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Live Projects as Research

Tools of Practice Research in Making Architecture

Hands-off or hands-on? Do architects 'design' buildings or do they 'make' them? This paper addresses the role of the architect as a maker, someone who has a foot in many camps in order to bring together and realise an intention in response to a setting. In a field where professional practice tends to take precedence over research, what is architectural research? How do we define it? Using examples from live projects carried out by students and researchers, this paper explores the different roles and tools adopted in three specific concrete settings: Navi Mumbai, Freetown and Agra.

Mainstream architectural design works in a hands-off way. However architectural making is definitely hands-on. To the extent that architecture is about making rather than planning, a hands-off approach is untenable. It is impossible to produce good architecture without being involved with the setting because making is a creative act using the resources, both physical and cultural, available within that setting. In the practice of architectural making, researchers need to develop a discourse around a topic and take action, after due deliberation, in an ethical way. Research is a part of this process. This paper identifies the varied roles architects have played in each of the three live projects and explores the implications for the architecture profession and in academia.

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1. Introduction

Hands off or hands on? Do architects 'design' buildings or do they 'make' them? This paper addresses the role of the maker/architect as someone who has a foot in many camps trying to articulate and then realize an intention, tuned by iterative response, so as to fit snugly within a setting; the architect as a polymath – a master of many trades (Twigger 2013).

Architect-makers need to communicate with both the gentleman in his drawing room, as represented in the Honeywood File (Creswell 1929/2000), and the labourer at the bottom of a trench on site. In our live making projects, students often have to negotiate with ministers and global organisations as well as small NGOs, and to the men, women and children in poor communities, involving them all in the process of making. In this process, the development of a range of roles and a spectrum of relationships are required, and certain sets of rules and decorum need to be observed.

In a field where professional practice tends to take precedence over research, what is architectural research? How do we define it? Small live projects embodied in very particular settings can act as research tools to help define a topic from the forensic study of the physical fabric and culture of the place and, by a process of reflective making, generate insights at a range of scales from the street to the city.

This paper explores the roles of detective and maker which architecture students and researchers at the Cass School of Architecture have adopted in carrying out live projects for transitional settlements in three specific concrete settings: Navi Mumbai and Agra in India, and Freetown in Sierra Leone.
Located in social, ethical situations in impoverished communities in rapidly changing urban contexts with only scarce physical resources, our live projects have sought to engage people in making, not only to produce schools buildings and sanitary installations but also to support the capacity of residents to engage with the civic realm, so as to be able to access the wider opportunities available within the metabolism of the city. This relationship is one where a community can provide a rich setting for study, and in exchange, they broaden and deepen their engagement with the opportunities offered by the city.

The informal city settlements within which these examples are set provided rich learning environments for both researchers and residents, where the making projects themselves became a shared ground for skills exchange and the negotiation of difference. The role of detective enabled students to engage, survey, sense and react to the setting. The role of maker proceeded by testing a first intention which had emerged from the detective work and by a process of trial and error, fine tuning this intention to fit the setting.

In combination with developing an understanding of the physical fabric, landscape and infrastructure, working with the metaphor of a detective, the architect can uncover social, political and cultural patterns and reveal matters of concern to the residents. By fabricating a dynamic dialogue, ideas can be represented as they occur and accommodated to actualities on the ground. Since the situations studied are profoundly unfamiliar to the students, we are obliged to work from very first principles. In this environment, students need to have tools for inquiry, tools which allow them to gain familiarity with their surroundings. The type of equipment required is that which can measure both the physical topography (such as a tape measure or Google Earth) and methods to interrogate and record the cultural, economic and political, which is more difficult. Under this second heading, 'cultural exercises' are developed which facilitate access into the communities that are being studied and make it possible to represent reflections and insights gained during that exchange.

The intention is not to collect, at a distance, a

pocket cultural map, which would be a reductive exercise, but rather to allow the students to use their five senses and their psychological antennae to capture and frame issues which are meaningful to the inhabitants (and perhaps strike a chord with more global issues of interest to the student). In order to avoid the negative exploitative possibilities implicit in this process, the ethics of research practice need to be employed. This includes ensuring that engagement in identifying and representing topics for inclusion in negotiating, constructing and representing an appropriate discourse is widespread and open to all (McFarlane 2011).

Having established a representative discourse arising from forensic research, the architectural detective's second task is to 'make a case' to and with those involved. However making a case is usually just a preliminary declaration of intent prior to crafting a response by a process of trial and error. We try as much as possible to get students and willing residents working with their hands on small live projects. We emphasize small, because larger projects have an internal momentum of their own which tends to overwhelm context, making it much more difficult to sustain a dialogue between learning and making, residents and situation.

Learning by doing is a heuristic process of explicit intention followed by contextual resistance requiring, in turn, an accommodation of intent. This iterative process is a way of engaging residents with the physical and cultural context through the process of making, letting it push back in a gentle way, allowing the architect and community to produce schemes which fit. When carried out explicitly in real time and reflected upon after each iteration this is the methodology of research by making (Mitchell 2010).

2. Making a Case: Quarry Classrooms, Navi Mumbai

Invited by a local Indian NGO to help construct a camp treating common eye diseases in the stone quarry settlements of Navi Mumbai, students found when they arrived that such diseases had been

successfully treated during the previous year and that a different problem was much more pressing. The residents were urban migrants squatting on mined land. The lack of a permanent registered address prevented their children from gaining access to education. The NGO, Association for Rural People's Health and Educational Needs (ARPHEN), proposed a programme in which they taught the children for a year through 'bridge classes' leading to basic educational certification. In exchange, the government agreed to accept these children into state education. Working with ARPHEN, student architect detectives identified suitable locations for community classrooms, made a case to the quarry owners for them to release land for building, marshaled local resources and started to build bridge classrooms with the community.

The first classroom was embedded within Baban Seth quarry settlement. There was a backdrop of cliffs at the edges of the quarries where blasting was going on. Sometimes stray stones landed on the roofs from the explosions. In the dry season residents developed eye diseases from the all-pervasive stone dust and in the monsoon, the place flooded. So what sort of building was appropriate here?

Students and the Baban Seth community produced a very simple building out of local but not nostalgic materials. Children helped clear the site and found and fetched water for construction. The quarry owner donated stone. The building form was based on the idea of a traditional community platform but with low brick walls, steel structure, grilles and reinforced corrugated plastic roofing added. These materials were accessible, affordable and the skills existed to use them adequately. Local masons were familiar with the idea of a community platform and construction proceeded without a formal set of drawings. The steel framed roof came next and security grilles, shading and monsoon proofing came the following year. (Fig. 1).

The building fits easily and loosely within the surrounding settlement morphology. The classroom also had a recognisable formal coherence, a new form of amenity building with spans longer than the domestic but nevertheless

fitting well amongst the collection of buildings making up the quarry settlement. This classroom was built next to a small temple and in the end had a spatial relationship with it. Temple and school were painted the same color as people took ownership of the building and it became embedded within the fabric of the community. (Fig. 2).

The proposal doesn't fight the existing urban grain, it doesn't try to compete with it. Whilst being modest in its construction students tried to craft their building more carefully than the adjacent buildings. Despite wanting to improve things there's pride in the existing way of building. People can see and recognize the improvements and consider whether to absorb them into their own way of making a place to live.

City Making:

The making of a building is integrated with and very much a part of the design process. Proposals are crafted by capturing, framing and harnessing ideas from precedent, and by a dogged process of trial and error, balancing resistances in the worked materials with appropriate accommodations in methods and ambitions. Each of the interventions: platform, roof, screens, paths were built at different times, fit loosely together and have their own name and recognisable internal coherence. They also fit loosely with elements constructed before and afterwards. They were inspired by precedent and have in their turn acted as precedent for classrooms elsewhere. The project provides an example of a fluent making trajectory which for very little financial cost has up-scaled from making a building to making a contribution to, and an exchange with, the changing topography of the city.

We found that many differences of opinion were resolved by doing demanding things together. In this way a method of working was generated which did not just produce a classroom but also contributed to community cohesion. Not long after the classroom was in operation and connected visually with the temple shrine, residents started to make their buildings more permanent by replacing tin and tarpaulin walls with brickwork. The local

Corporator (the local authority representative) arranged for street lighting, water taps and paved streets and drainage infrastructure in the settlement.

Baban Seth is one of many temporary mining settlements along the Navi Mumbai ridge. Only a few have survived the inevitable working out of the nearby quarries. As the mining moves eastwards, the settlements usually up sticks and move nearer the new work site. But now Baban Seth has a school and the residents have confidence in its survival it is much more likely that the settlement will survive and prosper as a permanent suburb of Mumbai. By fitting a school within the dynamic landscape the student researchers have consolidated a part of the city.

3. Making a Case: Meera's Toilet, Agra

In Kachhpura, an urban village on the edge of Agra, student architect detectives worked with the Centre for Urban and Regional Excellence (CURE), a local NGO. In the process of increasing visibility by mapping the settlement, interviewing residents and compiling detailed ergonomic drawings of inhabitation, one particular story - Meera's toilet (Tang 2014) emerged which took precedence over all others.

Kachhpura's residents do not have internal toilets and women used the surrounding fields to defecate, mostly in the evenings. This procedure became dangerous and unpleasant as the city expanded, encroaching on village land and making privacy in the open more and more difficult to find. One local woman, Meera, was frustrated at the situation, which included harassment by men and often led to health issues such as kidney problems, restricting the number of trips women would make to the bush.

With a view to generating alternatives to open defecation, students built up a case for toilets in the back yards of houses. However, at first, most residents did not want to have toilets inside their houses, stating that they were 'dirty'. Meera was the first to request the installation of a toilet and

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1. Making research through building a classroom,
Navi Mumbai, 2010 (Source: Bo Tang)

septic tank in her back yard. Students raised a small amount of money, about half that required, which eventually developed into a revolving community credit fund, administered by CURE. Meera really was the pioneer, the test case, because she took a cultural leap in the dark. Now over 200 village houses have internal toilets installed whilst 200 more are on the waiting list. The municipal authority has pledged to provide subsidized funds for these remaining toilets. (Fig. 3).

Soon, all the householders in Meera's street had toilets and septic tanks installed, and it was renamed 'Clean Street' by local residents. Once more children were the key to cultural acceptance. Students and NGO went into the village school and started talking about the alternative hygiene arrangements necessary when you have a toilet in your house. As a result children policed their own parents in this new sanitary regime making sure that this cultural change worked properly.

Still working live in Kachhpura, student architect detectives took one further step, in consultation with the village Panchayat (council) and in partnership with CURE. They installed a hundred metre long series of septic tanks alongside the main open drain with the last couple of tanks being filled with plants. This Decentralized Wastewater Treatment System (DEWATS) takes dirty water from the main drain and produces water clean enough for irrigation, building work and flushing toilets. Fitting this long linear system within the village required a difficult process of negotiation with individual householders which would not have been possible without the manifest success of Meera's Clean Street. It transformed the surroundings to such an extent that the area around the outlet of DEWATS is now used regularly for wedding ceremonies. (Fig. 4).

City Making:

In 2012 the city authorities declared Kachhpura the first open defecation-free slum in Agra and as a result are investigating the whole network of flood plains and open drains which serve the city's slums, to see if the project can be replicated elsewhere. They are considering the need for clean water and sanitation for the hundreds of registered slums which lie alongside these drainage canals and asking for copies of the student schemes to inform them of the possibilities. In Navi Mumbai politicians have arranged for surface water drains to be installed to protect the community classrooms from flooding, giving legitimacy to these interventions and promoting them as a way forward in establishing such mining communities.

4. Making a Case: Rita's School, Freetown

Research in the peri-urban settlement, Kaningo, a poor settlement on the edge of Freetown, Sierra Leone of Freetown, whose population was made up of civil war refugees, was sparked in 2008 by Rita's request for help to establish a primary school. This led to a collaborative partnership which opened doors to a stimulating academic learning environment. The research process was designed to test resistances and make accommodations to locally encountered realities. Insights and new knowledge emerged as the work progressed.

Architect/detectives first investigated the local physical and cultural topography around the school site sufficient to ensure an appropriate fit for proposals. This was effected through negotiation, institution formation and the assembly of practical capabilities built into the research process. In 2009, a local NGO, CESO, was registered. The first two field trips (2009-2010) reviewed the physical, cultural, social and economic conditions in Kaningo and its surroundings. In 2010 researchers investigated local technologies, trade practices and material availability in order to assess available construction techniques. This involved conducting interviews and documenting observations and construction processes through sketches and photographs. In addition a hands-on workshop experimented on-site with making cementitious walling blocks and ventilation grilles. This work was compiled into a construction manual. (Fig. 5).

By September 2011, the modest school building was completed. Whilst the school operated ever since (except for the period of Ebola outbreak where it was used as an information resource
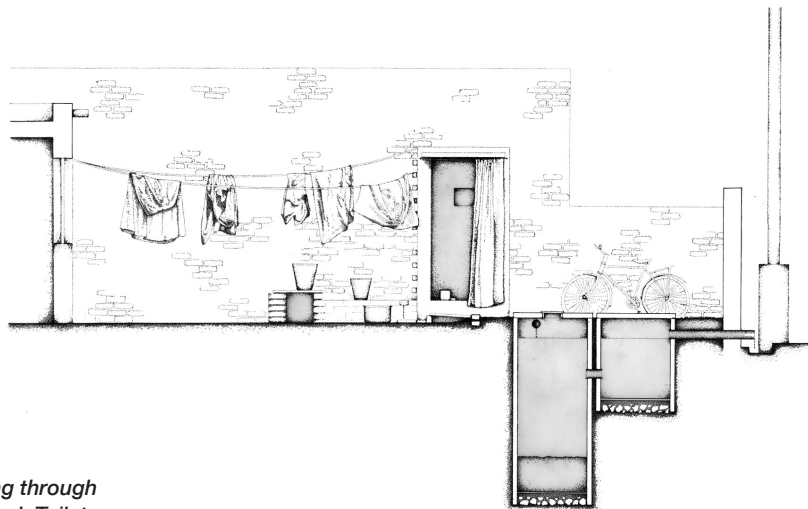
2. View over Baban Seth stone quarry settlement showing the construction of the community classroom, Navi Mumbai, 2009 (Source: Shamoon Patwari).

4. Wedding tent erected at
the outlet from the DEWATS,
Kachhpura, Agra, 2012.
(Source: Bo Tang).

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3. Section drawing through
Meera's Septic Tank Toilet
System, Kachhpura, Agra,
2008. (Source: Bo Tang).

centre), research and capability building has continued. Incremental upgrading of roof, floors and finishes was carried out in summer 2012. In July 2013, students and local carpenters worked together to design and construct timber benches and desks for two classrooms during the school holidays.

City Making:

The research in Kaningo made explicit the deep social problems encountered by poor Freetown residents. These included a sense of isolation from, and a lack of confidence in, democratic engagement with the city.

As a result of this civic disconnect a second phase of research aimed to raise awareness of the architectural history, culture, and potential of places such as early 21st century Kaningo, alongside those of early 19th century Krio Downtown, home to a distinct family of timber board houses, and early 20th century colonial Hill Station made up of timber box houses, prefabricated in Europe. These places were built at different times and under different conditions but are nevertheless spatially adjacent and all part of the rich architectural culture of Freetown.

Since 2011 ARCSR students and researchers have been carrying out measured surveys of houses in three Freetown neighbourhoods (Mitchell 2013). They have also assembled data from the literature and recorded oral histories in order to facilitate a comparison between them. Partnering with CESO and the residents of Kaningo over a relatively long period has allowed time for negotiations for students to facilitate practice in challenging circumstances. Ethical practice and research have been combined to generate tools and skills whilst training emerging researchers and practitioners to co-produce outputs.

Having explored the urban landscape in this way, researchers investigated ways to give a sense of identity to the growing populations of newer neighborhoods where the greatest social change is currently taking place. Exhibitions of the research and talks and seminars sponsored by the British Council in both Freetown and London have helped by generating a wide response from the Krio diaspora, the Government of Sierra Leone, students, professionals and the press. More importantly, they have enabled the residents involved to witness representations of their neighborhood included as a valuable contribution to city culture laying down the basis for a sense of shared spatial identity.

(Fig. 6).

Involvement with a live project to build a modest primary school provided a dynamic learning context within which students were able to gain first hand an understanding of the local physical and cultural topography. Students went on to represent the future potential of the peri-urban place within which the school was situated, and in combination with two other survey areas were introduced to two live conversations at city level which have seeded projects to design both a new school of architecture and a national museum. In April 2014, London Metropolitan University signed an agreement with the University of Sierra Leone and the Sierra Leone Institute of Architects to collaborate in founding Sierra Leone's first School of Architecture. The new school will use ARCSR's research into Freetown's historic neighbourhoods as the basis of its history curriculum, and it will use the building methods and attitude to sustainable design pioneered by ARCSR as the basis of its design curriculum. This new initiative grew directly out of the making research.

5. Conclusions

Working within impoverished communities in rapidly changing contexts, our live projects have sought to engage residents in transforming their domestic, neighbourhood and, by extension, their city topography. This involved three communities providing access for our students to rich urban settings and, in exchange, gaining capabilities and learning ways of working which facilitated their access to broader city opportunities. The implications for the architecture profession of working in this way are much broader than those addressed in these three settings, and have resonance for architects working ethically within transitional settlements worldwide.

Whilst mainstream architectural practice and planning is increasingly carried out remote from the site, to the extent that architecture is about making rather than planning, such a hands-off approach, is untenable. For the architect maker, working through representation and performance (Pickering 1995), the key to producing good architecture is to become embedded within the setting where the usually meagre physical and cultural resources available are assembled into an entity which is greater than the sum of its parts.

Making practitioners first need to develop a discourse around a topic defined as a result of forensic physical and cultural surveys. Through a process of shared deliberation and testing fit through a process of trial and error, creative action can be ethically validated. Research is part of this process. Consequently, the freedom in academia to work on live projects for those with the greatest need has enabled the reinterpretation of live projects as research tools whilst, at the same time, requiring architect makers to adopt a broader role.

Involvement in live projects brings together the three strands of teaching, research and practice in architecture. Research by making is appropriate because it changes lives and adds value within an ethical framework extending beyond conventional research practice to include the associated environmental, social and cultural costs. This promulgates a way of thinking and practicing which by accommodating strife and minimizing side effects and hidden costs, can become strategic. Thus this 'bottom up' research provides insights which can be effectively scaled up to contribute to city culture and policy.

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5. Making cement ventilation blocks; blocks used in the classroom building, Kaningo, Sierra Leone, 2010, 2011. (Sources: Amanda Rashid, Bo Tang).

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6. Exhibition put together by students, held at the British Council Headquarters in Freetown, Sierra Leone, 2013. (Source: Dominic Dudley).

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