

This is an essay about the situation of amazonian Brazilian indigenous groups and their relations / potential with current technological possibilities.

In September 2018 I had the pleasure of living for a month among an indigenous group of Huni Kuins (also known as “Kashinawa”), based in the upper part of the Envira River in the state of Acre, northern Brazil, western Amazon. I was invited by the Huni Kuin named Same Putumi, a healer and religious woman leader, who often goes to São Paulo to perform in cultural events and recently founded an institute called Nhandepa. The guiding vision of such institute can be summed up in the idea that strengthening indigenous cultures would be essential to preserve and understand (scientific sense included) forests. Huni Kuins and Guaranis (one of the largest Brazilian indigenous groups, located in the southeast) created the institute, a registered NGO, relying on a network of cultural producers, lawyers, architects, artists, musicians and researchers as collaborators. Although the Nhandepa Institute was formally founded only by the end of 2018 (the institutional site is still in production), the group of Huni Kuins, Guaranis and part of the collaborating network have started working together in 2014, producing exhibitions, documentaries, lectures and cultural festivals. The purpose of my trip was to better understand Same’s region and then elaborate projects for the institute. I spent a month living with Same and 20 other people from her village and together we went to other villages along the river. In addition, I had the opportunity to visit institutional spaces of other indigenous focused organizations in Rio Branco, Acre state’s capital.

To give a brief contextual summary, it is important to remark that the history of Acre stands out in the Brazilian Amazon for its indigenous rights achievements. Since the 1970s, indigenous leaders and rubber tappers came together, becoming known as 'forest peoples', seeking to claim rights over natural resources and territories. Acre was also the first Brazilian state to develop a public differential education program, which has pedagogical programs designed for each ethnic group, seeking to preserve their language and traditional practices. Currently 45.81% of Acre are protected forest areas and 15% are Indigenous Territories, home to around 18,000 indigenous from the Pano, Aruak and Arawá language families. Each language family has several ethnicities, the Huni Kuin belong to the Pano family and are the most populous group in the state, with about 8,000 individuals. The indigenous lands are considerably difficult to access, being in many cases seven days away (by boat) from the nearest municipality.

The Envira River is located between Peru and Brazil and is remarkable for the great ethnic diversity of its indigenous inhabitants. There are at least 7 ethnicities living along the river, divided between dozens of villages of 20 to 600 people, in different degrees of contact with non-indigenous society. There are only two medium-sized municipalities around Envira, Feijó (state of Acre, 40,000 inhabitants) and the city of Envira (state of Amazonas, 20,000 inhabitants). While villages close to the city are fairly integrated and economically dependent on non-indigenous society, the closer to the source the more self-sufficient are the communities. Near the source of the river, live the groups of isolated indigenous still existing in Acre, groups with no contact with the rest of society, not even with other indigenous. However, most of the population of the Envira River currently speaks Portuguese, is organized through legal associations and many are Christianized. It is frequent to find a strong syncretism between the native symbolic system and Christian society, thereby Christian conceptions are understood as capable of valuing traditional practices but are not connected to an outsider religious institution. However, there is a more recent movement of evangelization, being visible with the opening of churches. According to the reports of the

indigenous leaderships I had contact with, such evangelization is directly connected to the increase in political persecution of those who work for the preservation and diffusion of native practices.

Regarding the ideas presented by MIT Media Lab's Space Enabled group, about the democratization of space technology and its utilities for social justice, I see a series of possible applications for the communities I had direct contact with and for other indigenous organizations. There are several relevant topics, such as improving communications systems, improving local biodiversity research in partnership with communities, or developing self-sustainable housing structures in areas of difficult access. Techniques for water purification, for example, are essential for the survival of communities vulnerable to numerous adversities, including the contamination of rivers and watercourses by the mercury used by illegal miners.

It is visible among Indigenous leaderships an awareness of the relevance of having access and some control over the technological advances experienced by global society. This conception is strong specially among the Huni Kuins, who catch the eye as a curious indigenous group, open to foreign technologies¹. In recent years, partnerships between indigenous groups and visual artists have also multiplied, being worth to highlight the work of Ernesto Neto with the Huni Kuins of the Jordan River presented at the 2017 Venice Biennale and Lynette Wallworth's film with the Yawanawas, a project that combined virtual reality and stories about ayuasca. As an artist myself, I am mainly interested in the symbolic aspects of technological exchange. I believe it is essential that such a change take place respecting the community's cultural specificities, with the protagonist role of local leaders. Art can be essential for symbolic intermediation, for the integration of practices and concepts into a certain value system. Otherwise, technological transfer can easily become a new version of cultural colonialism. To avoid such a process, one of my theoretical references is the ethnocomputing research field.

¹ The Huni Kuins were one of the first in the Amazon region to master writing and the only Brazilian indigenous group to have a representative who entered the academic world and published a grammar of their own language

Ethnocomputing is the study of the interactions between computation and culture. It is carried out through theoretical analysis, empirical research and design implementation. It includes research on the impact of computing on society, as well as on the contrary: how cultural, historical, personal, and social origins and environments cause and affect innovation, development, diffusion, maintenance, and appropriation of computational artifacts or ideas. Its application has been interesting mainly from the educational point of view, especially in the work of Ron Eglash and Nettrice Gaskins. The pedagogical strategy of ethnocomputing elaborated by Eglash's group is largely based on the study of different cultures abstract patterns' algorithmic properties, therefore it has great potential among groups such as the Huni Kuins, for who the constant practice of abstract drawings is an essential cultural activity. The usage of a pedagogy based on designing patterns may be essential to engage young Huni Kuins in learning programming principles. Furthermore, the programmable patterns can easily be connected to other tools, such as a laser cutter, and add different possibilities to the existing arts and crafts.

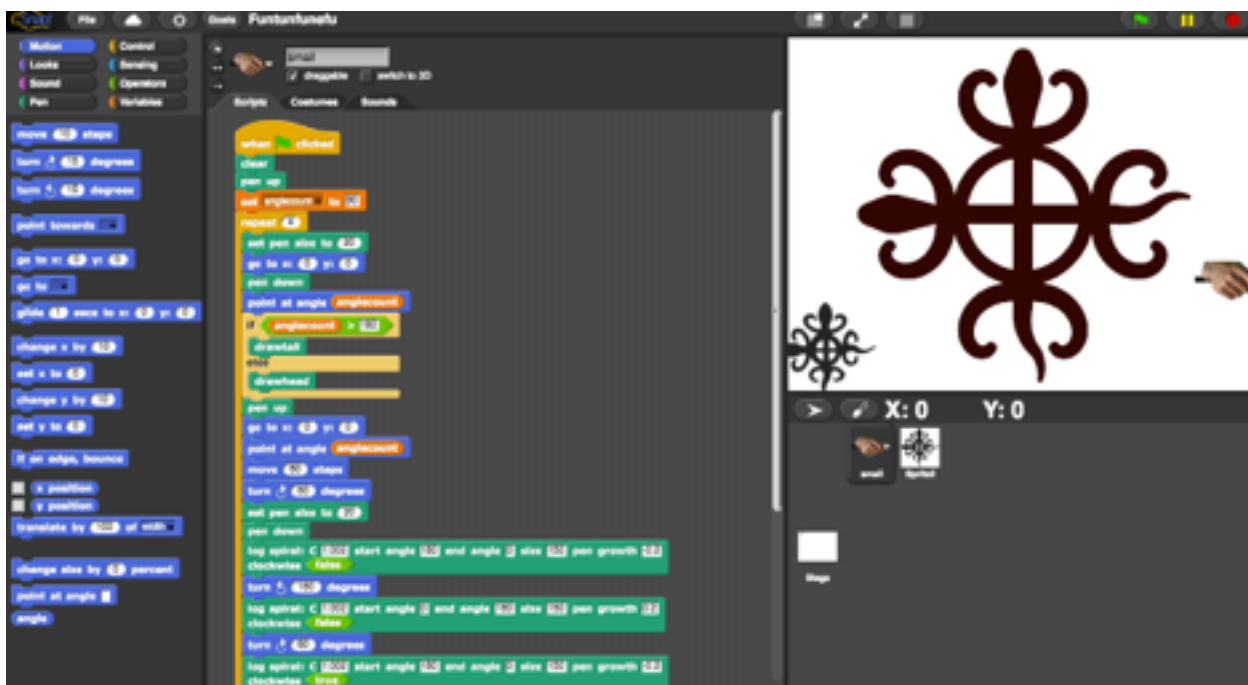


Fig 3. C-Snap : a culturally situated design tool elaborated by Ron Eglash's RPI research group. In the image the code describes a west african symbol, the Adinkra pictogram named Funtunfunefu Denkyemfunefu.

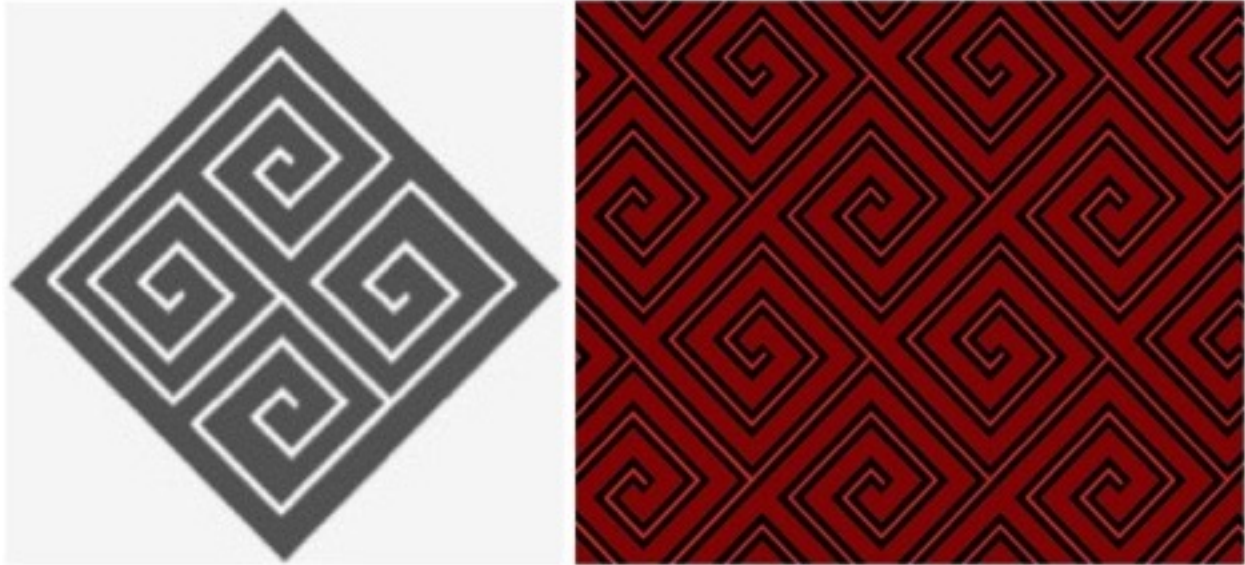


Fig 4. Traditional Huni Kuin pattern

Same Putumi asked my help to develop a project that would implement a multimedia laboratory in her village, something that could be implemented in other communities later. Her greatest interest is to better understand the tools and concepts of international medicine, chemistry and biology, for having more access to such information should improve her own research on indigenous knowledge over medicinal plants. Being able to have a compact laboratory in her village, with instruments that can assist in field research (like Andrew Quitmeyer's Digital Naturalism²), as well as being able to collaborate with invited researchers, would be essential to legitimize the traditional Huni Kuin knowledge as relevant to the general scientific community. Strange as it may be, there is as yet little scientific research on biology and medicine performed by Brazilian indigenous groups. The situation is even worse in terms of the patent ownership on products resulting from native knowledge -

² Digital Naturalism investigates the role that Digital Media can play for Biological Field Work. It looks to uphold the naturalistic values of wilderness exploration while investigating the new abilities offered by digital technology. Digital Naturalism unites biologists, designers, engineers, and artists to build and analyze new devices. It focuses on crafting DIY technology and interacting with animals and plants in new ways. In particular, Digital Naturalism looks at how digital media can be used to explore animal behaviors situated in their natural context. Most recently, this research has been carried out directly in the field in the form of Hiking Hackathons and a two month long conference.

one should remember that it was an American woman who first got a patent over the Ayuasca composition back in 1981, something that was contested by indigenous organizations when they discovered years later.

However, in the Huni Kuin knowledge system, the study of medicinal plants should not be an activity separated from the art of abstract drawing or other rituals. The integration between knowledge fields is essential for them, so a laboratory would also be a space for artistic experimentation and spiritual practices. In my experience with Same's group, I took laser-cut stencils made with the patterns Same had asked for, an airbrush machine to paint with stencils, a computer, a small projector, cameras, and a portable battery that allowed me to perform projection mapping experiments in the middle of the forest. The reaction to the projection mapping and the stencils was extremely positive, as it was consistent with their desire to fill every possible surface with abstract designs. They requested me to bring more equipment to the village and teach them how to use it.

In terms of broader forest protection projects, one of the best strategies would be to work in collaboration with the Pro Indigenous Commission of Acre³ (CPI as abbreviated in Portuguese) and the Indigenous Agroforestry Agents (AAFI). There are almost 200 AAFI, of 14 ethnic groups, in 30 Indigenous Territories, belonging to two linguistic families: Pano and Aruak. These are indigenous people who have undergone training courses organized by CPI Acre, after which they receive a monthly income, lower than the national minimum wage, and continue to have access to more educational programs. The training program began in 1996 and presents a pedagogical and socio-environmental philosophy with an intercultural basis. It combines management, conservation of the environment and systematization of native knowledge. The trained AAFIs work with their territory ethnomapping, plantations management dedicated to their communities subsistence, indigenous population awareness

³ The CPI Acre is a non-profit organization that took shape during the 1970s and was an essential part of the 'Peoples of the Forest' rights movement. The CPI is made up of a diversity of professionals, including geographers, engineers, anthropologists and historians. Another institution with a similar performance in Acre, Instituto Socio Ambiental (ISA) has a similar constitution.

of sustainability practices, plus they contribute to the ecosystem diversity through a calculated way of spreading seeds. Each AAFI maintains a work diary, in which they document not only technical information, but also talk about the village's daily life, for the subjective understanding about their work is recognized as having the same relevance as the technical. They also have direct contact with loggers, gold miners and others who invade indigenous lands and promote deforestation or pollution. Therefore, it is a very delicate work.

In order to understand the strategies of environmental and cultural management in indigenous lands, I spoke with two officials of FUNAI (National Indian Foundation, most important organization of the Brazilian government for the sector), two representatives of CPI Acre, AAFIs, two anthropologists, indigenous teachers and people from Acre's indigenous education secretariat. I have also based myself on the bibliography indicated at the end of this text. Something that caught my attention is the considerable technological isolation of AAFIs, which are not articulated with the Amazonian space monitoring programs. Brazil has an advanced level of space technology and efficient programs for monitoring the Amazonian deforestation, such as the DETER system (Deforestation Detection in real time), however they could be better integrated into the work of those who seek to preserve the forests while living in them.

An interesting potential to be explored in the fight against deforestation is the recent popularization of cellphones in indigenous villages, including those that do not have any telecommunications signal and do not even have public telephones. The smartphones are often used as cameras and music players, but people need to map the areas with signal to be able to use 3G or 4G. The internet has become an essential work tool, for indigenous leaderships nowadays often have contacts in the great Brazilian cities as well as international ones. Such connectivity has greatly facilitated the organization of cultural activities of several ethnic groups inside and outside their territory, allowing many leaders to seek economic alternatives for their villages, which is essential considering the vulnerability of these groups in relation to the maintenance of their rights over their territories. Even if there is no internet

signal, it is possible to devise strategies to improve the indigenous communication network using technologies such as mesh networking. However, digital technologies potential between AAFIs and other indigenous people goes beyond the possibilities of communication networks. Nowadays many smartphones apps can assist the documentation and research of plants, birds and other natural elements, therefore, we could greatly improve the gathering of high quality data on forest ecosystem. The implementation of small multimedia labs has enormous potential. The indigenous people are the ones who best know the forest and who go deeper inside of it.

I plan to continue my work with the Nhandepa Institute by writing projects, seeking outside support and creating artworks in partnership with Same. I believe that art plays an essential role in helping to change the understanding of Brazilian and international society about who indigenous peoples are and how their knowledge can be compatible with the global techno-scientific progress. Well-designed strategies that combine income generation projects, infrastructure improvements, education and visibility through diverse cultural projects will be essential for the future of Indigenous Lands and the Amazonian forest in Brazil. Considering the current Brazilian political context, in which our probable future president is openly against indigenous rights, is supported by evangelical extremist groups and believes that forest preservation is not a priority, we urgently need to expand our network of allies and our strategies to promote social justice.

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Some Images of Vanessa Rosa's work done in the Envira River villages

Techniques: Laser Cut stencils shadows. Non edited photos







Images from body painting experiments using laser cut stencils, jenipapo pigment (traditional fruit based color) and airbrush. Vanessa Rosa and Same Putumi

