

Immersive learning experiences. The case of Bamboo Think Tank in rural Colombia

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ABSTRACT

Using the workshop “Bamboo Think Tank; from Territory to Detail” as a tool, this paper examines the pedagogical value of immersive Live Projects in design education. The distinctive innovative characteristics of this workshop are the varied group of students working together coming from different international backgrounds with different levels of skills and resources; the organisers being a platform formed by professionals, academics and local community members with an interest in bamboo; and the focus on bamboo considered not just as a material but as a tool to empower all participants involved.

KEYWORDS Live Projects, community, social innovation, pedagogy, bamboo

Introduction:

“A key issue that should be addressed is the acute shortage of well trained, experienced professionals capable of formulating and implementing effective strategies in a variety of locations and situations, to work with the poor communities towards development of inclusive and sustainable cities in the South”¹ Joan Macdonald

Estudio SPN² is a research-led practice founded by Juana Canet, Ruth Cuenca and Elena Gómez. We work between practice and academia and between North and South. Our focus is on the fields of architecture, development, urbanism, participatory design and research with a special interest in projects of community support through the design of productive cycles and strategies. We believe that architects can have a positive impact in the “social production of the habitat”³ understood as the capacity of the

popular sectors of self-production of dwellings, new neighbourhoods and, in general, the territories they inhabit.

However, we find that architecture has lost the connection with people and places that could really benefit from it; there is a gap that architectural education seems unable to fill. Typically, architectural education is structured through a series of rituals, based in the studio and following the command of the tutor. The value is in creativity defined as architectural design and the outputs are drawings and models. Professional bodies decide the content of the curriculum with values that lean towards professional efficacy. We believe that for architectural education to be relevant to the challenging needs of society it has to address socio-political issues related to design and equip students with skills to respond to the contemporary complexities of each context.

Dean⁴ already suggested in her reflections about the work of Rural Studio that a fundamental change in architectural schools is needed. She argued that academics need to remind students of the profession's responsibilities if architecture is going to inspire a community or challenge the status quo into making responsible environmental and social structural changes.

The workshop aimed to close that identified gap in a specific context. Additionally, there is a larger educational strategy behind this workshop which involves the transfer of skills and knowledge to the local community to achieve a larger impact. As Max-Neef⁵ suggested, there is an opportunity in turning people's needs into potentials as they can motivate, engage and mobilise people and furthermore they can become resources. Some of the needs the community we worked with had, such as employment, education, appropriate housing etc. can be improved using the full cycle of bamboo with the right skills, techniques and products.

Why bamboo?

Since 2011, Estudio SPN has been researching bamboo-guadua (guadua is the Colombian variety) as an engine for human development, studying solutions of habitability and urban regeneration in disadvantaged areas through the design of socio-productive cycles. We work holistically incorporating the social, cultural, economic and environmental aspects of the context of each project operating from the territorial scale to the domestic scale. Leff⁶ (1986) argued that the environmental potential of a region is determined not only by its ecosystem structure, but also by the productive processes that different socio-economic formations develop in the region. The use of resources depends on the value system of communities, on the cultural significance of their resources, on the social and ecological logic of their productive practices; also on their capacity to assimilate modern scientific and technical knowledge to their values. This approach supports our idea of the socio-productive cycles putting an emphasis on the social and cultural processes in a region. These cycles incorporate bamboo in all stages from planting, harvesting and treatment, designing of crafts and furniture and finally housing construction.



Figure 1. Diagram of the sustainable productive cycle of bamboo. (Estudio SPN)

Bamboo is local to the coffee region in Colombia where the workshop took place and it is part of the vernacular architecture of the area. However bamboo has a reputation of being the 'material of the poor' which stigmatises it between the people that could benefit the most from it. This was one of the challenges that the workshop aimed to address.

Bamboo-guadua has excellent environmental properties as it is fast growing, earthquake resistant, absorbs CO₂ and avoids erosion. It has good mechanical properties when used as construction material; it is known as the vegetal steel, and the Colombian Building Code allows two-storey building construction with it. Bamboo has been used in vernacular architecture in the tropical regions as it is readily available, easy to use and affordable. Tools required to work with bamboo are basic and accessible to all and it can be easily combined with other materials such as timber. These characteristics make bamboo an appropriate material with an 'appropriate technology'. This concept was defined by Schumacher⁷ as an approach to community development consisting of a body of knowledge and techniques which follow a self-adaptive and dynamic system. These ideas underpin our productive-cycle strategies.

Background

Estudio SPN's research ideas were formulated in a project that was awarded 1st Prize in the International Competition of the Observatorio Panamericano del Paisaje, Territorio y Arquitectura (OPPTA) in 2012 for our response to 'Emergency Interventions: how to manage the integral development of habitability in a territory affected by floods linked to climate

change in San Cristóbal, Colombia'.⁸ The trip to Colombia to present the project allowed us to meet Carlos Hernandez, director of the PEI⁹ programme (International Studies Programme) of the School of Architecture and Design of the Pontificia Universidad Javeriana of Bogota, and was the start of an international collaboration between a research-led practice and a University.

The PEI programme started in 1996 aiming to connect international and interdisciplinary efforts in the generation of new knowledge and solutions to the many social, political, economic and environmental problems Colombia was faced with. PEI's methodology is based on workshops taking students outside university, focusing on specific solutions responding to the local issues with the idea that small scale interventions can generate great impact. The workshops apply the idea of 'collective intelligence'¹⁰ assuming that each part of the world possesses valuable knowledge, popular and generational wisdom, about their own environment, materials and construction systems which together with current design ideas and technology can produce innovative solutions.

Since 2013, Estudio SPN and PEI collaborated in various projects in Palomino, a small rural village in the Caribbean coast where PEI had been working for several years, a masterplan; a proposal for a vocational school which was awarded 2nd prize in the Latin American Development Bank competition and a participatory workshop working with the local community.

Following these collaborations, they co-founded Bamboo Think Tank (BTT); an international knowledge platform formed by practitioners and academics from Spain and Colombia to promote the use of bamboo in the social, economic and environmental development of vulnerable communities.

In 2014, BTT organised this international workshop open to architecture students and graduates with an interest in the material and in working with communities. The location was the village of Caimalito, an informal rural settlement that started in the 1970s along the disused rail tracks near Pereira. Caimalito is located in the coffee region by the Cauca River, more than 300km away from Bogotá. The region suffered a big economic downturn in the 1990s with the coffee crisis when Caimalito received new

inhabitants. Nowadays it has high levels of poverty and unemployment, bad transport links and limited access to essential services. The area has electricity and fresh (non-potable) water and only some dwellings have sanitation.

BTT was also connected to Fundación Escuela Taller de Bogotá¹¹ (FETB) where the workshop developed during the first week. This is a Vocational Training School providing skills in traditional trades such as carpentry, construction, instrument making and cooking through methodologies of learning by doing, typically through the refurbishment of heritage buildings. Students come from disadvantaged backgrounds in areas of Colombia affected by the armed conflict.



Figure 2. International, PEI and FETB students working with bamboo in the FETB's construction workshop. (Estudio SPN)

The process

The approach and pedagogical intent of the workshop was to learn about bamboo as a material and about participatory design techniques working with the community, to produce an outcome that will improve some aspects of the habitat for the local people and recover the disused Caimalito train shed for community use.

The participants:

- International students from Spain, Italy, Macao and Venezuela, typically young graduates.
- Colombian carpentry students from FETB, coming from disadvantaged backgrounds.
- Colombian students from PEI programme; typically coming from middle class or privileged families and for whom this workshop was the first project of

their term.

- Caimalito community; a group of young children, a group of teenagers, a group of mothers from the local school and a group unemployed men and some senior citizens.

There were significant differences between participants in terms of personal background, knowledge and resources which was a challenge as well as an opportunity. If we understand 'community' in the wider sense as 'sharing or having certain attitudes and interests in common', we can also consider each group as a small community. The premise was that all communities were equal, working together towards the same goals. The international and PEI students started working together with the FETB students in their facilities and then they moved to Caimalito where they worked with the local community.

The workshop structure facilitated social innovation, understood as 'the new social practices created from collective, intentional, and goal-oriented actions aimed at prompting social change through the reconfiguration of how social goals are accomplished'.¹²

The workshop used a combination of theoretical and practical activities. Students started by exploring the potential of the material and making prototypes in the FETB's workshop. There was a clear exchange of knowledge between the FETB students who were more skilled with the tools and the rest of the students who were stronger conceptually. Bamboo masters such as Simon Velez and Germán Rubio gave lectures and guided visits to students. German Rubio oversaw the students through the entire process. Simon Velez visited FETB and Caimalito to see the progress and took students to visit the Colombian pavilion for the Hannover Biennale he designed in 2000. Students also visited bamboo plantations, treatment plants and other bamboo constructions to understand the full cycle and potential of this material.

On arrival to Caimalito, students analysed the area and engaged with the people. They organised participatory design workshops with the local community to explore issues and potentials of the place. Students decided to focus the work on the recovery and revitalisation of the disused train station building and surrounding area for cultural activities as this would benefit the entire community. There was a long term ambition which was to turn this

disused building into a Vocational School similar to FETB which will benefit the local youth; however this goal encountered political problems with the local government.

Students were organised in groups and distributed tasks on a daily basis. The members of the local community joined the work in the groups when they had available time. A group worked with the local children regenerating the garden adjacent to the old station; others designed and made furniture with bamboo such as a working table and benches collaborating with the local teenagers; and others designed a small artefact to be used as a play area or a stand to watch films projected on the station walls as an improvised cinema. One member of the team was a Colombian film maker who was in charge of filming the workshop. He also organised screenings for the kids in the evenings to activate the place.





Figure 3. Students visiting a bamboo plantation (top); participatory design workshop with the group of children (middle); local kids helping to build a bamboo playful surface for their playground (bottom). (Estudio SPN)

Pedagogical review of participatory learning

The workshop can be framed within the Live Project education. Anderson and Priest's⁴³ definition is the most inclusive stating that "a Live Project comprises the negotiation of a brief, timescale, budget and product between an educational organisation and an external collaborator for their mutual benefit. The project must be structured to ensure that students gain learning that is relevant to their educational development."

In this case; the educational organisation is BTT which is not a standard academic institution; the students involved are not a typical design studio group either but a varied group with a mix of origins, backgrounds and abilities. Time was spread over two weeks and budget was limited. The external collaborator was the community of Caimalito in rural Colombia. There was an overarching brief which participants needed to make specific; proposals aiming to improve the living conditions of Caimalito using participatory design and bamboo as tools.

A key aspect of live projects is the inter-disciplinary and collaborative learning processes. A model that explores these is the "Situated learning: legitimate peripheral participation"¹⁴ where both formal and informal learning are incorporated and students' individual identities and their role in the community and discipline are valued in the learning process. It locates learning in the process of participation as an evolving set of relations, not as a cognitive act. Situated

learning queries what type of social engagements provide the proper context for a particular learning to take place.

Reviewing North American literature, the concept of Service-learning emerged as the theory that embraces explicitly the idea of working with disadvantaged communities. Service-learning is understood as the various pedagogies that link community service and academic study so that each strengthens the other. Felten and Clayton¹⁵ highlighted that Service-learning produces positive outcomes in many areas and argue that the pedagogy's most significant outcome may be the transformative learning that can result for all participants. However this model has been criticised in some instances 'because many, if not most service-based learning situations involve an unequal starting point in terms of technical expertise, access to information, and the ability to negotiate with public and private bureaucracies, there is an inherent risk of exploitation where the community setting is used as a laboratory to serve the university'.¹⁶

From an ethnographic point of view in the field of architecture, Carroto¹⁷ investigated the impact of service-learning projects in the US as an observer through various case studies. She found conflicting intentions and aspirations between service-learning in architecture and its implementation questioning who or what is served arguing that the established systems preclude effective civic engagement. She studied the social forces affecting service-learning, how students' work met course learning objectives and the relation with communities' unmet needs. The distinctive 'civic' part of these projects (from a pure design & build) was typically underachieved.

This workshop had some unique factors. Even if there was an aim to help a disadvantaged community, this was achieved via participation and empowerment of the local people, avoiding paternalistic approaches. The role of design was a vehicle for communication and empowerment through designing with a material that is familiar to the local people but not to the students. Rather than bringing studio-formulated proposals to be implanted in the area, the workshop brought students to the site to learn, understand and propose with and within the local community. This way, students learnt about the socio-political conditions that affected the area and questioned the role of design in those scenarios.

On reflection, we observed high levels of engagement, empathy and motivation which were due to the immersive experience in a new environment and the collaboration with the community. Students lived in a farm built with bamboo adjacent to Caimalito which belonged to one of the members of BTT who has a strong relationship with the local community. The workshop activities enabled participation with and within the community and the practice of designing and building with bamboo. This could be understood as an immersive Live Project experience.

The concepts of ‘immersion’ and immersive learning environments are relevant to our observations during the workshop. “Multiuser immersive learning scenarios¹⁸ (ILS) hold strong potential for lifelong learning as they can support the acquisition of higher order skills in an effective, efficient, and attractive way. By including collaboration in the learning scenario, multiuser ILS will transform learners and learning in three ways:

1. Transforming a participant from a passive recipient to an empowered actor.
2. Transforming content from information that learners have to remember to a tool that learners can apply to reach certain targets.
3. Transforming context from an assurance that “this knowledge will be relevant in the future” to an actual reality where learner’s actions have immediate consequences” (Nadolski et al., 2012).

The workshop facilitated learning to all participants. The main tutor in Caimalito was a bamboo master builder from a nearby community, teaching all students the different bamboo techniques and skills. The fact that he was the expert teaching architectural students and other community members created a horizontal environment for everyone to learn. In this context, Freire’s critical pedagogies¹⁹ (1970) can be understood as the learning that places an emphasis on the possibility of change in the lived experience of those who are engaged in learning. Freire’s teaching practice values the students’ cultures and aims to dissolve the teacher-student relationship into equals where both teach and learn. Freire’s theories are relevant to the workshop as a horizontal structure was achieved allowing learning to all and empowering the local people to be in charge of modifying their own environment.



Figure 4. PEI and international students working with adult members of the community making furniture and artefacts with bamboo. (Estudio SPN).

Discussion and student’s perspective:

The methodology is based on qualitative research from our observations and questionnaires conducted with the participants.

The majority of the responses to the questionnaire came from international and Colombian students. When asked about their motivation to participate, most of them were motivated by the prospects of working with a community, others wanted to discover bamboo. In their responses about what was different in this workshop they highlighted the “immersive aspect of the workshop”; others considered that it was “different from what we normally get taught that architecture must generate big impacts with complex and costly buildings”; others said “the social component, innovation and the qualities of the material”; and “work directly with the community, understand their living conditions and culture and most importantly get involved with the people to whom the project is aimed which makes it real”.

All agreed that having a diverse group of

participants was a very positive aspect of the workshop. Through their responses one can see the dynamic relationship between groups highlighting that the group they were most in contact with was the local community. When asked which group they learnt the most from, it was very close between the organisers and the community.

We witnessed the exchange of knowledge between the participants but in order to have a clearer idea of how this happened, we focused on students' reflections on what they thought they had contributed to the community:

"We [students] were an incentive to motivate community to continue with the process of transforming the place". "Different points of view and applications of architecture. Here the learning is open to all, community and all types of students". "To take advantage of local resources; how small actions can generate a big change for the community". "Participatory design. The will to create active local initiatives strengthening community". "Students provided their work and ideas. A single specific action has a limited contribution to the community; continuity is required to increase impact". "Dignify bamboo as a material and exchange design ideas". "The self-sufficiency and independency that can be achieved when they know how to use this material to progressively improve their dwellings"

When asked "what was Caimalito's community contribution to the students?"

"A new way of approaching the profession 'horizontally' including everyone's knowledge to contribute to the general progress."

"We saw an aspect of life and a reality of the country that we are not used to."

"A synergy was created, we learnt from them, they inspired us. They contributed with their vision, their time and their knowledge."

"Realize that there are people with plenty of needs and that one can help to fill some of them is very valuable."

"Showed us how they cope with scarcity of resources."

Some students were critical about the brief, as they felt that the outcome (as the built product) was not impressive enough and that a more prescriptive brief would have allowed for more focus and a better 'product'. However our view was that the process was as valuable as the product and we didn't want to dictate

the outcome as it should be defined by all participants as the result of the process. We did not want a situation where the community is alienated from the outcome of the workshop.



Figure 5. Bamboo structure for seating and playing- under construction and in use by local kids. (Estudio SPN).

One of our concerns was the question of time. How long do these experiences need to be to achieve their goals? Processes need time, especially when dealing with a varied group of participants, a community and different locations. The workshop was ambitious, complex and involved risks. It was the beginning of a longer term engagement, the first step aimed to change the way people think about their built environment and resources. Hamdi²⁰ is one of the advocates of small-scale; incremental change involving community dynamics.

The idea behind working with the community

was the transfer of knowledge whereby the students will bring fresh ideas about how to use bamboo and its potential to improve the area, and the locals will bring the knowledge about the place and local culture. Bamboo was not just a material but an empowering tool for the community to use creatively, removing the stigma of bamboo as the 'material of the poor'. However there was not a significant change in the way bamboo was perceived; changing a cultural issue will need more than the enthusiasm of a group of students.

The legacy of the workshop and what happens when students leave the site was a priority. This workshop started as the first of many, creating a connection with this community that would be sustained in time. It effectively worked as a catalyst for various actions:

1. The disused station building turned into a community space;
2. Caimalito continued to be the site for the Colombian students during that semester, some of them returned on their own initiative;
3. The workshop triggered talks with local government and this facilitated the students of the FETB to convert the fire station building (adjacent to the train station) into a cultural centre;
4. PEI students went back to Caimalito after the cultural centre was finished and improved the public space around it;
5. The workshop initiated the students from the local school of architecture at the Catholica University of Pereira working with the community of Caimalito.
6. The workshop led to a further collaboration between SPN and PEI who together submitted a proposal for the Solar Decathlon²¹ competition in Latin America & Caribe. The proposal was selected for the construction phase which was developed by the PEI students up to the construction of a housing unit at the end of 2015 in Cali winning the 1st prize in the Architectural section.

Was social innovation achieved? How can this be measured? We understand social innovation as new configuration of social practices and actors in certain contexts with the aim of answering some of their needs in a different way than established practices. From our own observations the workshop enabled the collaboration of various groups which wouldn't have worked together otherwise, allowing them to discover how much they could benefit from that collaboration. The international students joined

with genuine interest in the subject, most travelling from very far. This fact motivated the local students and the community. We observed the exchange of knowledge between the groups when working together. In conversation with members of the community, they highlighted the integration and immersion of the students in the community as they not only shared the workshop activities but also shared meals and leisure time together.

Conclusion

The immersive nature of the workshop facilitated the horizontal participation of the different communities involved in the activities, enabling social innovation which empowered the community of students as much as the local community.

Through this workshop, all participants discovered the potential of bamboo as a material and the challenges involved when building with it. The bamboo-related skills acquired during the workshop were an empowering tool for all participants, especially the local community as bamboo is part of their environment. However, the ambition of removing the stigma of the 'material of the poor' was not fully achieved as we realised that this would require a longer term strategy and action. This was the pilot workshop aiming to establish and strengthen relationships with the local community groups as well as the local government. To achieve longer term results, there needs to be an agreed target and a strong relationship between a well organised community and the educational organisation requiring a lot of planning and commitment from the parts.

Students learnt technical skills in an applied learning situation; they also gained awareness of the social, environmental and political issues that affect the area. These students discovered the complexity of a rural environment as a living organism which otherwise would have been just a site plan in a studio based project. This opens various issues that affect architectural education and the position of design as a social practice. A key question is whether architectural education is ready to respond to the complexity of the issues affecting the world outside campus. Our view is that the gap is too big to be closed purely by architectural design. Architecture is partly a social practice but the way in which it is taught now, seems unable to address all the human, ethical, and political

aspects of the environments in which architects may work. For this to be part of the education of the architects of the future, architectural schools need to strengthen the multidisciplinary aspect of the teaching teams and these teams need to be involved in Live Project experiences. Live Projects should be included as an essential part of the curriculum, understood as immersive experiences of a sufficient length that allow for a real impact on the students and the communities that connect with them.

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