

and Christianity. The figures presented in this article are a brief selection of the visual research methodology employed by the project to analyse the urban situation of the Gate area. The spatial study offers a snapshot of the myriad activities taking place at the gate on a particular Friday morning (Fig. 2). More than merely illustrative these visual research methods contribute to a process of documentation and enquiry; they are both communicative and analytical, revealing patterns of everyday dynamics in the city, often ignored not only by policy-makers and planners but also scholars studying the city.

What emerges from the spatial analysis of Damascus Gate is that Jerusalem's Old City enjoys a multitude of connections (social and economic amongst others) with the wider urban area. This is despite the fact that Jerusalem suffers from an increasingly harsh occupation with segregationist policies that have intentionally limited Palestinian mobility. Planners, policymakers, and architects have tended to represent the Old City as a self-contained religious area essentially segregated from its wider urban functions and areas of the 'mundane' city. What the visual analysis reveals is precisely the contrary, namely the manifestation of a vibrant Palestinian commercial landscape that on the whole can resist the potentially deadening effect of the incongruous urban design interventions the site has been subject to since the British Mandate, culminating in the western-centrist amphitheatre built by the Israelis after 1967. These spatial studies also reflect the changing nature of the city over time. As part of ongoing research the project has produced a wider body of such representations of Damascus Gate and other interface areas in the Old City. The drawings represented here demonstrate the capacity of urban spaces to harbour a variety of informal practices that make up a rich public space. At certain times this same area is used by some Israelis and Palestinians in what can only be called quotidian living: the market is still used by some Israelis at times of greater perceived safety and stability and on Friday evenings, religious Jews will pass through this area from the orthodox neighbourhoods in the West to reach the Western Wall in the Old City for prayer. Similar spatial studies representing the area when the city is experiencing civil unrest, show how the same spaces can easily be controlled by the Israeli police and military units, closing off the Old City in a highly confrontational period (Fig. 3). In making such visual analysis, the question of shared and contested space in a conflict situation may be reassessed and considered beyond the Lefebvrian social construct to one in which the built environment and spatial orientation act reciprocally with human events.

Many of today's peace proposals and political scenarios for the city argue for complete division of the city as well as the separation of urban functions. While there is no doubt that Palestinian Jerusalemites must be able to realise a full and just existence in the city under a leadership of their choice, as much as Israeli Jerusalemites require the security that they desire, the question of what constitutes a viable and even healthy city is one too often neglected by the negotiators. Too often everyday life is brushed aside and its interactions that are

rooted in rich urban settings are imperilled rather than aided by conventional planning policies. Understanding and respecting urban life in all of its diversity is a key challenge for Jerusalem, if the city is to recover possibilities of stability.

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1. 'Conflict in Cities' is funded by the UK Economic and Social Research Council (RES-060-25-0015). The authors wish to thank Lefkos Kyriacou, responsible for visual research on the project, for producing the graphics. Publications, information on the cities, as well as project news and events are available on: www.conflictincities.org.
2. Conflict in Cities: Architecture and Urban Order in Divided Jerusalem, 2003-4 and 2005-7; both supported by the ESRC. Further details on the project website, as noted above.
3. Available for download: www.chathamhouse.org.uk/publications/papers/view/-/id/835/.
4. Publication of the research findings is ongoing. For some examples of the work published in relation to Damascus Gate so far, see: Pullan, W. (2006) Locating the Civic in the Frontier: Damascus Gate. In M. Miessen and S. Basar (eds.), *Did Someone Say Participate? An Atlas of Spatial Practice*, MIT Press and Frankfurt: Revolver, Cambridge Mass and London, 109-22. Pullan, W., P. Misselwitz, R. Nasrallah and H. Yacobi (2007) Jerusalem's Road 1. *City 11*, 176-98.

6

Live projects and their role in studio teaching



Queuing for entry to the opening ceremony for the Tata Press

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Text by Toby Pear & Maurice Mitchell

Over the last three years a number of live projects have emerged from a process of engagement with Indian communities which have made a significant contribution to studio teaching at London Metropolitan University and to educational pedagogy. This paper compares this experience with other live project studios in the United States and Austria and discusses the potential for up-scaling the role of live projects in UK architectural education to prepare future practitioners to serve the architecturally neglected vast majority of the world's population.

Case studies

The Navi Mumbai Community Classrooms Project

In the summer of 2008 two students of the London Metropolitan University Faculty of Architecture and Spatial Design (ASD) carried out a survey of temporary worker settlements in the stone quarries of Navi Mumbai, India, on behalf of ARPHEN, a local NGO. ARPHEN had initiated a programme of bridge classes for young children to give them access to state primary education. ARPHEN trained the teachers, but they were in need of classrooms to serve their extensive programme dispersed over fifteen kilometres of linear quarry settlements.

The survey identified nine potential classroom sites. Bo Tang and Shamoan Patwari, of ASD's Project Office and funded by the Water Trust, constructed the first community classroom at Baban Seth Quarry in March 2009. In October and November of that year they built another classroom at the Tata Press Quarry with six fifth year students.



Opening Ceremony for the Tata Press Community Classroom, Navi Mumbai. Photo: Odel Jeffries

Despite the long distance relationships necessary between the NGO and ASD, the project has been a resounding success and there remain few children of primary school age in the stone quarries who are not yet being educated. ARPHEN regards the problem as solved and has moved on to tackle more pressing issues such as the spread of HIV/AIDS.

This collaboration of a London School of Architecture with an Indian NGO offered advantages for both parties. Students present a potentially eager and capable work force, effectively volunteering their efforts for the benefit of the community and the NGO, who would not otherwise be able to afford the skills of an architect. The students have a test bed: an opportunity to get stuck in and gain valuable building experience, practising and absorbing pragmatic skills that are often missing in studio bound activity. In addition, with relatively cheap material and labour costs, India offers an easier context than the UK in which to build quickly and without prohibitive cost.

But time was short and the cultural and physical context had to be understood and the building designed, approved by the community and constructed within just seven weeks. This need for speed focused the mind and limited the options. Students needed to absorb and adapt the ways of building practised locally: ways which had been found to respond to local climate and fit within the local neighbourhood settlement patterns.

Davis (2005) writes that:

healthy ... architecture ... has traditionally developed through common, culturally embedded knowledge of building, along with the political and economic ability to put that knowledge to use.

The classrooms however, with their low brick walls, steel structure, grilles and reinforced corrugated plastic roofing are not born of a deep seated local building tradition but of the skills and resources immediately available and everyday contemporary practice. The materials of construction and form of the building adhered to local norms. These materials were accessible, affordable and the skills existed to use them adequately. However, the classrooms also had a recognisable coherence lacking in most of the neighbouring structures. A new form of amenity building has begun to emerge with spans longer than the domestic but nevertheless fitting well amongst the collection of buildings making up the quarry communities. For the students, the importance of learning from local techniques first before adapting these techniques to a particular site was well understood.



Extended community space between Baban Seth Community Classroom and Hindu temple, Navi Mumbai. Photo: Bo Tang

Kutchhpura Settlement Upgrading Project

The success of the Navi Mumbai project was built off the template of a longer term relationship between ASD and another NGO, CURE, and in particular the project work they undertook together in Kutchhpura, Agra. In November 2006 students carried out fieldwork in Agra on which they based their whole year's portfolio design work. As a result more accurate maps of the village were generated and ideas about improvements to sanitation, livelihoods and education were developed in student schemes. The students gained enormous educational benefit from the opportunity to practise techniques of investigation (architect as detective), narrative exposition (architect as narrator) and hands on working (architect as craftsperson) from first principles during this project (Mitchell, 2010).

The whole academic year of focused effort resulted in a live project in the summer of 2007, when ASD students installed the first internal toilets to a street in the village. The scheme is currently being followed up with the installation of a decentralised waste water treatment plant (DEWATS) to clean the village effluent.

Architectural reach, funding and live projects

A pattern of engagement between Indian NGOs and some ASD studios is starting to emerge. Access to poor and marginal communities is facilitated by

local NGOs. Over a period of years, initiated by field work, which then forms the base to the design work of an academic year, a local development discourse is generated, encouraged and enriched by discussion. It is continuously referenced back to the host community and connected into global debates on change, resources, the green, humanitarian and development agendas and architecture. Brought to the attention of funders and other interested parties by publications, lectures and particularly the end of year show, this raised discourse then leads to live projects, further improving the quality and reach of architectural education at ASD. Polak (2009) remarks that:

The majority of the world's designers focus all their efforts on developing products and services for the richest 10% of the world's customers. Nothing less than a revolution in design is needed to reach the other 90%.

This statement is not specific to architects, but its sentiment seems particularly relevant to them. As architects we are concerned with the built environment and have the ability to influence practically every aspect of how people live their everyday lives. However, as pointed out by Architecture for Humanity (2006):

... all too often architects are desperately needed in the places where they can be least afforded.

To address this and to bring about the 'revolution' that Polak mentions, there needs to be a shift in priorities amongst our academic institutions to help ready more architectural students for practice where it really matters.

Live projects

ASD has made considerable progress in this regard but it is not alone. Live Project studios have run for a number of years in the United States and in Europe.

Design and Build Studios in deprived areas in the United States

Schools of Architecture in the United States have led the way in developing the idea of Design and Build studios founded on the belief that construction should be an integral part of design. Carpenter (1997) explains that whilst architecture schools are often criticised for turning out architects who are unable to deal with pragmatic issues, construction studios offer a way to learn in a very practical sense without sacrificing the quality of design. Design and Build studios also allow pragmatic insights, discovered during the course of making, to improve that design quality. These US studios have an emphasis on craft and making, encouraging students to realise a built project.

In addition, most construction studios in the US have either started out or have evolved into community outreach programmes concentrating on the more deprived sectors of society. All these studios have gained sufficient presence within their chosen communities to be assured of willing clients and potential projects year after year. Students are attracted by the opportunity to build for real and make a tangible contribution to the local community. These studios are extremely popular as a result. Badanes (1997) who runs a Design and Build studio at the University of Washington explains that by



Student constructing prefabricated septic tank, Kuchhpura, Agra. Photo: Bo Tang

working for clients who would not normally have access to architects, students are exposed to the notion that the whole of society is our real client, not just the small percentage who can afford the fees. This, of course, has echoes of Polak's 90% and finds common ground with these projects at ASD.

In the current economic recession, perhaps architects, now redundant, who are trained to be employed within the capital intensive sector of the building industry, should be looking elsewhere for meaningful employment: to Polak's 90% where there is a massive need for architectural skills. To do so, however, the curricula of architectural schools would need to be expanded.

It would need to include the pragmatic, craft-led skill-set needed for work in resource scarce, rapidly changing situations. Perhaps such an approach, one of hand to eye intelligence, might transform attitudes towards design quality and spatial understanding.

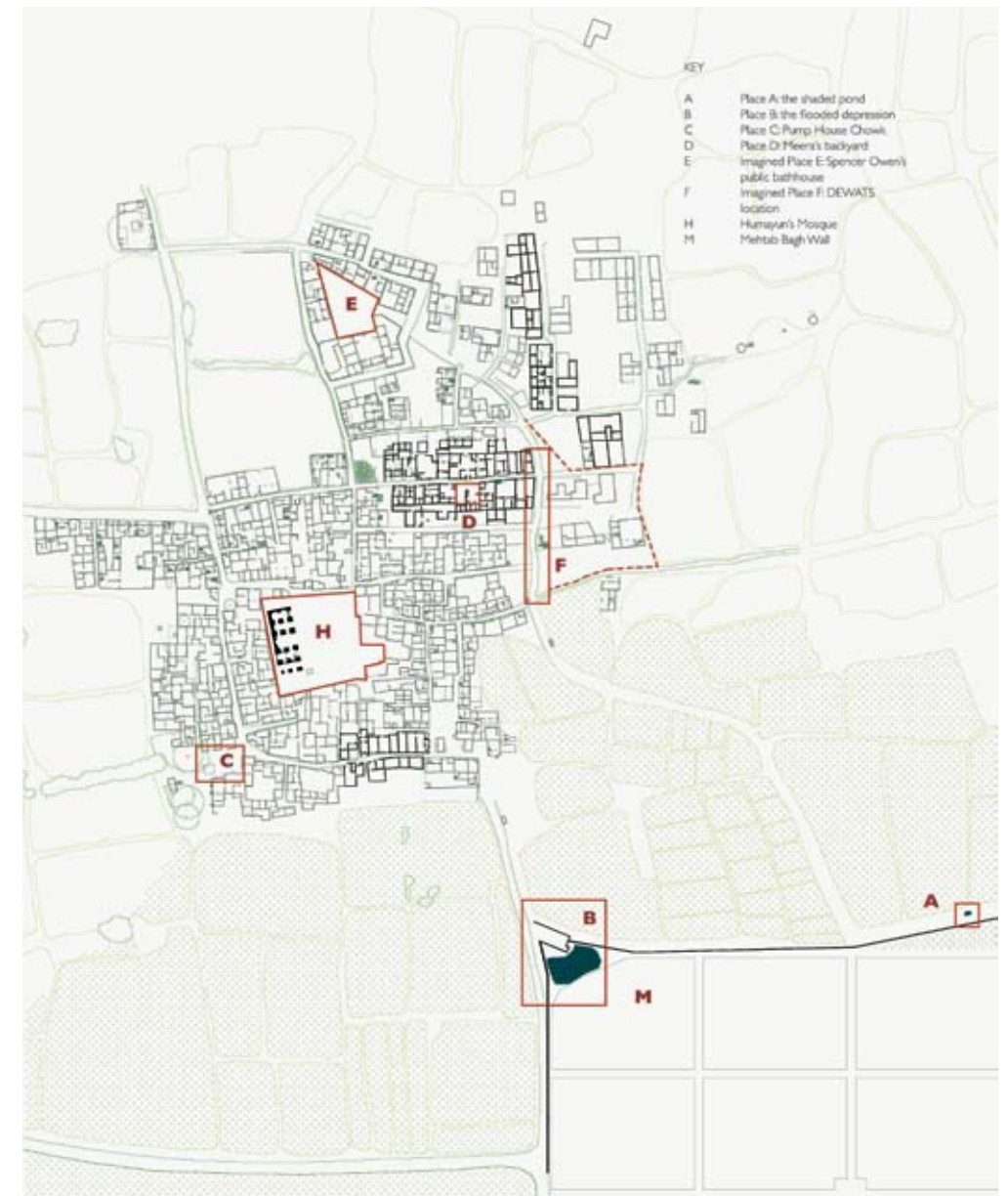
It would also need to have access to the skills necessary to raise funds by balancing self-help, mutual aid and volunteering with philanthropic donations. Whereas both local and global NGOs working within the humanitarian sector have experience and can show the way to facilitate and enable community involvement, it is to the United States that we must look to show us how to fund raise. Most notable examples here are those of The Building Project at Yale University and of the Rural Studio at Auburn University.

Both studios have shown how, by expanding work steadily in an impoverished area over a number of years, students have become involved in ground-breaking work that is life-changing for both clients and students. Such quality projects can result in a momentum of goodwill that generates funding. To disseminate their work both studios have produced internationally promoted monographs of their work and have exhibited worldwide. Their success and considerable exposure have naturally attracted sponsors, making fundraising easier and created greater potential for new projects. Yale's Building Project now has a long list of sponsors including Ikea, Dulux and Bosch. Rural Studio hosts scores of architectural tourists at Hale County and runs a multi-disciplinary outreach programme for non-architectural students to enable them to bring their skills to the studio's projects.

The experience of the Austrian BASEhabitat studio in Bangladesh

In their project for the Handmade School at Rudrapur, eight students from the BRAC University of Dhaka spent four months on site assisting with detailed design and construction and were joined by five students from BASEhabitat at the Kunstuniversitat Linz who flew out for one month of the build. By facilitating quality construction in traditional earth and bamboo the aim was to attach added value and pride to methods often viewed as inferior to the fired brick, concrete and steel that signify wealthier status. Herringer (2008) explains that:

The intention was to create an intercultural exchange with the expectation that the young architects will



Plan of Kuchhpura showing location of first street of internal toilets and new wastewater treatment plant (DEWATS). Studio Booklet 0607.

be able to carry their knowledge and skills to other regions of Bangladesh and the trained labour will be able to use their skills to build other modern mud houses in the region.

Collaboration with a local school of architecture has several clear advantages. Apart from meaningful cultural exchange between students, linguistic difficulties are reduced and there is exposure to different modes of study and practice in both directions. In practical terms European student involvement with the implementation of live projects is much simpler if a local school or architecture is a partner in the project. Local students are obviously able to spend much longer on site than European students and can provide much needed continuity for all phases of the project from initial survey through to construction and post-build assessments.

Curriculum

There are considerable difficulties in operating at some distance from the site location, especially if, as with these studios at ASD, a full range of students is involved from degree to diploma, MA and now PhD.; and especially if this involves integration with the requirements of local Schools of Architecture. Whilst all this integration of timetables and objectives is being arranged, it is also necessary to cast the net wide to find further appropriate projects and attract sufficient funding.

In such circumstances it is essential to have a curriculum which is flexible enough to take advantage of emerging project and funding opportunities and match these with current student energies and interests. At the same time they need to put the student through the hoops

required by their home university's examination process and professional validation.

The Austrian NGO S2ARCH provides just such a reliable source of funding and sources live projects with an unswerving social focus for seven European schools of architecture. To do this the NGO has a strong on-going relationship with townships around Johannesburg, South Africa. S2ARCH coordinates the schemes on site and offers additional design input throughout their progression. By working with several schools the NGO is able to complete a number of different building projects each year with each running to a fairly consistent academic programme and timescale.

Similarly the pre-condition for the success of the live project studios in the US is their well established and tailored course structure. The studios have bespoke curriculums that are moulded around the production of a community building. The project is not hemmed in by the need to complete other modules. Maximum time is given over to design development and on-site construction. All of the US schools have gained sufficient presence in their chosen communities to be assured of willing clients and potential projects year after year. Students are attracted by the opportunity to build and make a tangible contribution to a very local and scarcely resourced situation. These studios are, as a result, extremely popular.

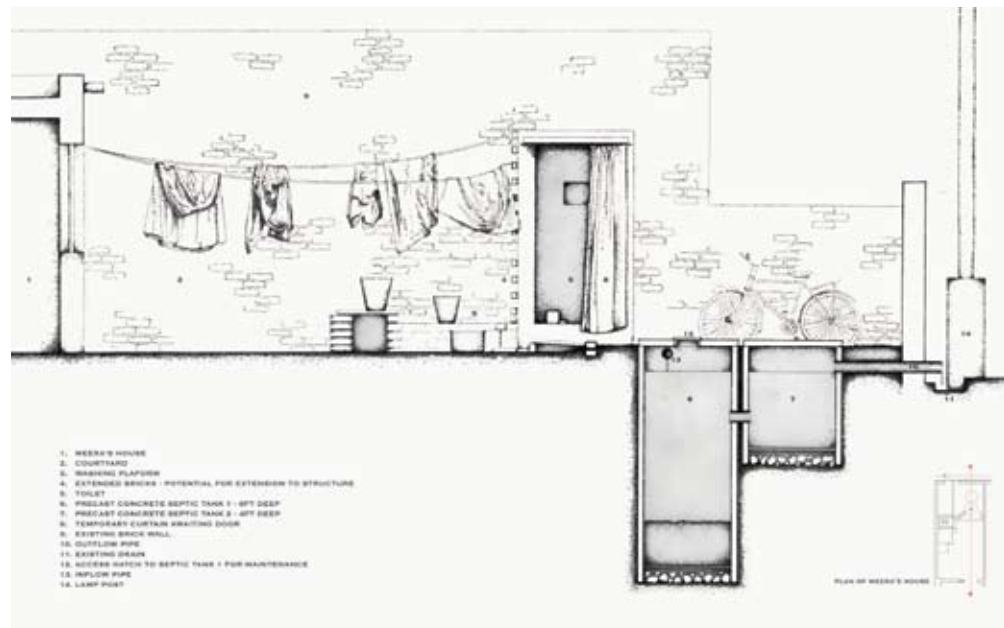
The opportunity to educate architects to link the hand with the eye, theory and practice in international live building projects challenges the architectural world to widen its focus. Change needs to come from within architecture schools as well as their validating bodies.

Fund raising and project finding may need to include several schools. Partnering agreements with local NGOs need to be strengthened and extended to support long

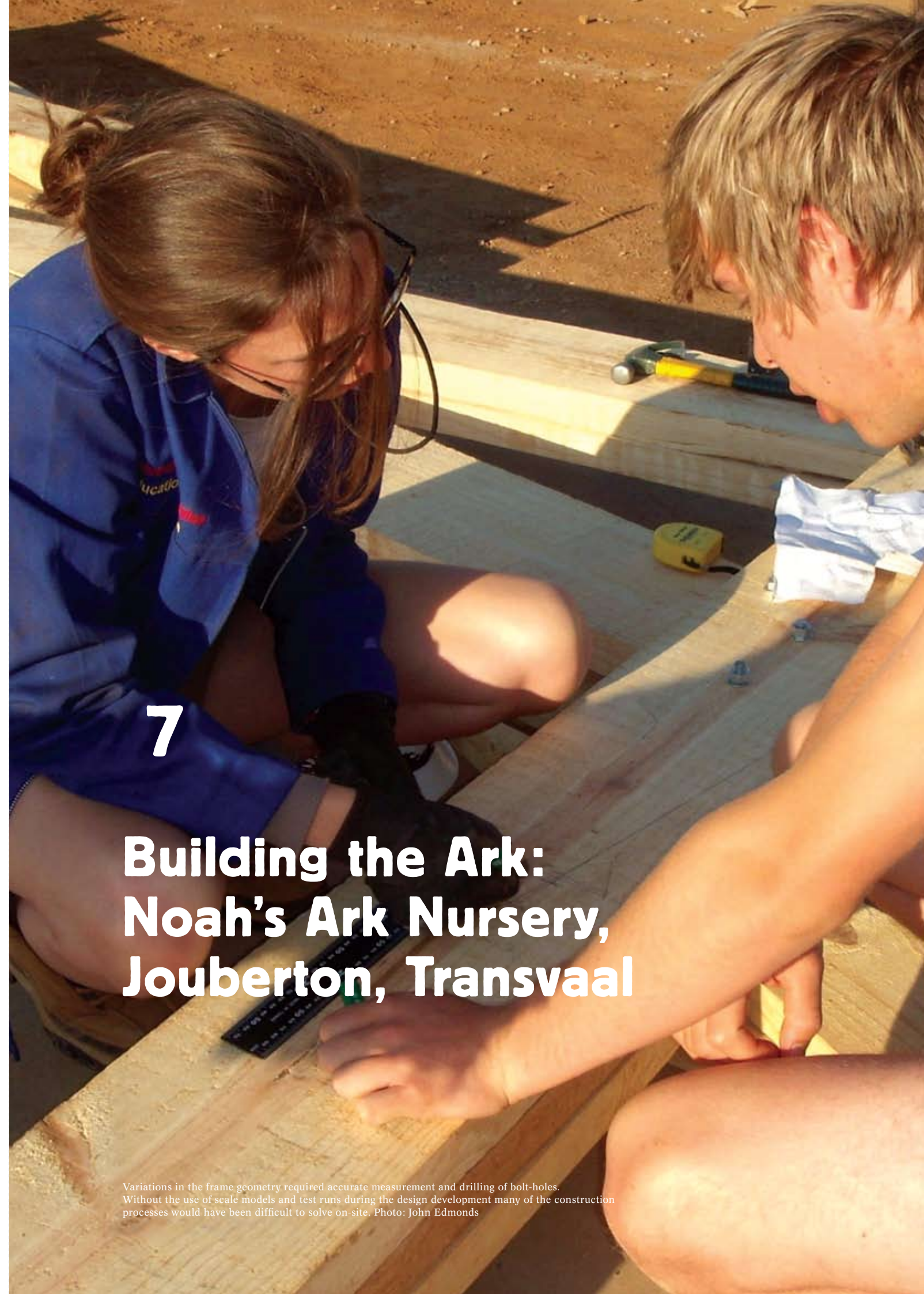
term associations. In this way ongoing live projects, which involve both students and under-resourced host communities in mutual learning and a steady improvement of the rapidly changing built environment, can proceed effectively.

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Section through installed septic tank providing internal toilet to Meera's house, Kuchhpura, Agra. Image: Bo Tang



7 Building the Ark: Noah's Ark Nursery, Jouberton, Transvaal

Variations in the frame geometry required accurate measurement and drilling of bolt-holes. Without the use of scale models and test runs during the design development many of the construction processes would have been difficult to solve on-site. Photo: John Edmonds

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Text by John Ramsay

The teaching and learning opportunities presented by the Social Architecture programme of the South African 'not for gain' charitable organisation Education Africa (EA) are considerable, and over the last decade a number of University Schools of Architecture from around the world have participated.

Education Africa has a continuing ambition to radically improve nursery level education in the townships and rural communities of South Africa. Primary school commences at seven years in the existing education process, and during the apartheid era pre-school education in deprived areas was virtually non-existent. This had a significant negative impact on the literacy and numeracy of children entering the school system, severely limiting their ability to progress beyond the most basic education. Through various programmes Education Africa is rapidly turning this around; one of the most visible is the Social Architecture programme.

Under the programme, University Schools of Architecture can volunteer to participate in the building of a pre-school education facility in a location identified by EA's team. It is the University's responsibility to raise funds for the construction and to meet logistical costs such as transport, although EA will assist with accommodation and local infrastructural needs. A local partner is also identified, as well as potential sponsorship.

In the summer of 2008 the University of Nottingham Department of Architecture & Built Environment (DA+BE) committed to undertake one of these projects, led by the studio coordinator for the second year of the B.Arch course, Adrian Friend.

The project selected was in a small community called Jouberton, the township of the mining centre

Klerksdorp, that lies a couple of hours' drive south west of Johannesburg, in the Transvaal. Jouberton is the birthplace of Archbishop Desmond Tutu, who lived there until he was twelve years old.

The requirements were simple: three classrooms, an office and kitchen, a covered external area for eating and toilets. This sounds rather modest, but the facilities that these simple buildings replace are sometimes little more than a single-roomed tin shack with no water and only very rarely electricity supplied by a single wire slung from a nearby building.

Enthusiasm for the project was understandably very high. The entire second year, some 180 or more Year 2 undergraduates, were asked to participate in an initial concept design competition for the building during the first semester (from September to December, 2009). This was organised in a number of stages, eventually resulting in a preferred scheme, after rounds of voting, analysis and refinement.

In the first part of the second semester (January to Easter) the selected design was subjected to a 'rationalization' process, led by the module convenor for the Part III course, John Edmonds, an experienced practicing architect, assisted by a small group of Year 5 (first year of Part 2 Diploma) postgraduate students. This team worked with the studio unit who designed the building to simplify construction and produce a full set of working drawings.

The construction was carried out over a seven week period that included the Easter break, by a team comprising of second year and fifth year students and a small number of staff, led by Adrian Friend and John Edmonds. Additionally many of the construction tasks



Left: 'Noah's Ark' has been described by Education Africa as 'raising the bar' of their Social Architecture initiative, and is now also being used as a training facility for nursery teachers. Photo: Education Africa).

Far left: One year on and the building is performing well, despite the extreme climate fluctuating from very hot summers to very wet winters. Photo: John Ramsay



Frames prefabricated by students in a local building yard were erected by crane and the frame was completed a bay at a time. Test runs for prefabrication were carried out in Nottingham to prove the construction method. Photo: John Edmonds

needed the support or participation of local contractors, such as the reinforced concrete raft and the supply of lifting equipment. At Jouberton generous support was provided by the principal local employer, the mining company Anglo Gold Ashanti. Unemployed local people were also given the opportunity to help build the school, and worked alongside the student team. Local builders provided space in one of their buildings for the prefabrication of roof trusses; a neighbour was paid to supply electricity to the site from the supply in his corrugated tin and breeze block house!

The site was originally a local rubbish tip, and had to be cleared by the students before work could commence. Conditions were difficult – Easter time is autumn in South Africa and sudden heavy rain is common. It was also very hot in the afternoons, so the provision of shade and water was essential.

A number of in-situ modifications were made to the design based on the availability of materials. One great discovery was the local system of sand-bag wall construction, which proved to be a very effective alternative to concrete blocks. Roofing details were modified according to the available sheeting profiles; the required fan-shape was achieved by the novel technique

of flattening profiled sheets by driving a pick-up truck (or 'Bakkie' as they are known locally) over selected areas! A popular local roofing material, bitumen impregnated corrugated fibreboard, was used in lieu of steel profiled sheet for wall cladding – it is easier to handle and cut, without exposed sharp edges around doors and windows. Timber frames were protected from termite attack using creosote at ground level, a substance that is now restricted in the UK, but is a very effective deterrent to these extremely destructive insects.

Live projects of this nature are perhaps better suited to smaller Schools of Architecture – it would of course be impractical logistically and financially to take 180 students to South Africa and the size of the projects would not require a construction team anything like this size. The selection process runs the risk of engendering disappointment amongst the majority of those participating. In an ideal world all students should have the chance to do a live construction project, and the DA+BE are currently exploring the pedagogy of 'design-build studio' (as it is known in the United States) to find ways of expanding it within the B.Arch course.

The Education Africa project for 2010/11, at Calais Village in Limpopo Province, will involve only one

quarter of the second year (now numbering around 200 undergraduates); all of those who are participating are volunteers and have committed to fund-raise over the summer of 2010. All of these students will work on the project in South Africa next Easter. Two teams, each of approximately twenty-five students, will share the construction over eight weeks.

Health and Safety is clearly of great importance. Building is by its very nature a risky business, and students with a few exceptions lack the strength, experience and skills of the seasoned construction worker. All students must be trained in the use of power tools, ladders and lifting, as well as the basic common sense of 'site safety'. Personal protective equipment (PPE) must be provided and worn (not always the comfortable option in South Africa). The Nottingham DA+BE is currently introducing industry recognised training and registration on site safety for all undergraduates in the B.Arch and M.Eng courses, to facilitate the incorporation of live-build projects into the curriculum.

Expectations and the norms of construction site safety vary from country to country, and are certainly more relaxed in South Africa than in the UK. We should however recognise that these projects have very significant benefits for the teaching institution in terms of publicity, quite apart from the obvious benefits for the communities and for the participating students. To maximize the publicity benefit from these projects institutions must recognise how important it is that students are seen in photographs and video to be acting in a safe and responsible manner, and that no avoidable risks exist. We must practice and preach the standards we would expect from the industry. It is quite often the case that the step from carrying out small constructions as part of an architecture course to the proper application of 'design build studio' is perceived to be difficult because of the need to apply much more rigorous standards of safety and training. These are however essential and routine in the industry we are training students to enter.

Funding and cost control are also areas where careful management is required. Construction costs in South Africa are generally low, and the buildings should

avoid unnecessary complexity – a township nursery does not require a sophisticated programme. One of the advantages of the EA Social Architecture programme is that it allows projects that are larger than could be achieved for the same budget in the UK. The logistical costs should not be underestimated – accommodation, flights, vehicle hire and food for the team can be substantial. All primary funding is raised by the undergraduates themselves, using various ingenious fund raising initiatives.

The need to improvise in the field can lead to additional costs, and advanced intelligence about the available construction materials in the immediate vicinity of the site is vital. Most of the materials are procured as required, locally. A fairly sophisticated range of building materials are available in almost every community, as self-build is usual, but they are suited to the locally preferred techniques and needs, and to the available production skills. A good example is the steel framed, single-glazed window, which is easily produced in a society where metal fabrication is a common skill due to the predominance of the mining industry.

The issue of liability post-construction is often raised as an obstacle to live-build studio projects. The parent institution must be prepared to fully support the project in terms of indemnity insurance; to facilitate this any final design must meet the normal rigorous requirements in terms of structural design, compliance with standards and good practice. The DA+BE at the University of Nottingham will from the beginning of next academic year operate live build projects, such as the South African work with Education Africa, under the supervision of a Projects Office, which will be an RIBA Chartered Practice, carrying PII and supplying experienced support from registered professionals.

The Social Architecture programme is just one of Education Africa's many excellent causes. We were delighted to discover when we revisited Jouberton this year that the nursery, which has been renamed 'Noah's Ark' by the local families, is now also being used by EA as a training facility for nursery teachers. The building is popular with its community and is surviving the sometimes harsh environment well. It is described by Education Africa as 'raising the bar' for future projects.

The opportunity to work on a real project in a community where the need is so apparent is a fantastic experience for all students (and academics) who are involved. The combination of design, construction, social impact and fascinating location is extremely rich in teaching and learning possibilities. The live-build initiatives at the University of Nottingham are ambitious, but the benefits are the vivid, real-life and real architecture skills and experiences that our graduates will carry into their careers.



Selected scheme from student design project.
Photo: Will Gowling, University of Nottingham



Live projects abroad: Building networks for internationalisation

Figure 3. Students constructing the Tarlungeni Children's Centre Romania
Photo: the LIVE Project Group, University of Sheffield