The opportunity to build a new factory for the Iratapuru River community is the result of a beautiful collective effort over many years. Brazil nut collection, processing and exchange have contributed significantly to the region's economy, but the community was forced to displace and relocate due to the construction of a dam and a large reservoir. This led to the development of a new urban fabric along the river. This spatial configuration provided a new type of social interaction, with many challenges for a rural community, but also the possibility to build a processing industry to improve the harvesters' income. The community considered it necessary and feasible to envisage a future through the expansion of output by the collectors and their access to a share in the profits of the Natura company, which began to use the nut oil in cosmetic products. For this project, the community decided to invest its share in the design and construction of a new factory that would permit the production of more oil and new nut derivative products.

Both the management of the Iratapuru Fund and the Brazil Nut Cooperative is done by the community in a democratic system. Both have independent presidents elected for a 4 years tenure. Each institution has a different role but collaborate with each other with the goal to improve the local wellbeing. With such a strong organization for the project, the community has the ability to establish a good dialogue with local politicians and be an active voice against the Amazon Rainforest deforestation as they need a healthy forest to survive.

Site diagram

Aerial photography of the Iratapuru River Community

Brazil State of Amapá

Rio de Janeiro

São Paulo

Brasília

Pictures of pre-existence - Iratapuru River Community - September 2018 and June 2019
In this context, discussions with the community led us to propose a scheme that included several phases and stages. Methologies and construction techniques were proposed in order to facilitate the acceptance of the project by the community. We aimed to properly relate the inversion of values with the local reality. With the implementation of the new factory, it is imagined to receive a larger quantity of nuts from producers that are not currently part of the cooperative today. The expansion of collaborators will increase the final production volume to be sold and will bring financial security to an even larger population. Producers that are not part of the cooperative today face difficulties as they need to sell their production to intermediaries.
Progress
The proposal reflected the desire to expand the benefits from the new factory, going beyond a simple increase in production to achieve deeper social change through the dissemination of knowledge related to construction.

The project's implementation strategy is divided into two fronts that take into account the community's difficult access, only possible by boat. The first front is the wooden structure. For its execution, a set of high density wood species will be used, all from sustainable and certified producers near to the community. Conceptually, the structure is idealized as a set of interlocking frames of different heights which gently rests in the exposed concrete foundations. The different heights of the structure accommodate not only the program and reduce the unnecessary consumption of material but also generate spatial variations as well. Facing the community, a lower structure establishes a dialogue with the existing houses, and to the existing industry side a higher ceiling accommodates the machinery. For the execution of this structure, a small carpentry shop will be set up on the site, with the aim to develop local knowledge. After the execution of the structure, a metallic cover will be installed, providing a large shadow to the construction site, protecting the collaborators from the strong tropical sun and the heavy Amazon rains.

The second stage is the masonry. The bricks will be composed of local soil, sand from the river and a small part of cement, just the right amount to stabilize the mixture. The compound will be pressed by small hydraulic machines on site then dried in the sun for 7 days. The walls are assembled in different ways, each one establishing a dialogue with the height of the volume in which it is inserted. The volumes under the cover have different geometries that correspond not only to the internal function of the industry, but they are also the possibility to test different constructive situations. Each situation has a different assembly, each assembly enables a new technique to be learned.

In a regular year the extractivists spend 4 months in the forest - harvesting the nuts - and 4/5 months working in the industry - producing oil and biscuits from the nuts - and the rest of the year they usually are unemployed. Understanding this time framing was a key aspect for the project, in which an intermittent and flexible factory could be built.

Therefore, enabling a protected field and independent objects in it, through clear and replicable techniques is, in addition to a factory design, an attempt to provide a set of favorable circumstances. With it we aim to increase productive, cultural relations and wellbeing.
Seção Construtiva

01 - Telha metálica em aço de 0,85mm tipo "sanduíche" com miolo em lã de rocha de densidade 0,48 kg/m³ e espessura de 50mm. Acabamento zincado natural;

02 - Contraventamento longitudinal em madeira de manejo sustentável afixada conforme projeto estrutural. Acabamento em três demãos de verniz incolor;

03 - Pilar em seção composta em madeira de manejo sustentável. Acabamento em três demãos de verniz incolor;

04 - Pilar em concreto moldado in loco. Para forma reaproveitar as sobras de madeira previamente cortadas conforme projeto estrutural. Acabamento em verniz hidrofugante incolor e fosco.

05 - Piso em concreto moldado in loco. Acabamento em verniz hidrofugante incolor e fosco.

06 - Tirantes metálicos em barra roscada. Ver projeto estrutural.

07 - Alvenaria em solo cimento. Confeccionar os tijolos in loco. Após secagem ao sol misturar lotes para homogeneização das cores. Ver prancha específica para montagem das empenas;

08 - Sapata Corrida em concreto moldado in loco aflorada 10cm do piso acabado;

09 - Lastro em bica corrida retirada de rio local;

10 - Calha em chapa metálica dobrada. Acabamento zincado a fogo;

11 - Paredes de tijolos verde em cimento.

12 - Paredes de tijolos vermelhos em cimento.

13 - Telhas de cimento.

14 - Telhas de concreto.

15 - Telhas de cerâmica.

Place

The building establishes a dialogue with the site not only for its constructive characteristics but also for its environmental performance. The project takes into account the existing contradiction, where families were relocated to create a hydroelectric plant and live without energy. Therefore, all ventilation in the building to these naturally openings are allocated to achieve optimum luminous performance in internal functions and are glazed with glass all the heavy materials that will produce thermal isolation will be disposed in the construction site and everything will be produced and manufactured in situ. The deactivation of the existing factory and small buildings around it, considering that these functions will be performed in the new factory, we plan to transform these buildings into cultural venues as cinema and an exhibition space.

Planet

In general, the project not only uses local materials and labor, but also amplifies the voice of a community that for its livelihoods depends on an active and healthy forest. The project also transforms a obsolete industrial site into a library of healthy forms that relates to a timeless value of security and reaches the preservation of one of the greatest world heritage sites, the dam of Parque Marajó.
<table>
<thead>
<tr>
<th>Building component</th>
<th>Materials</th>
<th>Quantity</th>
<th>Recovered material</th>
<th>Transport</th>
<th>Transport medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundations</td>
<td>Concrete</td>
<td>72 m³</td>
<td>0%</td>
<td>45 km</td>
<td>Sand/gravel</td>
</tr>
<tr>
<td></td>
<td>Steel bars</td>
<td>18 tonne</td>
<td>0%</td>
<td>717 km</td>
<td>Steel bars/cement</td>
</tr>
<tr>
<td>Structure</td>
<td>Sun-dried clay bricks</td>
<td>934 m³</td>
<td>100%</td>
<td>0 km</td>
<td>Human labour</td>
</tr>
<tr>
<td>Building envelope</td>
<td>Concrete</td>
<td>234 m³</td>
<td>0%</td>
<td>45 km</td>
<td>Sand/gravel</td>
</tr>
<tr>
<td></td>
<td>Steel bars</td>
<td>18 tonne</td>
<td>0%</td>
<td>717 km</td>
<td>Steel bars/cement</td>
</tr>
<tr>
<td>Internal walls</td>
<td>Sun-dried clay bricks</td>
<td>89 m³</td>
<td>100%</td>
<td>0 km</td>
<td>Human labour</td>
</tr>
<tr>
<td>Floor</td>
<td>Concrete</td>
<td>150 m³</td>
<td>0%</td>
<td>67 km</td>
<td>Barge, Truck, Pontoon</td>
</tr>
<tr>
<td>Roof</td>
<td>Translucent plastic</td>
<td>16 tonne</td>
<td>0%</td>
<td>2000 km</td>
<td>Translucent plastic</td>
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<tr>
<td></td>
<td>Metal sheets</td>
<td>2930 km</td>
<td>0%</td>
<td>2930 km</td>
<td>Metal sheets</td>
</tr>
<tr>
<td>Total building area</td>
<td></td>
<td>3810 m²</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Foundations are made of precast concrete and reinforced with steel bars.*

*The structural system is composed of a grid of steel bars, held in place by concrete.*

*Internal walls are made of sun-dried clay bricks, sourced locally.*

*Flooring is made of concrete with embedded wood elements.*

*Roofing elements are made of translucent plastic sheets and metal sheets.*