurely abandoned. It was an ideal rather than a realistic aspiration. The colonisation plan was rigidly applied, with no room for revision or input from micro-level studies. The lack of input from micro-level studies into macro-level planning and the subsequent lack of review and adjustment also contributed to the failure of the scheme. Contemporary newspaper headlines read: ‘on the roadside, all dreams end’.

The national development pursued by various administrations, both democratic and dictatorial, was translated into progressive urban forms, i.e. rationalist urbanism. The functional city grew out of the modernist struggle to subjugate nature, and the image of progress rarely coincided with habitual urban forms. New towns based on radically innovative models developed in more problematic ways than those based on conventional patterns. As a result, some of the modernist forms were eventually rejected and eliminated, especially those that did not fit in with local habits.

Brazil’s insularity during the military dictatorship and the regime’s patronage of rationalist architecture and urbanism (along with its revolutionary goal) delayed local criticism of modernist production. Contemporary postmodernism, with its ecological concerns, environmental planning, cultural ties and sense of belonging, and celebration of traditional building methods and types would then embody a counter-image of progress.

The Transamazonian new town scheme was not designed *for* the forest environment. The simplified artificiality of the settlement layout and the linearity of the highway contrasted with the aquatic connectivity, dendritic structure of the region and its complex systems of integrated mobility. Moreover, the Transamazonian urban forms disrupted the traditional urban tissue and form. Idealised by a foreigner to the place, these towns ignored the context in which they were planted. Their simple layout is the antithesis of the complex thinking capable of encompassing this ecosystem. In general, those who migrated to the

Amazon went there to replace the forest. The organic, more natural infrastructural design applied to the northern territory of Paraná was transformed into an abstract scheme in the Amazon: an artificial order to reorganise this tangled natural world. It is important to know the various factors that contributed to the failure of Rural Urbanism, but for the purposes of this paper it is more important though to register the lesson of not designing in accordance with the social milieu and the physical environment. The pioneering agricultural frontier, especially in the forest, is a little-known territory, and each new context requires specific formulations. Imported models, imposed with little or no adaptation to local realities, have little chance of success.

All construction has an impact on nature and the ecological footprint. The military regime's plan for national integration and development, based on the old ideology of 'building the country' and transforming the environment, overlooked important cultural, social, and ecological components in favour of a productive apparatus and infrastructure. In fact, the modernity sought through the Transamazonian Highway and its progressive new towns did not bring the expected benefits of modernisation, but rather its negative consequences.

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