

## TEA - TRANSFORMACIÓN DE LA ESTACIÓN DE TREN DE OAXACA. EVALUACIÓN DE UN TALLER DE CO-CREACIÓN.

## TEA - UPCYCLING THE RAILWAY STATION OF OAXACA. EVALUATION OF A CO-CREATION WORKSHOP.

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### Resumo

Protestos urbanos no século XX marcou uma mudança social e política que mudou a maneira como transformamos nossas cidades, ou pelo menos deveria: projetar os espaços urbanos para as pessoas, mas principalmente com as pessoas. Hoje, parece muito claro que a participação e os processos de baixo para cima se tornaram uma preocupação central no projeto urbano. Nesse novo contexto, nossa pesquisa atual propõe a criação de uma metodologia com novas estratégias (ICT, ferramentas lúdicas como desenho urbano, planejamento tático). Isso implica a análise do presente em vários estudos de caso, nos quais os destinatários finais do planejamento urbano - seus usuários - co-projetam o projeto. O principal objetivo deste artigo é avaliar o método que usamos no TEA (Taller Espacios Abiertos). Esse método, que segue a ideia de ação urbana ou DIY urbano, tem sido estudado em dois níveis: primeiro, como mecanismo de participação e segundo como nova forma de ensinar arquitetura, com ações urbanas em escala 1/1. Neste estudo de caso, a transformação da antiga estação ferroviária em um centro cultural foi articulada com oficinas de co-criação, assembléias, modelos evolutivos, mas principalmente oficinas de autoconstrução. Para obter os resultados, utilizamos uma avaliação doble: quantitativa e qualitativa. Os resultados mostram que ele foi bem-sucedido não apenas como uma ferramenta participativa, mas também como um processo social e como uma forma de aprender projetos em design e arquitetura.

**Palavras Chave:** Participação, urbanismo pop-up, urbanismo tático, bottom-up, autoconstrução.

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## Abstract

Urban protests in the twentieth century marked a social and political change that altered the way we transform our cities, or at least should have, so that we design urban spaces for people, but mostly with people. Today, it seems clear that participation and bottom-up processes are central to the urban project. In this context, our current research focuses on creating a methodology with new strategies (information and communication technologies, fun tools such as urban sketching and tactical planning). In this research, we analyse recent case studies, in which the final recipients of urban planning, its users, co-design the project. The main purpose of this paper is to evaluate the method we use in TEA / OSW (Taller Espacios Abiertos / Open spaces Workshop). This method follows the idea of urban action or urban DIY and has been studied at two levels: first, as a mechanism of participation and second as a new way of teaching architecture, with urban actions at a scale of 1:1. This case study examines the transformation of the old railway station into a cultural centre, which took place through co-creation workshops, assemblies, evolutive models and, above all, self-build workshops. To obtain the results, we used quantitative and qualitative evaluation. The results show that the workshop was successful not only as a participative tool, but also as a social process and a way of learning in design and architecture.

**Keywords:** participation, pop-up urbanism, tactical urbanism, bottom-up, self-build

## INTRODUCTION: REINTERPRETING SELF-BUILD AND SELF-ORGANISATION FOR URBAN SPACES

Why and how should we consider urban action through self-build as a powerful participation tool?

Self-build is the well-known practice of creating buildings for oneself or for a community through a variety of methods. The oldest evidence of self-built settlements, made with mud (or mud mixed with straw to make cob), in the central plateau of Iran dates to 8000 BC (1). Since then, humanity has acquired knowledge in architecture through empiricism in the varied environments of the world, cumulating in impressive, ancestral knowledge. This type of activity and its organisation still takes place in some parts of the world, such as Mexico, under similar principles. In the state of Oaxaca, *El Tequio* is a pre-Hispanic custom that is still implemented in some places. It is defined as the collective work that every inhabitant in a town owes to its community (2). The study of this participative practice is extremely interesting, since it represents a living example of the social organisation of many ancestral urban settlements in various parts of the world. The workshop TEA / OSW (Taller Espacios Abiertos / Open spaces Workshop), which was held in Oaxaca, sought to adopt this philosophy and adapt it to current urban contexts.

The concept of bottom-up self-organisation can be understood in a social and scientific way. Steven Johnson and Deborah M. Gordon explained how it arises in communities or cities, and how we are necessarily somehow connected. They refer to the concept of “emergence” that occurs when a system of elements with fairly basic organisation results in intelligent behaviour, spontaneously and with no previous rules. They demonstrated through a series of examples how ants, brains, software and cities are built up using “bottom-up” intelligence (3), (4).

Some experts agree on the importance of self-build as a participatory and social process and consider that community emerges from these activities. This can be seen in the works of Walter Segal and his self-build method. The method, based on a traditional timber frame to build houses, involved families of self-builders and converted the experiences into a “true family enterprise” (5). “Segal not only emphasizes the physical, but also the psychological needs of the users in his participatory process” (6). Clearly, what was important to Segal was not so much the built structure, but the way of life. Inspired by Segal’s method, Peter Hübner and Peter Sulzer are two other leading figures in the areas of self-build and participation. Peter Blundell Jones indicates that “having produced some habitable rooms, the idea arose that they might build a whole student hostel, in which the students would become designers, then builders and finally inhabitants” (7). The author concluded on Hübner works that “instead of a monologue from the designer at the drawing table there was dialogue, unpredictable, but alive and fascinating, socially rewarding”. Doina Petrescu stated that, in the urban context, in European cities such as Paris or Barcelona, new practices transform temporarily available and reused spaces through everyday life activities that help to preserve urban “biodiversity” and

somehow reclaim the right to the city. Petrescu considered that these new practices come directly from the urban protest form of the 1970s (8). These experiences, alongside other temporary interventions, are also called guerrilla urbanism, DIY urbanism or tactical urbanism and are basically designed to improve neighbourhoods through temporary changes to urban spaces (9). However, beyond the result, the virtuous circle of tactical urbanism is when the intervention takes the form of an activity that encourages individuals to take personal responsibility in creating sustainable urban space.

Self-build experiences at large scale in our current context are often associated with megacities and informal shanty towns worldwide. Created by hand by their inhabitants, shanty towns reflect extreme inequalities and scenes of social exclusion. This reality reinforces the main thesis of our research, which is the balance between top-down planning and bottom-up systems. Urban DIY and self-build entail a social process that makes more sense than ever in universities and in research fields. Everything suggests that we may be facing a change in the architect's role and it is therefore essential to prepare our students for these eventualities, through a rich learning experience in architecture with social commitment.

## CASE STUDY: “TEA - UPCYCLING THE RAILWAY STATION OF OAXACA”

### Presentation of the workshop and method

In the workshop TEA / OSW, an architectural and artistic approach is adopted that proposes another vision of learning in the project process. It is aimed at not only architecture, design and art students, but also anyone else who is interested in improving their urban environment. Whether on a smaller or larger scale, all projects are self-build and community based on a 1:1 level. The aim is to give students or users the opportunity to learn all stages of the project, from sketching to the finished work, with a sustainable, innovative and participatory approach. As they work, participants gain a sense of self-criticism and civic and social responsibility within our society, questioning tomorrow's spaces, sustainable development and public places. The second workshop, “Upcycling the railway station” lasted 8 months and aimed to convert railway areas into cultural spaces. By bringing together a group of students and local residents, ideas emerged to solve some urban and social problems. Even if the installations that were built were temporary, they illustrated sustainable ideas and new urban practices that should be assimilated by the democratic authorities.

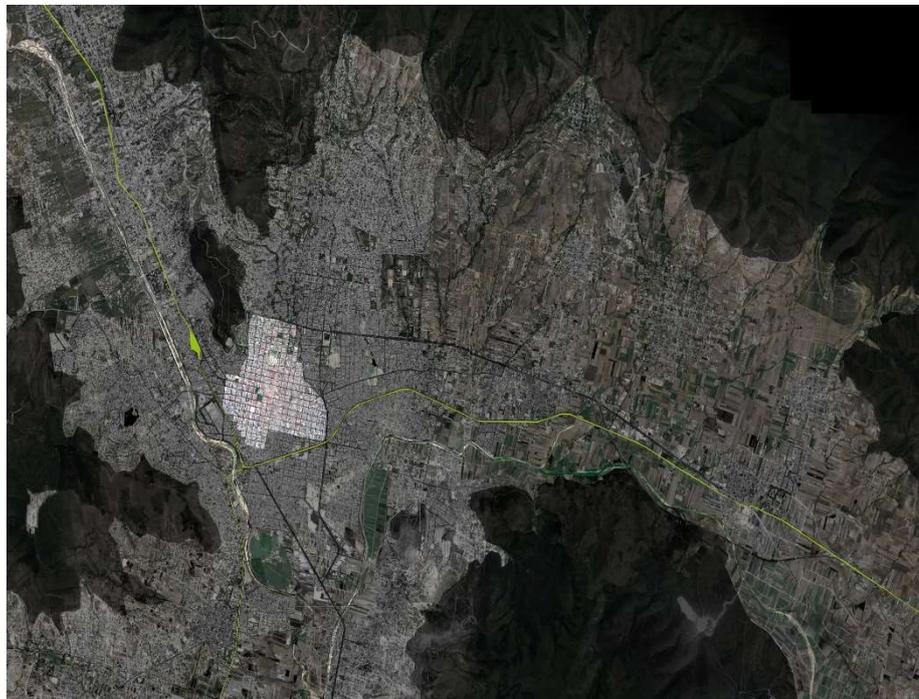
*Figure 1. Self-build and urban DIY in the abandoned railway station in Oaxaca.*



### **Oaxaca de Juárez and the old abandoned railway station**

Oaxaca de Juárez is the state capital of Oaxaca in Mexico and a UNESCO world heritage site. Although it stands out for its remarkable colonial centre, it was first founded by the Mexicas, and was later occupied by numerous native peoples, as demonstrated by the many archaeological sites (11). The city continues to be an important meeting point for local ethnic groups (12). It is in the Central Valleys, a set of three fluvial valleys located between the “nudo mixteco”, the Sierra Juárez and the Sierra Madre del Sur. At the end of the nineteenth century, the city saw the arrival of the railroad, which connected it with the national capital and made it easier for people to move within the state. The route chosen for the railroad tracks followed the logic of the topography and orography, distributing numerous cities near the Oaxacan capital. As several ex-railway workers have noted, the train was the catalyst for the development of these cities (13). Urban development outside the colonial centre was also dependent on the arrival of the railroad. This infrastructure was an important means of communication, not only for the transfer of passengers or products from other latitudes and nationalities, but also to facilitate the sale of Oaxacan products and the development of local markets. Merchants from Etna, Tlacolula and Zaachila could take their products to the city market. Today, these small cities still have “tianguis”, traditional Mexican markets. The railroad had the greatest impact on the city in the “Marquesado”, since this activity offered new sources of employment to people who lived near the station (14), (15), (16). After the privatisation of the Mexican Railways, in 1999 passenger transportation on the Southern Mexican Railroad was suspended in the City of Oaxaca.

*Figure 2. Oaxaca de Juárez, railway tracks and topography.*



Today, a series of urban problems call for urgent attention. There has been a lack of urban planning, with a tendency to follow a model of urban dispersion in which suburbs are associated with car ownership. If the railway led to a boom in the activity of local merchants from traditional villages and cities who could sell their goods, its abandonment, in favour of investment in motor vehicles, resulted in the isolation of these places. Hence, there has been no drive behind the opportunity to create new centralities. The fast roads and highways, with few pedestrian crossings, have generated a lack of transversal permeability and dangerous crossings in the valley. Finally, capricious and uncontrolled orography have led to significant, repeated flooding of the Atoyac River, which runs in the northwest of the city and crosses Oaxaca de Juárez, Santa Cruz Xoxocotlán, Zaachila, Zimatlán and Santa María Ayoquezcoco. One example is the 1969 “zona de tragedia” (area of tragedy) flood.<sup>1</sup>

At another scale, the railway station is a testimony to the past. The building was opened in 1892 by Porfirio Díaz and designed by the company Read & Campbell. The main building housed the station manager’s office, the ticket office, the waiting room, the telegraph office, the dining room with sanitary services and the kitchen. Although it was originally built with quarry walls, a zinc roof and a wooden structure, it was rebuilt with a Catalan brick vault supported by narrow track rails, after destruction. Farther north, the 80 x 10-metre cargo hold was built with quarry walls and roofs with steel structures and a zinc sheet cover. Other industrial architecture includes the machine house and the elevated tank (17).

Fortunately, on 27 July 2001 the railway station reopened, but this time as a Museum and Cultural Centre. The survival of the space was largely due to the artistic groups that had taken over the area. They looked after it and attracted visitors, using the old station as a magnificent backdrop for their works. Another attractive feature of the place was the presence of old abandoned or partially reused wagons:

- The first-class passenger car *El Oaxaqueño*, which was part of the last train that covered the Mexico-Oaxaca route and was in use when we started our project. It was used to project movies.
- One small freight wagon, which was used as a library.
- Three goods wagons, which had been partially transformed into a computing space.
- Two totally abandoned wagons.

However, due to a lack of maintenance and vision, the old station and the various carriages represented fragile industrial and social heritage. In 2010–2011, the workshop TEA / OSW proposed a design and community-instigated overhaul, through urban DIY actions on the various spaces, with the participation of citizens and students. Our completed works, which were finished in 2011, inspired users and inhabitants to reclaim a sustainable transformation of the railway station into a civic and cultural centre for the people. In 2013, the federal and municipal government and the Alfredo Harp Helú Oaxaca Foundation (FAHHO) continued the partial transformation of the spaces. However, some main questions that emerged from our experience are still without answers:

- What is the vision for the abandoned railway corridor? If we consider this area an opportunity, could we imagine a new public transport link and green spaces on this urban track?
- Could we consider the area of the cultural centre as a new centrality? What about the other railway stations on the rest of the track?
- What is the future of the area near the abandoned train station? How should this area of the city develop? The river Atoyac, whose course is parallel to the railway station in this area, also represents an opportunity for a linear park.
- Could we imagine, through a mixture of bottom-up and top-down planning, that we could initiate a sustainable urban transformation?

*Figure 3: Oaxaca de Juarez, railway tracks and topography*

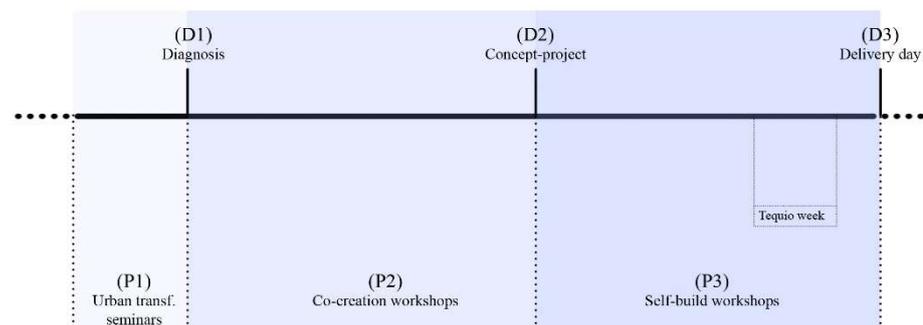


## Workshop development

Co-creation brings a range of ideas for a project from direct users. The workshop TEA / OSW is inspired by the long-lasting “Tequio” tradition, which we described at the beginning of this paper. However, this initial idea was of course reinterpreted, to adapt the tradition to more contemporary practice and to an architecture workshop. It was developed as a participative and serious game in three main parts: urban transformation seminars (1 month), co-creation workshops (3 months) and self-build workshops (4 months). Although the co-creation workshop was proposed for the faculty of architecture of Oaxaca (UABJO - Universidad Autónoma Benito Juárez de Oaxaca, Facultad de Arquitectura CU) for students, the self-build workshops were open to the local inhabitants, who would occasionally participate. Like all games, this meant there were some rules to follow:

- Duration 8 months (approximately 600 hours of workshop).
- Four Interdependent groups: 4 to 5 people. Every two weeks, each group presents their progress to the other ones.
- Three parts: urban transformation (P1), co-creation workshops (P2) and self-build workshops (P3).
- Presentations: diagnosis (D1), concept-project (D2), and delivery day (D3). Organised as local meetings and a party, in which inhabitants could participate.
- Volunteers' week: a week of “tequio” was organised, with other members of the faculty and inhabitants.
- Schedule: Monday to Friday from 4 to 8 p.m.
- Self-build classes (P3): skilled craftsmen, such as metal workers, provided support occasionally and during a first intensive week.
- Spatial limits: two scales of project: urban study and project area.

Figure 4. Workshop organisation.



### Urban transformation seminar and debate (P1)

Everyone could participate in the experience, although it was more attractive to architects, makers and designers. The theoretical classes and debates gave participants' a solid background for the project. The first seminar, called "*The architect and the project process*" started with a brief introduction in a round table workshop to explain the purpose of the project and for participants to introduce themselves to the group. We then gave further explanations of the site and explained some notions such as social architecture, co-creation, positive critical thinking or principles of landscape architecture and urban morphology. The second debate, called "*upcycling spaces*" started with the explanation of various case studies, such as the *Landschaftspark Park*, which was designed by Latz and Partner in Duisburg-Meiderich. The third workshop, "*Ready-made, LandArt, and DIY open design*" deepened reflection on the subject, with the example of Marcel Duchamps and his "Objets trouvés" (Found objects) and other environmental artists or land artists such as Christo and Jeanne-Claude or Robert Smithson. Finally, the last module "*Urbanism and the Railway station of Oaxaca*" provided new urban and historical inputs at a larger scale. The purpose of this seminar was to link all the scales of the project and explain how local urban actions can make a difference at a larger scale. The students were presented with concepts and definitions of urbanism regarding Oaxaca's urban growth, especially the relation between the colonial centre and the urban developments that appeared around the infrastructures, such as the river, the train and the main roads.

At the end of the session, the participants wrote an "intentions list" for the railway museum. The main ideas that emerged from this workshop were:

- the aim of creating a cultural centre for community use, with local facilities for children and inhabitants, such as a library, multifunction rooms and a space for local dances and other events.
- a design with a special focus on the history of the space, with the reuse and transformation of industrial heritage, such as the wagons.
- an improvement in abandoned public spaces to maintain the railway tracks with temporary objects and an exuberant nature.

### **Co-creation (P2) & self-built workshops (P3)**

The second part of the workshop started with two weeks of assessment and perception of the place. Through walks, chats with locals, photography and drawing, students carried out a conceptual and artistic diagnosis of the place and its opportunities. Four interdependent groups were created to propose physical actions for the site: one landscape team and three groups that would act on the wagons. Each group worked as small cells in round tables to propose two project deliveries called *(D1) Diagnosis*, *(D2) concept and project*, which were presented to a committee. Each experience of co-creation and self-build is explained below by the team.

#### **Landscape team**

This group was formed by two architecture students, one architect and one fine arts student. It was responsible for the public space in the railway station, on a large and local scale. The diagnostic showed that the public space was a dynamic area where museum activities were held as well as self-organised activities, such as the ecological *tianguí* “*La estación*”, artists collectives (painters, aerial dances) and concerts. Inhabitants cross the public space of the railway station following the train tracks from the outskirts towards the city centre, but also transversely from the Ex-Marquesado neighbourhood to the Atoyac river. The space attracts people because of its beauty and social history, with its charismatic nineteenth century industrial architecture, its old wagons and its peculiar and exuberant vegetation and biodiversity: palm trees, pine trees, flamboyán, Indian laurel, a copperwood tree and an impressive 29-metre ahuehuete (*Taxodium huegelii*), planted in the sixteenth century (18). Another beautiful phenomenon that was described by students was the river atmosphere that emerged during the rainy season, as tall herbs and reeds grow. The team that met on an old draisine<sup>ii</sup> of the railway station described the main idea of the project in the book *Taller Espacios Abiertos – Recicla el Ferrocarril*: “this place made us feel nice, magical, from this point you can appreciate the magnitude of what was Oaxacan railway station. Observing our surroundings and hypnotised by the fleeting views of the routes that run nearby, the feeling arose of being on a raft, sailing on a river.”

Once the concept had been stated, the team worked on its viability, taking advantage of the dimensions and axes referring to the roads. In front of the station, the train tracks are parallel and equidistant. The project consisted of building new draisines that they called “rafts”, using reclaimed materials. The modules can be assembled into a larger stage for events, such as concerts, dances or other ceremonies, or they can be used as separate resting spaces. To ensure comfort, the team came up with back rests that convert the platform into loungers. Easy to move along the rails, but too heavy to be lifted, the “raft” seemed to be a great answer to regenerate the public space of the abandoned railway station. The team proposed other actions that unfortunately could not be accomplished due to a lack of time and financial resources. These actions included transformation of the train tracks into a bicycle lane or the placement of found objects throughout the station.

During the *1-to-1 self-build workshop*, the team worked on the selection of recovered steel and wood and quotation of prices for this material. Participants who had no technical knowledge of purchasing or welding steel, were instructed by a professional team of metal workers onsite, which was open to anyone. One of the most interesting aspects is how the team devised the

system of wheels on rails. They considered resistant elements that would be available in scrapyards in the city, and found that the famous beetle car's drum brakes perfectly suited the rail tracks. With patience and consultation with local mechanics, the team managed to build the raft with a real chassis. This difficult step shows how the *1-to-1 self-build workshop* is a great opportunity to learn design through problem solving.

*Figure 5. Details of the raft and tracks (Source: Seve Bruno)*



### **Freight wagons**

Three teams of participants worked on the wagons: two groups on abandoned wagons (W1 and W2) and the last group on the three pre-transformed wagons (W3). They first researched the architecture of their freight wagons, with a diagnosis of their current state, historical value and a survey. These types of wagons were totally enclosed to protect loads from inclement weather. Steel framing, which is very common in the world of rail, made the wagons strong enough to carry long-distance vans, cages or pallets filled with cargo of all types.

#### **W1: Shape cube wagon**

This team was formed of three architecture students and one design student. The team concluded after a diagnosis that the state of degradation, although advanced, had not produced structural defects. However, the transformation of the wagon should imply an action beyond restoration. The wagon is made of steel, with no insulation and a lack of ventilation. This traps heat inside, and the air quality is toxic due to rusted surfaces. As a starting point, the students decided that the space should be multifunctional, have good passive ventilation and natural illumination. The relatively small space (2.80 m x 15 m) should not be occupied by a lot of furniture. An interesting aspect of the diurnal climate in the central valleys of Oaxaca, which, according to the Köppen climatic classification is a mix between a subtropical climate of highlands and a mountain climate, is that it is pleasant in the shade. This enabled the team to create ventilated spaces without necessarily using enclosures, as demonstrated by numerous local architecture examples. This led to savings in materials and the added value of bioclimatic architecture. In addition, the participants wanted to change the look of the wagon and associate it with an environment for children, since they wanted to focus activities on this objective and consider the wagon an element of play. They came up with the idea of

drilling the façade to store customised furniture. Using as a reference a simple object, a shape cube for sorting, they started to adapt the concept to the wagon. The Shape Sorting Cube is a classic developmental toy for children that consists in putting wood blocks in a perforated cube. In the case of the wagon, the concept was reinterpreted. Cubes would have a double function, as furniture, but also as mobile enclosures that could act also in a bioclimatic passive way: the temperature and ventilation can be controlled by taking the cubes out or leaving them in.

Figure 6. The “Shape cube wagon”



### **W2: Canvas wagon**

The abandoned state of this wagon was like that described above: totally enclosed, with a narrow claustrophobic space. The team, formed by three architecture students, an architect and an industrial designer, came to the same conclusions as the other groups. The space should be transformed dramatically to provide good ventilation and light and should be opened to the beautiful environment of the area. In addition, the graffiti on the wagons was a source of inspiration and a problem solver: as the wagons are abandoned, any type of graffiti protects the structure. So, why not encourage this practice on their wagon?

After a careful analysis of the structure, the team came up with a simple idea. They cut the non-bearing part to build a mobile system of vertical slats that could be opened or closed according to users' preferences. In addition, the surface of the blades could be used as a large canvas for artists, which could be seen both when the facade is closed and when it is open. Under the supervision of the metal workers, the intervention involved cutting the steel sheet, frame assembly, welding, etc. The students proposed wooden indoor furniture and a text on the history.

### **W3: Gap wagon**

As mentioned above, the three last wagons were already partially transformed and conditioned. They had been converted into a playroom and a computer room with interior insulation, but without any openings. The result was poor spatial identity and no ventilation, with electrical lighting and suffocating heat during the dry season. However, the starting point was to take advantage of the electrical installation and insulation. Following the same line

as their colleagues, the group thought of very small holes, some gaps, which could form a large-scale drawing. They decided to draw a map of the old railway line in the towns of the state of Oaxaca. The gaps also had deeper connotations, such as the memory of bullet holes, as a testimony to the violence related to immigration from South America to the United States.

*Figure 7. The “Canvas wagon”. Final result, early 3D image generated by the students and DIY workshop (Source: Seve Bruno).*



## RESULTS

The results show that TEA /OSW was successful as a method of participation and as a holistic way of learning design. To obtain the results, we undertook a quantitative evaluation using polls and data collection and a qualitative evaluation based on the testimony of students, compiled in the book *Taller Espacios Abiertos – Recicla el Ferrocarril*. The results show that the implementation of this type of workshops in an academic environment improves motivation, involvement and satisfaction in the processes of developing urban projects and much more. Furthermore, the completed works inspired some of the stakeholders to demand a change in the railway station. Fortunately, the federal and the municipal government and the Alfredo Harp Helú Oaxaca Foundation (FAHHO) are continuing with the transformation of the spaces and their management. The area is now called the Museo Infantil de Oaxaca (MIO).

### **Qualitative: TEA / OSW community life**

More than twenty-four participants have been officially involved in the workshop (with equal numbers of men and women): 14 architecture students, two fine arts students, six architects, one design student and one industrial designer. The participation of some local residents was more informal and unfortunately was not recorded, but included school groups, retired railway workers, artists already present on the site and local merchants. An effective way to obtain feedback from the students was to ask them to describe their personal experiences. This idea came from the fantastic conversations we had with the students in a café after a day of work. We asked them to write an A4 testimony with anecdotes and answers to some key questions: Why had they entered the programme? What did they learn during the year? What were their daily experiences and personal opinions of the workshop?

Sharing eight months working on a common project left deep memories and anecdotes in the minds of the workshop participants, and those of local people and groups. On delivery day, the students presented their finished work, ready to use. Neighbours and merchants from the ecological *Tianguis* “La estación” offered their services and food for free in a festive atmosphere.

Generally, all the students agreed that the workshop has been a human and social adventure. A community had been created, and the place and its users would become part of it. Nancy, an architecture student explained that “we became a family,” and “the railway station museum became my second home”. Karen, a fine arts student, interested in ecology and heritage, considered “the coexistence with the people involved directly and indirectly with the project was very gratifying”. For Efraim, an architect, the programme meant “...ideas, discussions, models and architectural plans, travel, hunger, cold, rain, heat, sleep, enjoyment... but above all... a success, the satisfaction of doing things well and sharing with great people.”

Figure 8. Self-build and urban DIY workshops (Source: Seve Bruno)



The experiment was also an opportunity to increase self-confidence. Alexis, an architecture student, explained that when he started the workshop: “I was very depressed. I saw the opportunity to be part of a group that, apart from helping me, would teach me architecture in another way. It was very difficult to start because I am very quiet, I did my best and I did it!” For Denisse, the workshop was a way of giving the best of oneself: “This experience has helped me to realize what I am capable of doing. Each one of us sets our own limits. And each one of us is also capable of breaking them.” For Mirna, a recently graduated architect, the hard part was learning patience: “in the development of ideas I have learnt to be patient and respect the other members of a team, to do the work under good terms.”

Beyond the social experience, one of the purposes of the workshop was to teach students new skills in architecture, urbanism and other crafts. For a lot of the students, the learning was holistic, involving give and take and problem solving, as Denisse stated: “We had a lot to learn, not only in the theory or practice of architecture, shapes and forms, looking for real methods and mechanics, but also in human learning to develop with other people,” and “We all had a common factor: the desire to create and be part of that great project, to show what we had to give to society, which was our main motor... We not only learned to design and project, but also to use endless tools that in life we had never imagined we would have in our hands.”

For Neftali, an industrial designer, “There was a lot of freedom to develop the concept of our wagon. Theory classes, references to other transformation projects and the advice of the metal workers helped to imagine the project. At the beginning of the practical part of the project, we began to familiarize ourselves with the tools: the metal saw and the welding machine. As there were twenty doors to do, we devised a production line to speed up the process. Learning to weld and cut metals was basic to getting the job done.” He concluded that: “the mix of play and pressure makes the experience fun.”

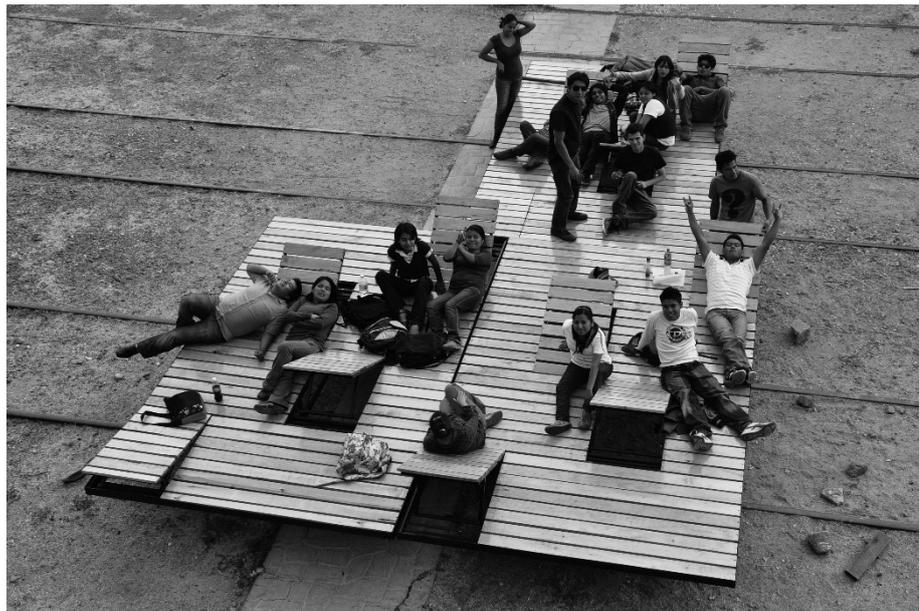
Luis, a recently graduated architect, saw an opportunity for a new experience before starting a job in an office and wanted to know more about field work: “I learned so much. First, I learned to see from the perspective of the builder. Then, I learned that design can follow empathy. If something is missing, it doesn't matter, because I can add something to it. And if something remains, no worries either, because I can remove it. The best place to rest is in the

materialisation of the idea.” He said: “In short: creativity + effort + dedication + friendship = TEA”.

For Karen, the workshop helped her to understand more about architecture, heritage and architecture: “I was able to understand and analyse architectural concepts, programmes and presentation formats that are indispensable and were beyond my knowledge.” She describes her participation in the workshop as: “very significant personally regarding the acquisition of experiences in physical work and planning for the elaboration and fulfilment of a project of such magnitude,” and “my long-term purpose is to create awareness regarding the care of our urban and ecological heritage.”

The students’ expectations were met, and much more. Efrain wrote: “we thought it would be easy, the ideas flew, the lips moved, the pencils drew innumerable lines, the computers created utopias, but the real ending was different... It was much better!”. Nancy stated: “When entering TEA, I did not imagine all the experiences I would have... although the end of the experience was intense, seeing that the activities were carried out like theatre plays, I feel totally satisfied with the project”. Finally, Angel, a second-year architectural student concluded: “It was a great experience to belong to TEA. It was sad when the day of the opening arrived.”

*Figure 9. TEA / OSW participants on the “rafts” (Source: Seve Bruno)*



#### **2.4.2 Quantitative: 2018 poll**

This project undertaken in 2011 was not studied in a quantitative way at the time (19). As part of the research TEA / OSW, we decided to ask former students, who are now professionals, to answer a questionnaire. The same questionnaire was used in the new “TEA / OSW” organised in 2018 in Barcelona with the ETSAB. The results show that it was successful as not only a participative tool, but also a social process and a way of learning about design and architecture projects. For this quantitative approach, we administered questionnaires with specific questions and details. In the first

block, we obtained personal information: there were a total of 18 participants, 10 women and 10 men from 18 to 35 years old. In the second block, we designed a Likert scale so that participants could evaluate on a scale of 1 to 5 their level of agreement with statements. The participants were asked about 29 statements on various aspects: eight related to participation and social views (PAR), seven focused on motivation (MOT), nine about pedagogy (PED), and five about pedagogy and participation (PED/PAR). The results are shown in Figure 11, using the same legend (N2-number of the statement) as indicated below.

*Table 1: Statements for the questionnaire*

N2-1-PAR	Tactical urbanism and co-creation workshops are vital tools in urban projects.
N2-2-MOT	I am motivated to do more workshops of this type.
N2-3-PAR	In an urban project, involving the inhabitants is vital.
N2-4-PAR	Participation is fundamental in an urban project.
N2-5-PAR	I feel that this type of workshop can be a valid participatory experience.
N2-6-MOT	I participated in this workshop voluntarily.
N2-7-PAR	The inhabitants or visitors understood our intentions.
N2-8-PAR	This type of workshop can change mentalities.
N2-9-PED	I gained more architecture experience through the workshop.
N2-10-PED	By working on the site, I feel that I learned about the place.
N2-11-PED	By working on the site, I can imagine how this place could change.
N2-12-PED/PAR	Communication between workshop members was good.
N2-13-PED/PAR	Team design and round tables make the dynamics more participatory.
N2-14-PED/PAR	The workshop was organised in a horizontal manner, guided by the teacher.
N2-15-PED/PAR	The workshop was teamwork.
N2-16-PED	I learned about sustainability and ecology.
N2-17-PED/PAR	As I was intervening in-situ in the city, I met more inhabitants or visitors of the place
N2-18-PED	I am satisfied with the results we obtained.
N2-19-PED	Experimentation 1:1 (or prototypes) increased my understanding of architecture.
N2-20- PAR	I think the place improved with our intervention, although it was only temporary.
N2-21- MOT	I think co-creation workshops as a participatory activity are really interesting.
N2-22- PAR	Inhabitants or visitors are interested in our intervention.
N2-23-MOT	I enjoy attending co-creation workshops.
N2-24-PED	The university should propose more activities of this type.
N2-25-PED	The university should establish an academic course for 1:1 co-creation and self-build workshop for ecological and/or social purposes.
N2-26-PED	Co-creation workshops can change our way of doing architecture or urban planning.
N2-27-MOT	These types of activities are useful for my future and can benefit me.
N2-28-MOT	I would participate in this type of workshop again.
N2-29- MOT	This type of experience helps me to interrelate with other users/partners/friends, which expands my social relations.

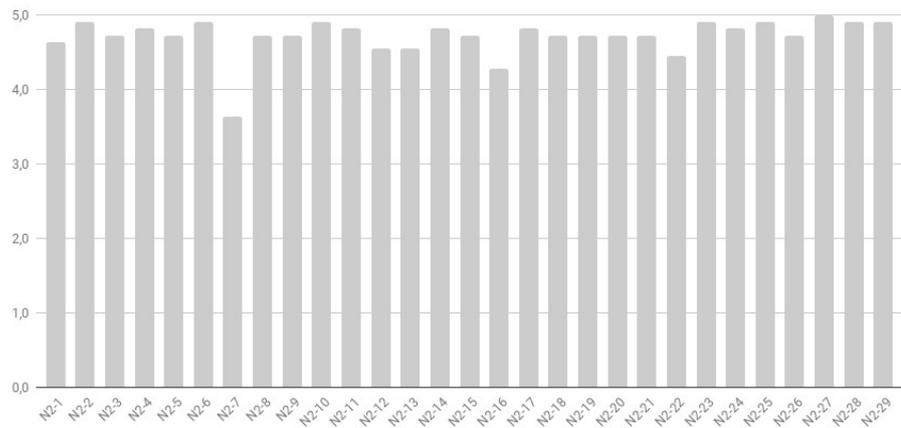
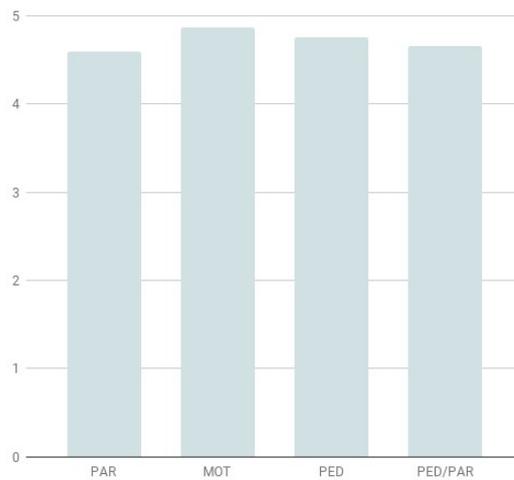


Figure 10. Feedback of the students. Results of the polls

The results of this workshop and method were so positive that we consider we should develop more activities like this. The interpretation of the separate data, apart from the general score, showed some of the students' preferences (Figure 11). Some of the highlights were that all the participants agreed these types of activities are useful for their future and benefit them (5/5, Figure 11, N2-27-MOT) and participants fully agreed with the idea of establishing an academic course for a 1:1 co-creation and self-build workshop for ecological and/or social purposes (4.9/5, Figure 11, N2-25-PED). Data also show that students had to interact a lot with the inhabitants and users of the place (4.8/5, Figure 11, N2-17 - PED/PAR). All participants agreed that they would participate again in this type of workshop (4.8/5, Figure 11, N2-28-MOT). However, it seems that students agreed less with the fact that visitors had understood their intentions (3.6/5, Figure 11, N2-7 PAR). This could be due to the low budget allocated to the project. Even if the completed works were considered very satisfying (4.7/5, Figure 11, N2-18 PED), we could not build all the projects that were considered by students. Instead, we could provide some guidelines for the future of the museum. Today, the transformation of the old railway station continues with the Museo Infantil de Oaxaca (MIO).

Finally, the general feedback shows that the method is **excellent**. If we look at the data collection by category (Fig. 12), the co-creation and self-build method is seen by participants as motivating (MOT - 4.9/5), pedagogical (PED, 4.8/5), participative (4.6/5) and teamwork (4.7/5).

Figure 11. Evaluation aspects



## CONCLUSION

Clearly, the integration of co-creation, self-build and co-construction workshops as a participative and pedagogical tool in urban processes generated positive feedback. The use of this type of tools, with participation at the two levels of student and citizen, is of greater interest and produces a virtuous circle. Students develop skills in architecture for their degree in a different way, working as a team and as a community, and providing a positive urban response in the urban space. They interact directly with the local population, which participates actively in the project.

Beyond the methodology, one of the objectives of this type of research is to illustrate how participative dynamics can be created at neighbourhood scale in a playful way that could provide solutions to problems related to abandoned spaces in the city of Oaxaca de Juarez.

Consequently, the implementation of co-creation and co-intervention workshops in the urban space can be methods to transform the city gradually. Although the intervention is temporary, it can help to teach citizens and give them some ideas about what could or should be done through open DIY workshops. The participants are receptive and aware of the evolution to a new paradigm due to the urban installation. The results identify this as a fun method, which, when it is adapted to other urban situations, can easily be combined with the participation of students, or directly applied to the local community.

Some aspects of the process could be improved. First, as shown in the results, improvements should be made in how citizens are invited to participate, to increase inclusivity. For example, formal questionnaires can be administered and feedback obtained. The methodology could be enhanced, with new experiences and more appropriate theoretical context, to better target the participatory experience. Should the emphasis be on community planning or on the bottom-up process? Another problem we had to face was the lack of funding. This type of workshop is still difficult to insert into university study plans, perhaps due to its cross-cutting vision. These limitations are clearly

associated with the teaching staff's lack of experience, the available resources and the way universities conceive education, which is undergoing a paradigm shift: to create architecture for the common good and for the people.

This experience, which is now continuing with new workshops in Barcelona such as TEA / OSW organised in September 2018, shows similar results and could be a new way of teaching architecture and urbanism, with a holistic method that covers all facets of architecture work and much more.

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## NOTES

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<sup>i</sup> The state of Oaxaca was declared a national tragedy zone, with over thirty thousand people affected. In: ABC. Tuesday 26 August 1969. p.20. Mas de treinta mil personas, afectadas por las inundaciones en Mejjico. El estado de Oaxaca, declarado zona de tragedia nacional.

<sup>ii</sup> A draisine is a light auxiliary rail vehicle.

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