

projeto

Existence through Resistance: Offering Amazonian Communities Economic Alternatives to Urban Migration

Estudio
Flume

Brazil's Amazonia is being severely affected by forced migration and deforestation. The lack of opportunities in small communities within the Amazon rainforest plays a key role in the growth of slums in the region's main cities. Simultaneously, urban expansion causes inherent loss of fertile soils increasing rainforest deforestation. This project aims to reverse this situation by proposing to mobilize local groups in order to stimulate entrepreneurship and generate sustainable economic opportunities. The project is located in Mapiá, in the state of Amazonas, where there is already an ongoing collaboration with local people. Moreover, they are interested in further developing a sustainable economy based on certified logging. The proposal takes inspiration from Maya agro-urbanism and the indigenous architecture of the Amazonian Yanomami people. The idea is to integrate the built environment with agricultural fields. Furthermore, it will make use of local construction techniques and materials promoting a sense of identity and ownership while also minimizing environmental impact.

KEYWORDS: Amazonas; healthy soils; social economy.

EXISTÊNCIA NA RESISTÊNCIA: OFERECENDO ÀS COMUNIDADES AMAZÔNICAS ALTERNATIVAS ECONÔMICAS À MIGRAÇÃO URBANA

A região amazônica do Brasil está sendo severamente afetada pela migração forçada e pelo desmatamento. A falta de oportunidade econômica em pequenas comunidades da Floresta Amazônica implica o crescimento das favelas nas capitais da região. Simultaneamente, o crescimento urbano aumenta o desmatamento com a perda inerente de solos férteis. Propomos reverter essa situação com uma proposta que mobiliza grupos locais, tendo como objetivo estimular o empreendedorismo e gerar oportunidades econômicas sustentáveis. O projeto está localizado em Mapiá, no Estado do Amazonas, onde há colaboração contínua com a população local e um interesse mútuo em desenvolver sua economia baseada na extração certificada de madeira. A proposta toma como precedente o agrourbanismo Maia e a arquitetura indígena dos Yanomamis. Esta proposta integra o ambiente construído com as áreas de agricultura e utiliza técnicas e materiais de construção locais promovendo um senso de identidade e pertencimento, minimizando o impacto ambiental.

PALAVRAS-CHAVE: Amazonas; solo saudável; economia social.

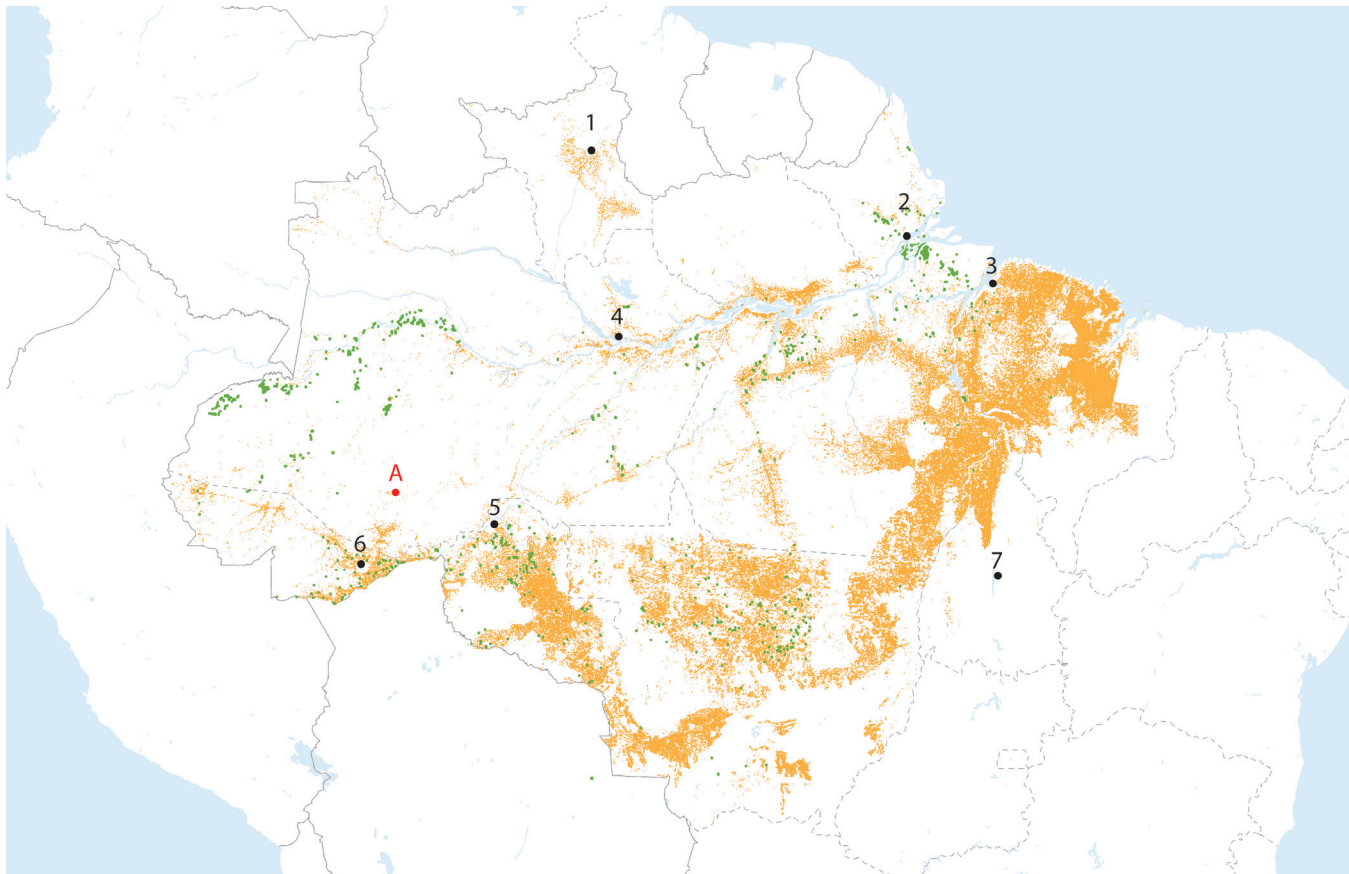
EXISTENCIA EN LA RESISTENCIA: OFRECIENDO A LAS COMUNIDADES AMAZÓNICAS ALTERNATIVAS ECONÓMICAS A LA MIGRACIÓN URBANA.

La región amazónica en Brasil está siendo afectada severamente por la migración forzada y por la deforestación. La falta de oportunidades económicas en pequeñas comunidades de la selva Amazónica juega un papel clave en el crecimiento de favelas en las capitales de la región. Simultáneamente, el crecimiento urbano incrementa la deforestación con la pérdida inherente de suelos fértiles. Nos proponemos revertir esta situación con una propuesta que moviliza grupos locales con el objetivo de estimular el emprendimiento y generar oportunidades económicas sustentables. El proyecto está ubicado en Mapiá, Estado de Amazonas, donde hay una continua colaboración con la gente local y un interés mutuo en desarrollar su economía basada en la extracción sustentable de madera. La propuesta toma como precedente el agro-urbanismo Maya y la arquitectura indígena de los Yanomamis. Esta propuesta integra el ambiente construido con las áreas de agricultura y usa técnicas y materiales de construcción locales promoviendo un sentido de identidad y pertenencia a la vez que minimiza el impacto ambiental.

PALABRAS CLAVES: Amazonas; suelos sanos; socioeconomía.



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PÁGINA ANTERIOR
The project is located in an open field in Mapia (State of Amazonas). The shape of the resulting canopy references) the Yanomami architecture integrating the working unit with a meeting space for the community.

- - Deforestation until 2012 (PRODES)
 - - Community forestal management
 - A - Mapia
- Capital Cities in North Brasil
- 1- Roraima, Boa Vista
 - 2- Amapá, Macapá
 - 3- Pará, Belém
 - 4- Amazonas, Manaus
 - 5- Rondonia, Porto Velho
 - 6- Acre, Rio Branco
 - 7- Tocantins, Palmas



Mapia has a timber extraction based economy that follows the legislation to preserve and conserve the rainforest and its biodiversity.



1. Dust to Dust Competition: Redesigning Urban Life in Healthy Soils

The proposal was developed within the framework of the "Dust to Dust Competition: Redesigning Urban Life in Healthy Soils". The competition was organized as part of the public-facing international and interdisciplinary Arts and Humanities Research Centre funded research network entitled Pre-Columbian Tropical Urban Life (Trulife).

The Dust to Dust competition was a research-led urban design challenge that encourage one to take inspiration from basic principles of urban life practiced by the ancient Maya to inform proposals for sustainable urban futures. The team was selected to participate in an intensive multiple-day workshop with interdisciplinary researchers and the proposal was exhibited at the Sainsbury Centre for Visual Arts in Norwich, UK until February 2019.

2. Proposal

According to the Brazilian Institute of Geography and Statistics's reports (PINTO DE OLIVEIRA; RIBEIRO DE OLIVEIRA, 2011), in the last three decades in Brazil, the internal migration can be characterized as a "concentrated deconcentration," which means that the migrant population that until 1980s was concentrated mainly in Rio de Janeiro and São Paulo is now choosing to settle in smaller urban centres. According to the 2010 demographic census, cities with less than 500,000 inhabitants are the ones that have grown the most in the country. At the same time, it is possible to observe a population loss up to 10,000 people in urban centres. In general, these urban cities have not experienced any economic development and have a very low gross domestic product (GDP) per capita. Although some regions have experienced a popu-

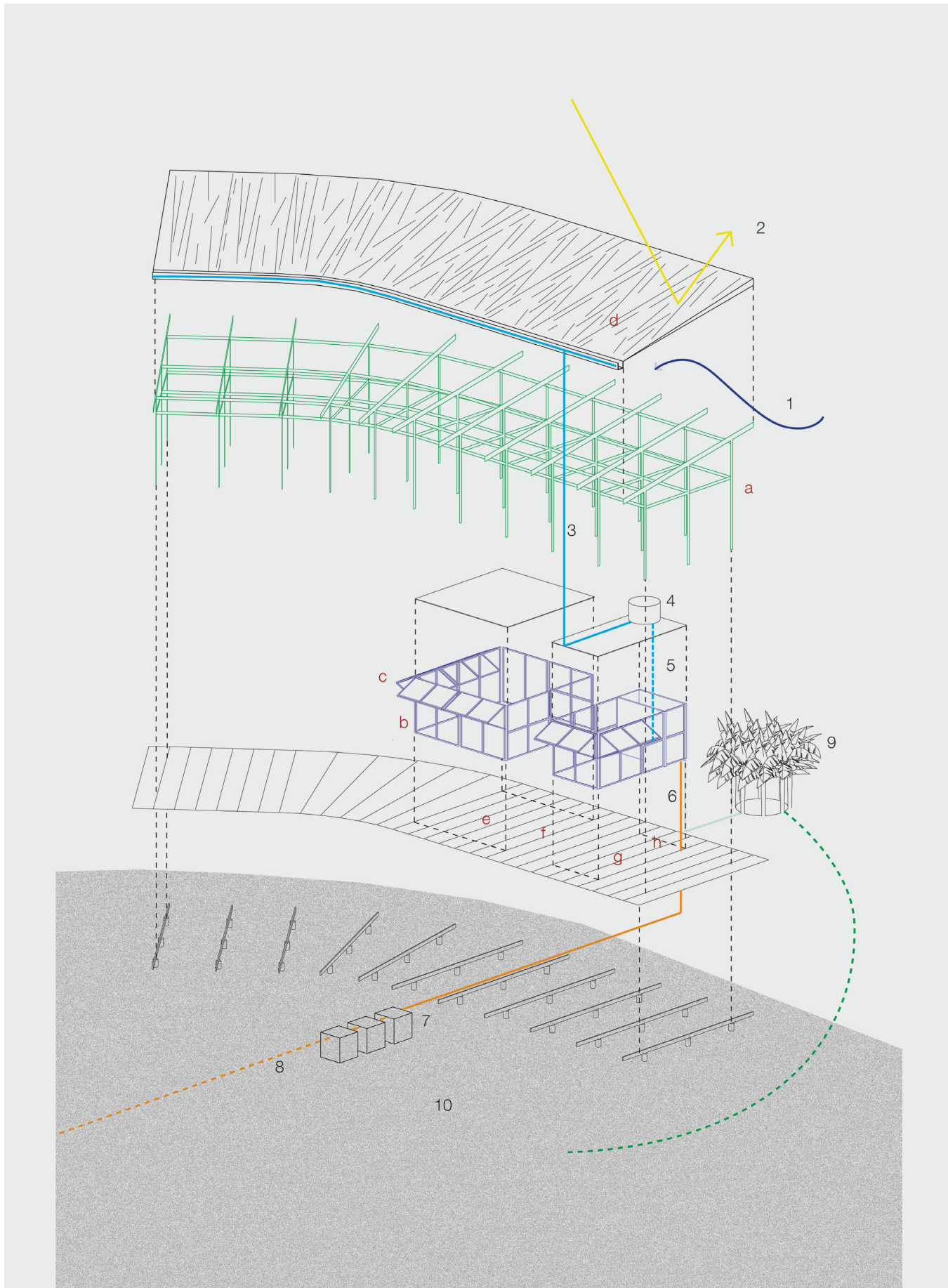
lation increased, it was mainly because these regions are urban conglomerates with an economy based on modern farming, expanded rural areas, and mineral exploitation.

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The project is located in Mapia, in the state of Amazonas, where there is already an ongoing collaboration with the local people who have a mutual interest in further developing their economy. The social economic project is developed through an "incubation process" by the Institute of Solidary Social Economy (ISES), a non-governmental organization (NGO) based in São Paulo. The whole program lasts an average of two years and it is completed once the group becomes economically self-sustainable and there is a clear business structure that guarantees continuity. The methodology to implement the socio-economic project is organized in three stages linked to the activities involved in the incubation process of start-ups. These stages resemble the life cycle of a tree:

- Birth or Pre-incubation: Community assessment, identification of entrepreneurs, and development of a business plan. At this stage investors are invited to support the business strategy;
- Nutrition or Incubation: Existing infrastructures are improved, the group receives training and technical advice, the cooperative management is structured, work team is consolidated, and the market for selling products is accessed;

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Passive thermal comfort strategies
 1 - Cross-ventilation
 2 - Sunlight protection and filtering

Rainwater harvesting
 3 - Collection of rainwater
 4 - Storage, filtration and purification
 5 - Drinkable water

Treatment of foul water
 6 - Collection of foul water
 7 - Biodigesters tanks
 8 - Production of fertilizer

Organic waste
 9 - Banana circle

Permaculture fields
 10 - Fertilizers derived from the treatment of foul water and the banana circle system are used to produce soils for permaculture

Building unit
 a - Timber structure made with FSC wood obtained locally by the community
 b - Timber frames for sliding insect screens made using FSC wood
 c - Openable brise-soleil panels made using local weave techniques and palm tree leaves
 d - Thatched roof build-up

Uses
 e - Workspace
 f - Meeting area
 g - Kitchen and break-out area
 h - Toilet and shower

A: Roof structure.

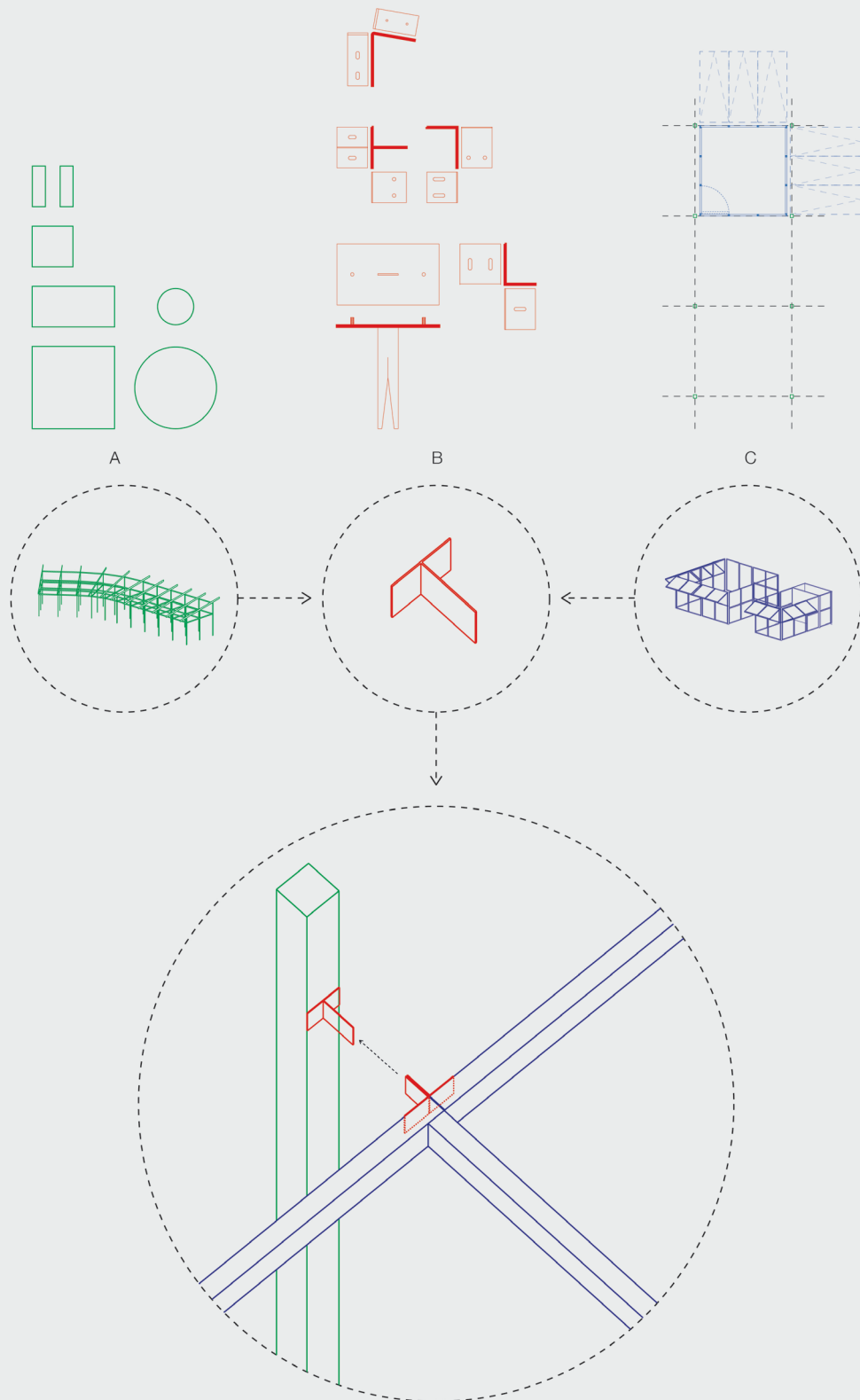
Main canopy structure built with locally sourced timber. The type of timber, the size and shape of the section and the construction techniques vary between communities.

B: Joints.

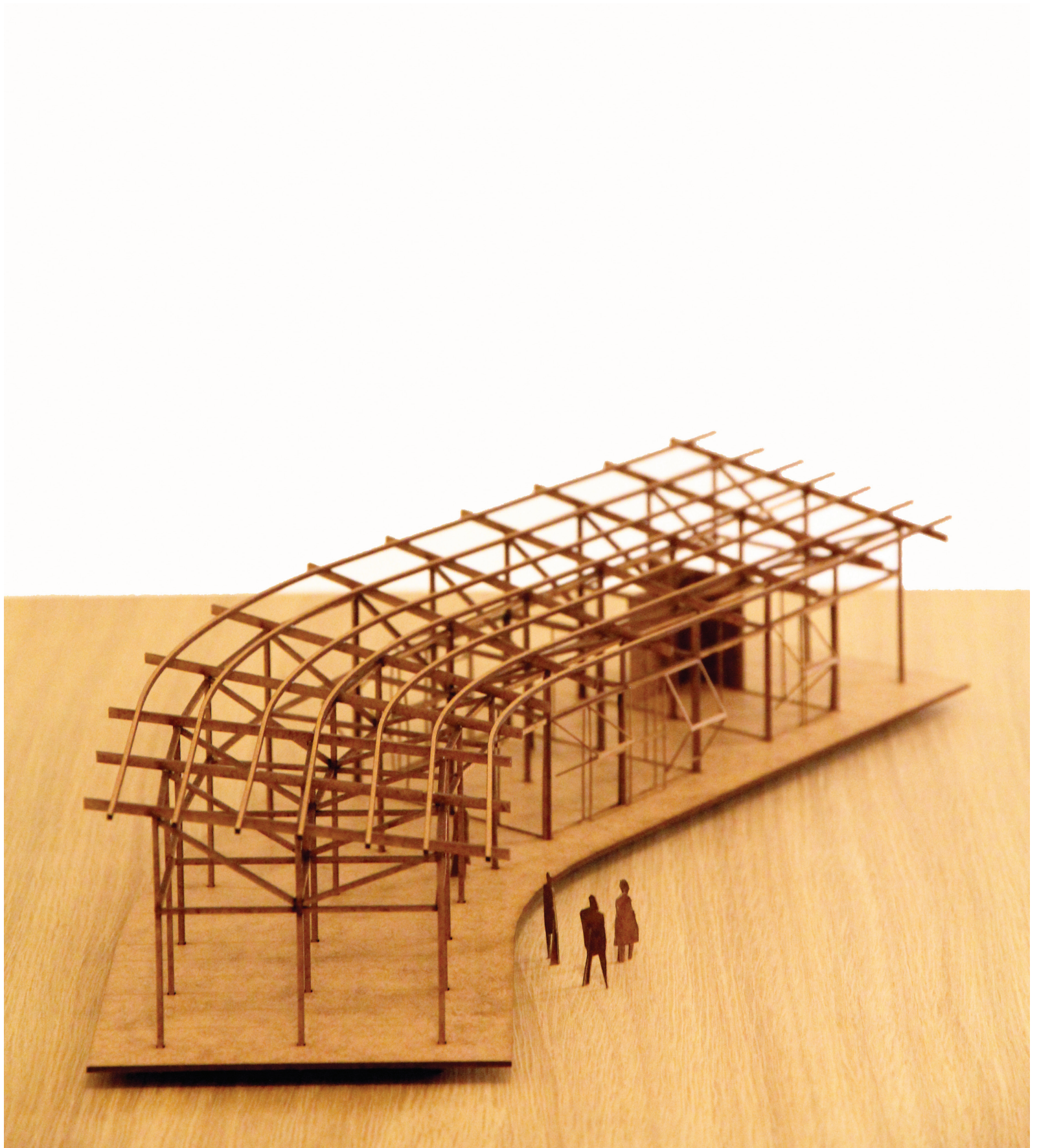
A family of metal joints was developed to interface between the roof structure and the workspace units. They were designed to also speed up the construction time whilst keeping a degree of standardisation.

C: Workspace.

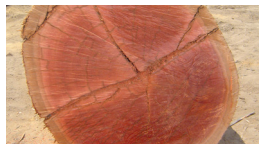
The minimum number of units are installed from the outset (shower and toilet room, kitchen and workshop space) and more modules can be added as required. The size of the units can vary though they follow a module designed to suit most of the uses we anticipate.



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Locally sourced certified timber for canopy structure
The quality of workmanship as well as the timber type, quality, section size and shape vary depending on the community and location, hence it is an unpredictable variable.

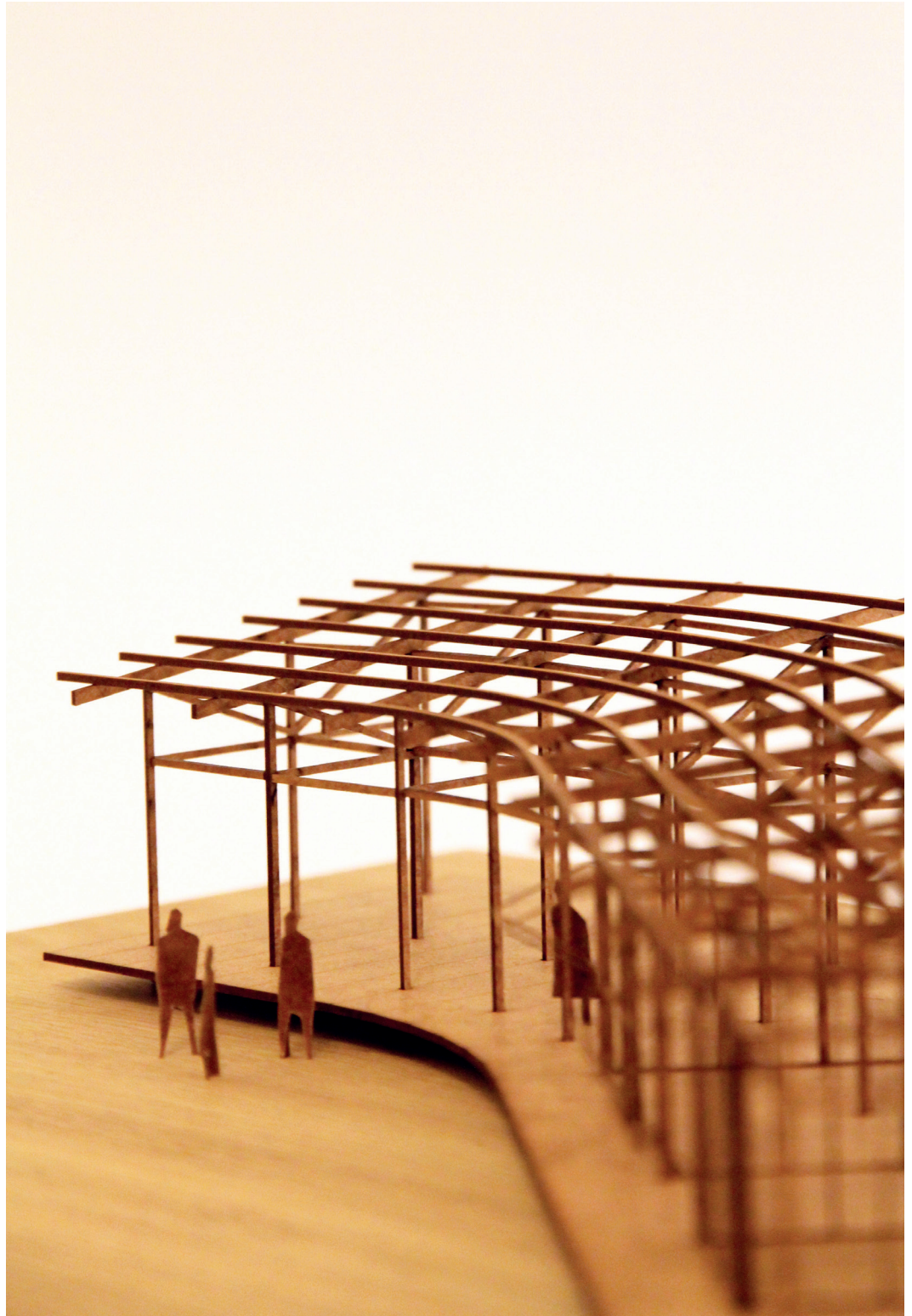


Pau-roxo / Scientific Name: *Peltogyne Paniculata*
Maçaranduba / Scientific Name: *Manilkara Elata*
Cupiúba / Scientific Name: *Glabrous Goupia*
Angelim-pedra / Scientific Name: *Hymenobium Pulcherrimum*
Cedão / Scientific Name: *Cedrelinga Cateniformis*
Tauari-vermelho / Scientific Name: *Cariniana Micrantha*

Timber sections
Locally sourced sawn timber section shapes, dimensions, tolerances and availability vary significantly depending on the location of the communities. Round sections could also be used and would be a preferred option versus sawn timber.



Brise-soleil
The facade consists of openable brise-soleil panels made using local weave techniques and palm tree leaves. The internal lining of the brise-soleil can include a mosquito-mesh panel depending on the final use of the internal space.



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Build a prototype allowed the team to verify the construction assembly methodology and confirm the minimum work force required.



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- Blossom or Graduation: A structured ecosystem is put in place to support the community; other potential clients are engaged and finally the project management is granted autonomy.

The headquarter building will occupy an existing cleared area of the rainforest within the Mapia community next to the navigable Igarape-Mapia river. This waterway is also linked to others small communities where similar sustainable socio-economic projects can be gradually implemented.

The proposal takes inspiration from Maya agro-urbanism and the indigenous architecture of the Amazonian Yanomami people (GASPARINI; MARGOLIES, 2004). The shape of the roof and the open space make a reference to the large circular communal houses of the Yanomami people. Thus, a platform for social activities is created supporting a sustainable lifestyle. Since the Amazonian soil is very thin and poor in nutrients, the central area comprises a combination of gardens and agricultural fields. Careful maintenance generates fertile soil for food production.

In addition to integrate the built environment with agricultural fields, the proposal makes use of local construction techniques and materials in order to promote a sense of identity and ownership. The intention is to minimize the environmental impact by incorporating sustainable technologies. The program integrates traditional methods of thermal control such as natural ventilation and manually shading panels with contemporary sanitary and organic waste bio-digesters, solar panels, and water harvesting methods. Soil for sustainable and self-sufficient agricultural ecosystems, known as permaculture, is then produced. The result is a self-sustainable and environmentally friendly socio-economic workspace unit that generates electricity, drinkable water, and biofertilizers.

Mapia economy revolves around sustainable, low-intensity certified logging, and therefore providing the timber for constructing locally modules causes no environmental impact. From Rio Branco, which is the closest largest city, one must drive five hours to Boca do Acre and from there take a ten-hour boat ride to reach Mapia. Mobilizing construction materials to Mapia is a very expensive and difficult task. Hence, the proposal consists of an implementation rather than a prefabricated unit. It was a strategy to integrate the various levels of workmanship and the unpredictable quality and type of local timber with an internal space designed to meet the minimum requirements of the area and standardized frames. As a result, the design process concentrated on developing a

module that can work with both the structure and sub-structure; and a joint system that acts as an interface between them absorbing the vertical, longitudinal and transversal tolerances.

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Mapia — Amazonas, Brasil, 2018-19.

