



BUDDlab

Volume 1 October 2010

Wales Workshop:
an exercise in local resource building practice

Foreword <i>Caren Levy</i>	1	<i>Since the beginning of time, the art and act of building has been at the core of human evolution and our relationship with the specific landscapes that surround us. And while the idea of building with traditionally local materials and resources still exists in parts of the world, in many western societies, the opportunity to initiate and engage in an actual building project is difficult in comparison to the amount of ideas that are hatched on a drawing board or computer.</i>
Materials that Fit <i>Maurice Mitchell</i>	3	
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Building Dimensions <i>William Hunter</i>	6	<i>For the past years, the Wales Workshop at CAT-Machenlyth has provided a platform for BUDD students to escape the urban confines of London, and gain hands-on skills utilizing local resources and methods while further building upon their group dynamics outside the classroom. BUDDlab Volume 1 captures the essence of these experiences, offering a collection of essays regarding the conceptual multiplicity of 'building' and the role of practitioners, as well as the reflective voices of past students.</i>
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Planning for socially just
and sustainable development
in the global south

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Foreword

Caren Levy

One of DPU's central concerns is to explore and define with our 'community of practice', socially just courses of action to address informality and inequality in cities and urban areas in Africa, Asia, Latin America and the Middle East. This is one of the most pressing challenges of our time! As 2008 UN statistics indicated half the world's population live in cities and urban areas, with over 75% of the world's 'million' cities and 16 out of the 19 world's mega cities located in the global South. Statistical trends also show that this is where 90% of the world's slum dwellers are located.

The DPU's mission is to build professional and institutional capacity in order to design and implement innovative, sustainable and inclusive strategies to address the immense challenges of these realities. At the core of this mission is the commitment to develop the critical and reflexive capacities of current and future practitioners who come to the DPU for postgraduate education and capacity building. Such capacity to think and act strategically and creatively comprises many components: the ability to diagnose problems and opportunities critically and creatively; the ability to work collaboratively in teams, with communities and the range of public and private sector actors involved in urban development in a respectful and empowering manner; the ability to communicate honestly and persuasively with all actors; and the ability to learn from a variety of people and experiences.

The experience of the students on the MSc Building and Urban Design in Developing Countries (BUDD course) at the Centre for Alternative Technology (CAT) in Machenlyth, Wales has provided an exciting and innovative learning opportunity for students to develop some of these capacities. Thank you to all those involved in this valuable initiative.

Materials that Fit

Maurice Mitchell

Working within a context of rapid change and scarce or minimal resources professionals in development need to find a way to discover and utilise effectively those resources and skills available locally. These include the physical attributes of the site and those of the immediate physical and cultural context. Turning these resources into built form is more than a technical task. It requires innovation. The Wales Workshop takes students through just such a process of innovation by experimental modelling which turns the imagined making/designing process from a technical task (turning a finished design into a realized building by the application of a known technology) into a craft where the making of the building is integrated and very much a part of the design process. In this way proposals are crafted not through imitation but by a dogged process of trial and error.

So the Wales Workshop aims to provide students with the opportunity to acquire and practice the skills required to identify, classify and harness materials which are immediately available. Gaining confidence as they work, students then learn to produce coherent buildings elements within the skill constraints of their own student group and the time available to the course. Using ideas of loose fit construction students assemble their building elements into a coherent whole within a discourse of ideas which challenges the mainstream top down industrialised tight fit approach.

At the start of the workshop students are encouraged to choose just one material found, harvested or dug out of the ground on site. Then, working in small groups with this one material each student group makes a building element such as a suspended floor from scrap pallet timber, a two storey larch pole building frame, a bendy willow cigar truss roof, a vaulted slate opening, a stone gabion plinth or a stabilised earth wall. Skills are all site based, focusing on those of mason (wet trades) and carpenter (dry trades). Tools are all hand held.

By limiting the choice to just one material for each building element students are guided and bounded by the physical properties of the chosen material in the crafting of their pieces. Students gain knowledge of their material and confidence to proceed by a process of hand to eye reflective working.

The form of the building element is approached by finding out (asking) what the material will let the student do in

the manner of Louis Kahn (Cruikshank, D. (1992) 'I Like a Brick', Architects Journal, EMAP architecture) where, when asked, a brick states that it would like to be an arch rather than a beam. This process of asking configures the process of design so that design itself does not precede the act of building. It evolves in tandem. Periods of practical work alternate with lectures and seminars where the work in progress is discussed.

Students are required to keep an illustrated diary of their practical work and their relationship to the key theoretical ideas which emerge from the discussions held throughout the workshop. In successive seminars each student group is asked to consider and communicate their answers to the following questions:

1. what did you intend to do?
2. what did you actually do?
3. what resistances to your intentions did you encounter?
4. what accommodations to these resistances did you make in order to proceed?
5. what do you intend to do next?

The lectures provide information on site based materials and illustrate appropriate building precedents which inform the student's own ongoing practical work. So, over the course of a few days, a series of building elements are produced and assembled into a complete building through a hands-on, cyclic process of experimentation and focused group criticism followed by modifications to the original proposal.

Consideration of how to join the individually crafted building elements is not allowed to determine the size and scale of the elements themselves. Joining comes after making. Elements can then be joined directly, one to another or be spaced apart and independently supported to provide new transitional spaces between constructed elements. Alternatively small two dimensional elements might be assembled together in an array and fixed back to a primary structure via a mediating or secondary structure. Whichever way is chosen, the final decision as to the juxtaposition and joining of elements to form buildings is made after the integrity and coherent construction of each element has evolved from the process of experimental making.

Materials which are newly introduced to a particular context either by chance or design can have a profound ef-

fect on the normal way of doing things. They can enhance the appropriate use of local materials or hinder it by making a local technology redundant. So the workshop explores the value added to creativity in a particular context by considering the introduction of low cost, lightweight, loose fit materials which behave reliably.

In addition, some traditional materials such as brick (under pressure because of improved pollution controls), and bamboo (suddenly popular globally), have reinvented themselves to meet contemporary conditions. Other traditional materials such as newly harvested timber have generally been replaced by steel (in the form of small angles) and reinforced concrete. Students explore the possibilities opened up by these new and improved traditional technologies in seminars and feedback sessions as student curiosity is provoked by the practical issues discovered during making.

As the workshop progresses and the skills, ambitions and interactions of the students become clear a built form evolves which is quite unique. The final product which is left standing as students leave is more a large scale model than a finished building. Its form, never predictable at the start of the process is a way of learning about the process by which technology and human agency are transformed into a culture of making.

The seeming triviality of the objects being made is banished within the group as the work proceeds by constant self-conscious communication and iterative endeavour. Meaning is attached to the building elements being made by clearly identifying prototypes and other precedents. This consolidates the learning process. The end of the workshop is marked with a performance given by the students in which lessons learned are made explicit.

In a situation of rapid change and scarce resources where the builders, occupants and designers are often the same people and where the building work is carried out over a long if not continuous period of time then it is this newness or uniqueness of innovation, responding to the changing circumstances, employing a loose fit approach with immediacy and originality which allows a rapid response; adapting available skills, habits and resources, efficiently and effectively to make places in an unfamiliar context.



Reflecting on Action

Camillo Boano

Believing in and attempting to act on many radical, boundary-pushing concepts, a reflective approach is fundamental when entering practice and engaging with the world. Operating from a basis of praxis – of embodying or realising a skill or theory – is the essence of being a reflective practitioner, an approach that constitutes one of the fundamental bases of the BUDD philosophy.

A reflective practitioner strives to consider critical incidents in practice, to thoughtfully consider their actions as knowledge is applied. It is in essence a continuous learning process, relying on improvisation and adaptation when acting and interacting in space. While theory tends to be neat and clear-cut, practitioners are frequently embroiled in conflicts of values, interests, objectives and approaches as prompted by on the ground dynamics of power, domination and oppression that challenge many genuine efforts to shift design processes and urban spaces in more socially just and sustainable directions. Such a context makes reflecting on our role fundamental – asking “who am I, the practitioner?” Working in the built environment, we see people living in those spaces, through their day-to-day experience and deep connection to place, as containing profound and multiple understandings of social dynamics, environmental adaptations and so forth. The traditional conception of ‘expert’ is thus questioned, recognising the great value of local, context-specific knowledge embedded in communities where one is engaged, while at the same time being aware of hidden power dynamics and the complexity of social relations.

Schön’s (1983) reflective practitioner approach, forming the base of BUDD, thus directly challenges and uproots rigid technical rationality focusing on ends that are so often ingrained in professional education, especially in traditional architectural training. Technical-rationality is a positivist epistemology of practice, “the dominant paradigm which has failed to resolve the dilemma of rigour versus relevance confronting professionals” (Usher et. al. 1997, p.143). As Schön (1983, p.40) notes, in real-world practice problems are not presented to the practitioner as givens but rather must be constructed from the materials of problem situations “which are puzzling, troubling and uncertain.”

In moving away from technical rationality, the reflective practitioner focuses on ‘reflection-in-action’ – or thinking on one’s feet – and ‘reflection-on-action’ afterwards. The first refers to an exploration of our experiences, connect-

ing with our feelings, and exploring how concepts or approaches we may have encountered in theory unfold in reality. It involves constructing new understandings that inform our actions in the situation where we currently find ourselves, towards developing further responses and moves. The practitioner “carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation.” (Schön 1983: 68)

This process of thinking on our feet is deeply connected with reflection-on-action, done after the encounter. In BUDD this is done through the individual portfolio processing and analysing studio work over many months in London and the collective building/dwelling experience at the CAT-Machenllyth, Wales. During the field course students have a (b)log book and space is continuously made for collective debriefings on important meetings or events, to share analysis, learning, to build a cohesive understanding of issues and to develop further sets of questions about our actions and practice. By using multiple lenses – our own experience, those of our colleagues and that of theoretical, philosophical and research literature – we strive to become aware of the submerged and unacknowledged power dynamics throughout practice settings and of our own assumptions (Brookfield, 1998: 197). The act of reflecting-on-action enables a consideration of why we acted as we did, how effective our engagement was and how we can be more strategic in the future.

Building Dimensions

William Hunter

As obvious as it may appear, the 'B' in BUDD stands for "Building", an inherited dimension of the course identity. This dimension of building has manifested itself concretely in the form of workshops at the Center for Alternative Technology in Machenllyth, a successful aspect of the practice module for the past four years. While these hands-on construction projects have achieved a level of success and worth complementary to the ethos of the DPU, it is imperative to stress the conceptual meaning that "building" entails for BUDD. This meaning perhaps stems from what Heidegger explored in *Building Dwelling Thinking*, where building's discovery requires "long experience and incessant practice".

Thinking, as Heidegger puts it, is a way of dwelling. And dwelling is in turn a kind of building. To build well we must first acquire the grace to be at home in our region, to live into it, one could say. Both building and dwelling imply this strict thinking that remembers and responds to the call presented to it. Pursuit of the simple in the craft of thinking therefore needs long experience and much practice in living and building properly. Patience is a key virtue.

In reference to Martin Heidegger, Kirsten Harries offered in his work entitled *The Ethical Function of Architecture* that 'Our experience of buildings is inseparably tied to the experience we have of ourselves, of our bodies, just as our experience of our bodies is affected by the spaces we inhabit' (1997, p. 215). Thus, building in this sense is tied to experiencing ourselves and our bodies in a specific space. In that respect the CAT-Machenllyth experience has fitted perfectly with this individual and group experience in a remote open building site that is able to stimulate individual and reflexive perceptions of us in the space. Whether or not students and staff inscribe themselves onto environments such as this, these environments respond by inscribing themselves onto the students that dwell within them making the experience of building a proto-experience and a process of transcription- what Heidegger called dwelling.

The central challenge in Heidegger's work in relation to learning is that educators and architects must first understand what it means for humans to dwell before they can understand what and how they should build. To dwell is not a task. By contrast, dwelling is a reflection of one's being. This difference could be seen in a comparison between two different requests to which BUDD students are subjected in the workshop. First, they are requested to get

organized and map the area and the available resources. Second, through a process of design and construction, they are requested to find a sense of dwelling within their particular built form, being an arch, a roof or a wall. While the first request is logically plausible and relates to direct activities through which a sense of dwelling can come about in a productive/design manner, the second request is one that comes by virtue of the indirect interaction that students share with their classroom and with the larger learning environment of CAT-Machenllyth.

Heidegger asserted that 'To dwell, to be set at peace, means to remain at peace within the free, the preserve, the free preserve that safeguards each thing in its nature' (Heidegger, 1971/1975, p. 149). Students identify with the preservation of peace when they find themselves in learning environments where they are encouraged to interact with what it means to have an authentic understanding of themselves as individual, as group and as professionals. Such an action lays bare the essential connections of materials, objects and our belonging to their space.

As building relates to housing, Kemeny (1992) argued that housing is a central – if not fundamental – dimension of social structure. Following this, BUDD propagates the importance of housing to society, moving away from "bricks and mortar" definitions towards a broader social and economic dimension of building space. The socio-spatial relationship centred on housing can best be described in terms of "residence" which encompasses both internal dwelling and external locality factors. The social dimension of "residence" represents a sort of conceptual moving from households to social structure, while the physical dimension represents a conceptual moving from dwelling to the aggregate level of locality. This conceptual shift is played out in situ during the CAT-Machenllyth workshop and is considered fundamental for BUDD, prompting the understanding of building and housing specifically as nodes located within networks of social relations and at the centre of a dynamic interplay with surrounding places.

Student voices

Federico Gori Italy
MSc BUDD 2009/10

Wales workshop learning from materials

The Centre for Alternative Technology is an experimental campus, halfway between an interactive museum and an autonomous community. Its stark environment - close to woods, water and prime materials sources - and its energetic self-sufficiency provides to students and practitioners visiting in a basis on which to test traditional and new technological building solutions.

The workshop tailored for the MSc BUDD sees the student involved in a 3-days full-time immersion of simple structures construction, carried on with the few materials available (timber, willow, slate and earth) and avoiding the use of electrical tools. Its purpose is to simulate an environment scarce in building resources, to stimulate the explorations of wide-ranging solutions. Once decided for a particular building strategy in the early brainstorming, participants are thus fostered to learn from the material chosen while investigating its basic characteristics, keeping in mind the possibility of further materials' recycling. Working sessions are alternated by reflective ones, enriched in the evening by discussion on building and architecture with Maurice Mitchell which take place in the lodge.

The Wales Workshop is peculiar in its character. Unlike the other real case scenario that the BUDD curriculum offers - a simulated negotiation on a real worldwide case, a London-based exercise and the Overseas field-trip - it seems a bit estranged for its undisclosed connection to the studio. Immerse in a heavy theoretical term, however, it represents, with its pragmatic character, an experience and hides interesting aspects beyond the exercise itself. Being the MSc BUDD a multidisciplinary programme, the technical exercise is a useful yardstick for those who come from a different background. Like the practical studio in the first term, it is also a tool for building relations among the participants, to strengthen the groups and consolidate organisation and co-operation among the participants.

The Wales Workshop final aim is to set in the participants a sensibility towards the value of local cultural building traditions, highly fundamental for reaching sustainable developments, while giving them an experience comparable to what they could find working in poor areas, especially in developing countries.



Gynna Farith Millan Franco Colombia
MSc BUDD 2008-2010

Going to Wales to the CAT was an unforgettable personal and collective experience and to write about it makes it necessary to frame the intense academic pressure all of us were experiencing by the time we had to depart. What in a moment seemed an inopportune trip, after few days became a truly skillful adventure.

The magnificent place in which the CAT is located was a personal encounter of the memories of my hometown in Colombia with a new rural landscape within a developed country. The self-sufficiency cycle in which the place is maintained made me reflect on the thousands of little sustainable solutions that can be given to daily requirements when making free use of creativity. The place itself was a big lesson of living in balance with nature.

The process in which the building workshop was developed was not different to the one I am sure any community under rapidly changing conditions has to go through when adapting to a new environment. Understanding the resources we had around us to turn our ideas into physical products was indeed a deep reflection on the goodness of the materials and the needs of our desires. What at the beginning gave the impression of being an easy task to perform, ended up being a real technical and practical challenge. Like this, during 4 days in the CAT we moved from dreaming and imagining to proposing and concerting.

The building workshop converted in a thoughtful expression of what adaptation could mean depending on the context. It was in my case a reflection on the thousands of daily internal displacements that my home country faces as result of the violence provoked by the armed conflict. The constant need for temporary and permanent shelter triggers the affected and impoverished to make use of the few resources around to cope with their needs. Many of these solutions are real lessons of expertise and creativity to endure the difficulties. Adaptation in this case would be the capacity to deal with social struggle and to cover the basic needs for living.

The visit to the CAT was one of the best “learn by doing” exercises developed in the course of the Master. It was not only an unique opportunity to combine our different background experience with the new developmental perspective given in the Master but it was the perfect soil to become more conscious of the richness of resources that are present in the environment and allow its transformation in balance with the cycles of nature. When we came back to London, the still existing academic pressures were dispelled by calmness experienced in the countryside.



Krista Canellakis USA
MSc BUDD 2009/10

A process of (un)designing (space) (time)

Although the end goal of the workshop was to have contribute a physical/built form to an existing space, the process was more about undesigning than designing. Although an intended outcome for the function of what we were building was important, the form was not expected and it was encouraged to set very few expectations about what it would look like. Time management was important so that work was progressing towards an end but there was no precise idea of what that end meant... this is "loose fit".

A process of learning (materials) (skills) (techniques) (from mistakes)

With the material as our starting point, the basis for our plans and ideas, we set out to explore what was possible. The learning curve of our endeavor was steep and thrilling. What at first took us a full day to conceptualize, design and construct –with failures and eye opening moments of realization about our material’s capabilities– later took mere hours. Understanding our individual skills and putting them to work in a production line transformed us into efficiently working machines. Recognizing our capacity to learn, adapt and develop creative solutions showed us the humanity of what building "loose fit" can be.

A process of adapting (designs) (thinking) (inputs) (materials)

A flexibility to adapt to the constraints and abilities of the material is at the core of this experience. Change was constant throughout the process. Although, I was at first weary of not knowing what the end result of our efforts would look like, I realized in the process that flexibility was empowering as it enabled a more efficient, conscious and intentional use of materials. In a development context, all new building materials will require a learning process for those using and designing a built form so by removing embedded assumptions of "expertise" and being open to alternative materials and responses, finding abundance in scarcity is possible.

A process of enjoying (each other) (tea breaks) (meals) (campfires)

Stepping away from the halls of the DPU to spend time outside, working with our hands together on new problems, sharing new skills and knowledge outside of the classroom and generally relaxing and enjoying ourselves helped to bring the class together was invaluable. This was the early formation of one large BUDD team that would work as a whole unit again and again.



Marisol García Chile
MSc BUDD 2009/10

The task, the take and the take out

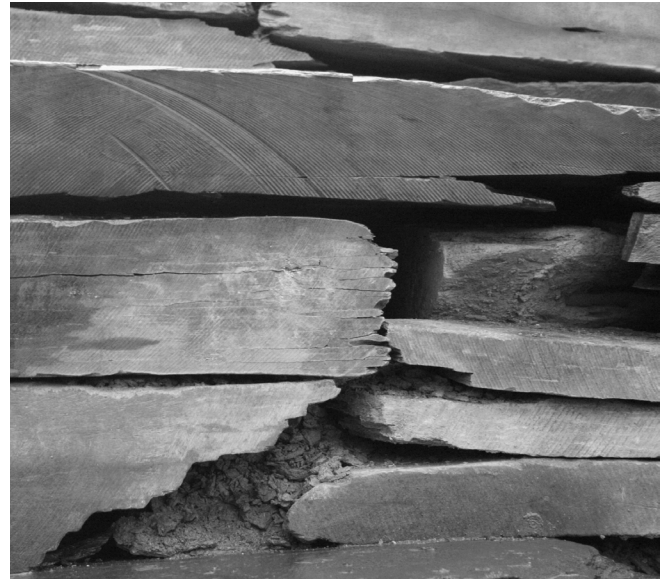
Building up something with what is available locally. The soil in all its forms; from clay, to bricks, blocks, gravel and stone. The poles in its different sizes and thickness. Choose just one single material. Without any specific client, programme, site location, problem or need, but by using the material and its intrinsic properties, design and build. When building re-design. The material rules. Grabbing just one seems restrictive as every built form is usually produced by combinations, but acknowledges the fact of their different behaviors and characteristics.

The take, was to use the bending properties of the ash-poles to self-structure the design as to build an immediate spatial result. The planned idea of our small group was to build a dome. While proceeding, practice drives the process. Decisions were not completely taken in advance, but instead, the design process was open and evolves during the process.

The concept of adaptation becomes explicit and relevant for overcoming the constraints and limitations after repetitive and seemingly different failures in the building process (eg. breaking poles by exceeding their possible bending curves or by threatening brittle or green wood indistinctively, dismissing the unevenly bending properties of the poles due to the variable thickness on its own length, tying knots ineffectively, etc). By doing so, we acknowledge that the final results are not necessarily the only way of building that building process can be dissociated from building form. The same adaptation of the design itself was latterly applied when assembling the different structures of each small group into a final whole. Intermediate materials fill the missing gaps. The informal way of building is not a process of perfect matching but one of addition, adaptability, flexibility and evolving design.

The Wales Workshop was an academic exercise developed outside academia; as a hand-on-building exercise. Though seems aisle in the middle of term papers and readings, it had strong connections with concepts we were struggling with during the course as for instance with the role of the practitioner in an informal context. Scarcity rules in any poor informal setting. The challenge in those contexts is to maximize resources in the process of building.

The practitioner may help to encounter solutions with people when obstacles are found mediating between diverse resistances and creating awareness of local communities about their knowledge. Urban design is a transformative tool that might be flexible to adapt to the changes and to the local needs instead of being prescriptive.



Andrew Wade USA
MSc BUDD 2008/09

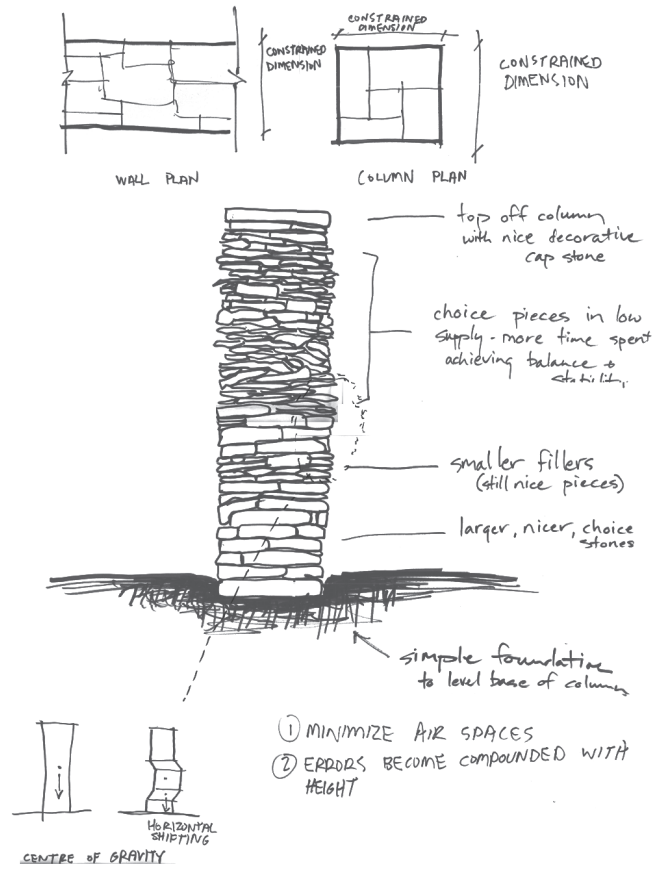
"History has drawn fault lines dividing practice and theory, technique and expression, craftsman and artist, maker and user; modern society suffers from this historical inheritance. But the past life of craft and craftsmen also suggests ways of using tools, organizing bodily movements, thinking about materials that remain alternative, viable proposals about how to conduct life with skill"

- Richard Sennett, *The Craftsman*

The Building & Construction Workshop at the Centre for Alternative Technology developed the skills necessary for the progressive transformation of data into information, information into knowledge, and knowledge into critical action and reflective practice. Its essential nature as a field exercise in which decision-making, designing and building took place on site catalysed a learning process exclusive to the lived experience of strategy, trial, error, and revision.

The workshop also encouraged the effective recognition and appropriate utilisation of embedded local knowledge with an understanding that implemented design solutions emerge from a strategic hybrid of global practice and local methods. In the process of the workshop, the traditional divisions of mind and body, designing and building, universal and local were set on a collision course that forced their harmonic resolution in a successful experience. Within this creative tension emerged an understanding that polar opposite ends of "building" as an experience meet on site, and it is the development practitioner's aim to carefully negotiate this meeting. In this sense the true nature of craftsmanship, as Richard Sennett describes it, allowed an alternative approach to thinking and building with the available materials.

The exercise positioned one's role in fieldwork as the guardian of an iterative process, using precedents and previously gained momentum to design an intervention building upon the successes of the past while planning for future expansion and independence. This required a conscious and continuous critique of the process to ensure that a coherent rational thread justified every established priority and course of action. As such, the multiple restrictions of the workshop (in time, materials, labour, etc.) served as a microcosm of the wider experience of building in a developing context. Working with limited information and dealing with emerging barriers and frustrations served as a learning platform for more expansive and complex scenarios in the field. The experience strengthened our professional resilience and adaptability, and therefore our capacities to deal with the issues of time constraint, construction technique, intra-team negotiation and problem resolution as they arose.



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