Humber Centre for Excellence in the Built Environment

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Abstract

The project is an educational initiative which addresses exclusion and deprivation in one of the United Kingdom’s poorest cities by engaging with communities to raise aspirations in the built environment in order to ensure the development of a sustainable urban future. The project seeks to do this principally through a learning and capacity building programme, already underway, which is engaging young people and communities of interest throughout the city to raise aspirations and knowledge generally. In parallel, a series of exhibitions, lectures and workshops will be held in the Centre’s Learning/exhibition space. To house these events and to act as a base for its outreach programmes the centre has commissioned a relocatable new building which will act in a didactic capacity in relation to design and sustainability.

The building is part building, part vehicle, part installation art and has been designed to interact with the natural environment in an innovative and engaging manner to produce a building “exclusive” to Hull. Its design has been informed by participatory and consultative meetings between architects and community representatives. The aim behind the project is to integrate high quality architectural design with participatory methodologies – so often in practice thought to be mutually exclusive. The proposal has demonstrated thus far that the aim to reconnect communities with their built environment, in the least promising of circumstances, can result in design of national, if not international, significance.

Keywords: relocatable building, sustainable design, participatory design, art installation.
1 Introduction

The project, the Humber Centre for Excellence in the Built Environment, of which the author is vice chair, grew out of an opportunity to apply for funding which was identified in 2001 by a group of people representing the public sector, the voluntary sector and the local university sector who had a shared interest in the built environment and in the future health of the city and region with which they were familiar. Applications were invited by CABE, the Commission for Architecture and the Built Environment, in October of 2001 for bids in order to enable regional centres throughout England to establish, in their local area, a focus for raising quality in the built environment. CABE’s stated aim is to be the champion for architecture in England and its function is to promote high standards in the design of buildings and the spaces between them and its regional policy is to ensure that there is significant improvement in the design of the built environment throughout every English region [1].

A bid was successfully made, research undertaken, and funding secured to establish the project. Since then the Centre has been successful in obtaining additional funding from a range of sources, principally from Yorkshire Forward, the regional development agency, through Hull Cityventure from the Single Regeneration Budget (SRB6). In addition to this European funding, through the ERDF programme and support form the New Opportunities Fund have also been secured. These resources have enabled the centre to employ a dedicated staff team who have begun to deliver the learning and capacity building programme.

1.1 Context of the project

The City of Kingston-upon-Hull, or Hull as it is more commonly known, is a port city and it is situated on the north bank of the Humber estuary in the north-east of England. The city has a population of 250,000 and sits at the centre of a sub-region of some 850,000 people. Like many regional cities in the north and east of England Hull has suffered a severe decline in its traditional industries, in this case fishing, once a significant source of wealth. As a result of this Hull suffers from urban decay and population drift to the more prosperous areas of the East Riding and has areas of severe social deprivation in some of the less advantaged parts of the city. The Integrated Development Plan, published by Hull City Council in 2001, identifies the key problems as being an overdependence on low value added manufacturing activity, high levels of unemployment and significant numbers of skilled individuals leaving the city as a result of lack of opportunities. There are also low levels of entrepreneurial activity in the city with high levels of deprivation in particular pockets in the city and significant physical dereliction and obsolescence of sites and premises [2].

In response to this situation the city has successfully established an Urban Regeneration Company, Hull Citybuild, one of six such companies established in England. Citybuild has been charged with delivering an economic spatial plan which aims to attract inward investment into the city and deliver urban regeneration, both in the historic heart of the city and also in the deprived inner
city areas surrounding it. A city centre master plan, led by Roger Tymms and Partners working along side such architectural practices as Michael Hopkins and Partners, has recently been produced which proposes to attract investment by capitalising on the cities underused waterfronts which are adjacent both to the Humber itself and the river Hull which flows into it. Redevelopment has already begun, and the “Deep”, an award winning aquarium by Terry Farrell which opened in 2002 has already brought a new spirit of optimism to the city.

2 Aims of the centre

The feasibility study [3], which was undertaken by group members, and accepted by CABE in 2002, established the purpose and direction of the Centre as follows:

- Raise public awareness and appreciation and understanding of architecture, urban planning and design
- Raise aspirations of quality in the environment and understanding of what makes for long term sustainability
- Create opportunities for people of all ages to learn and develop skills in the built environment
- Encourage dialogue and collaboration between all those involved in the design of the built environment
- Assist in upholding the quality of the architectural heritage and public spaces in the sub-region

2.1 The learning programme

The learning programme, led by our director Karen Houghton, grew out of the feasibility study and has the following priorities. These are underpinned by the aim to raise the aspirations of all with regard to the built environment and by an underlying belief that in order to develop sustainable communities in the future a sense of ownership in design is an essential component which must be there from the beginning.

- Education and Life-long Learning. The centre will seek to establish new opportunities for education in the built environment for everyone. There is particular interest in engaging with young people through, for example, specially designed modules in the ‘Citizenship’ curriculum in schools, which will link with actual live projects taking place in their neighbourhoods and elsewhere in the city.
- Community Engagement. Through joint working with agencies delivering community capacity building projects the centre will raise awareness of, and ownership of good design as a key element of social, economic and physical renewal. The centre will engage directly with the communities of Hull, particularly the most deprived, to become engaged with the process of reshaping their neighbourhoods
- Exhibitions/workshops. The centres building will be a venue to showcase building/environmental developments arising from Citybuild,
the Urban Regeneration Company, and other regeneration/economic initiatives. This will include exhibitions, interactive ICT workshops, as well as conferences and seminars for communities of interest in the city and potential investors.

- Tourism. Add an extra dimension to the tourist offering which the city makes, bringing the future of the built environment to as wide an audience as possible.

3 The building project

From the projects conception it was assumed that, subject to funding, space in the city centre would be leased in order to provide premises from where the Centre would operate. This situation changed in the summer of 2002 when it became clear that the project could apply not only for revenue funding, but also for capital funding for the Centre. Thus the idea was formed whereby the projects aims of raising aspirations in the built environment and engaging communities with the design of their own environment could be combined with the design and construction of the centres own building, creating an opportunity so far unique within England – the construction of a purpose built home for a Built Environment Centre.

3.1 The commission

It was decided that the best way to move forward was to appoint an architect by way of a competitive interview process. We took the view that we did not want at that early stage to see a design, but rather we were looking for an approach to the situation as defined in an outline brief. This brief proposes the commissioning of an iconic moveable building, which will be relocatable and move from key site to key site over a twenty year period. The building comprises a large space capable of subdivision into two spaces for use as exhibition and learning activities. There will also be offices for five staff, WCs, a kitchen and a plant room.

The following practices were shortlisted: Niall McLaughlin, Sergison Bates, Shed KM, Archeion, MUF and Salt. The practices were chosen for the quality of their work, their interest in movable structures and for the fact that together they represented a wide geographical spread including, as it was felt to be important, a local practice. Interviews were held in May 2003 and as part of the process all architects were asked to set out their particular philosophy as a practice, to discuss their experience of and interest in participatory methodologies and to demonstrate how, should they be appointed, they would approach this particular opportunity. In the event the commission was won by Niall McLaughlin, who of all the practices, interpreted the brief in ways that went beyond the groups expectations and who had worked in a highly participatory manner with school children in the design of an award winning bandstand at the De la Warr pavilion in Bexhill–on–Sea, on the south coast of England [4].
3.1.1 The approach

Niall McLaughlin’s approach to the commission was from the beginning open-minded, curious and free of preconceived ideas. He proposed a method of working whereby the place, the city and its inhabitants, would be as relevant to the project as the architect and engineer. All parties would exchange knowledge and ideas, the project would develop out of mutual respect and understanding, creating a design proposal which would be informed by and reflect the uniqueness of the situation for which it is intended. People, place and technique, and the interaction between them, were suggested as underlying themes to inform design decision making.

3.1.1.1 Participation

Participatory involvement of the people of Hull, to ensure a sustainable future is a core idea which underlines all of the Centre’s activities and therefore meaningful involvement from the start and throughout the lifespan of the building was a prerequisite. The design processes started through a series of meetings and workshops where architect and community representatives came together to learn and exchange expertise. These meetings were purposely designed so that the barriers between ‘professional’ and ‘lay person’ were set aside. All parties brought something to the table, everyone learnt, and everyone was changed by the experience. The intention here is to establish a sense of ownership by the community in a design which inevitably, because of the nature of the commission, will challenge pre-conceived ideas about buildings and their appearance.

The success of this process can be judged by the observation, made by Michael Hills, of the Hessle Road Network who stated that “this community is consulted to death, we are asked our views on almost everything, and mostly nothing ever happens. Here, for the first time we can see how the communities concerns have been reflected in an actual proposal” [5].

4 The proposal

Out of these conversations came the idea that the building should be about story telling and the design should relate the built environment to the wider environment as a whole. It should overtly express the processes that enable it to function, both structurally and environmentally, but most of all it should aim to involve people, to draw them in and to do so in an interesting and engaging manner.

The resultant design, illustrated above, is a hybrid; it is an ambiguous structure which colonizes several territories simultaneously. It is part building, part vehicle and part installation art.

The design takes the form of a large mono pitch roof which is supported by an upended line of caravan like structures. The learning and exhibition space sits under this roof and the offices etc are housed within individual caravans. Sitting directly in front of the roof, and connected to it by a pool of water, is a mechanical garden or thicket which supports an array of wind turbines and solar
panels which will provide the power to run the centre. In addition the roof is to be used as a projection surface and will carry real time images from the North Sea.

![Figure 1: Elevation from the east.](image)

### 4.1 People, place and technique

Hull is going through a period of rapid change, there is likely to be significant reconstruction in the city centre in the next few years. Indeed this is already underway. Examples such as Terry Farrell’s lottery funded aquarium – The Deep, or the new community stadium are already changing the city’s skyline. There is a concern, however, that in this dash for a bright future, of which this project is a part, that Hull’s past, its historic connection through the fishing industry with the sea, is in danger of being forgotten. The importance of the past and the wish for some acknowledgement of its relevance to the present and indeed the future came up continuously in discussion with people throughout the design process.

The design therefore proposes to establish a connection between the building and the memory of the sea and Hull’s seafaring history by using the exterior surface as a projection surface. The building will express itself at the scale of the city – it is a sign board, screen or advertising hoarding which will be seen from a distance. The proposal is to connect the cities fading memory of the vast hinterland of the sea that once formed such a strong part of the imagination of the city. Dancing patterns of light will illuminate the screen on dull days and at night and as the building ‘dreams’ about the sea, the patterns will change dependant on conditions out at sea [6].

Place is also responded to in other ways. The first site is low lying, very near the water, and estuarine in nature. The building thus ‘floats’ on a timber raft in response to the ground conditions and the thicket like nature of the mechanical garden alludes to the watery nature of the surrounding landscape by making connections with the reed beds which line the banks of the estuary.

The design also exploits local manufacturing expertise. Hull and the East Riding of Yorkshire are home to a significant proportion of the UK caravan industry and the design exploits the use of caravan technologies. The learning/exhibition space is served by a series of cellular spaces containing, offices, toilet facilities, plant room and storage which form a service wall down the west side of the structure. These will be detailed like caravans, though with a superior specification to ensure a 20 year life.

Externally the thicket stands on a series of interlocking concrete trays which sit directly onto the ground and connect the building directly with its site. We are in discussion with a local sanitary ware manufacturer and it is intended that the bases are formed using modified shower tray moulds. These are hand made and every base will carry the initials of the man who made it thus connecting the design directly with its makers and the idea of ownership.

There is also the incorporation of advanced technique. The roof, for example will be a UK first, it is designed to be translucent and yet will achieve the same thermal performance as if it were opaque. By exploiting a highly insulating roofing product the learning/exhibition space will be generously day lit achieving a solar transmission of around 20%.
The design therefore aims to respond to the place in which it is to be built and also to use such modern technologies that are available to it. I would argue that the result could be seen as an example of what Kenneth Frampton has termed Critical Regionalism, where the proposal could be said to seek to “cultivate a resistant, identity giving culture while at the same time having discreet recourse to universal technique” [7].

5 Structure and environment

In conjunction with Niall McLaughlin, Price and Myers were appointed as structural engineers and XCO2 were appointed to design the environment systems. The following information is drawn from the Stage D report which was presented to the board of HCEBE in November of 2003 [8].

5.1 Construction and assembly sequence

In order to minimize work in the ground, and to ensure that as much of the building can move as is possible the building, does not have conventional foundations. The whole structure sits on a grid of pre-cast concrete pad foundations which will sit directly onto the site. The structure of the floor is to be formed by a series of timber cassettes. Individual caravan units will then be brought to site, upended and bolted down onto the floor cassettes.

The main roof of the building is formed by thin wall metal rafters, which span form the base of the building onto a steel truss which runs over the top of the caravan units. The rafters are to be covered by a polycarbonate cladding system over which will be curved perforated steel mesh panels which will form the projection screen.

Immediately at the foot of the sloping roof a line of water troughs will be placed. These are part of the cooling system for the building. The thicket bases are then brought to site and once in position they are tied together to allow them to act as a whole in order to resist overturning by the wind. The poles are erected, then guyed and braced and finally the solar panels and wind turbines will be fixed to the top of the masts.

Figure 3: Ventilation diagram.
5.1.1 Environment
The intention behind the environmental design strategy has been to create as light an environmental footprint as possible and to elucidate, as entertainingly as possible, how this is done.

The design team has set out to produce a building which will be comfortable to use, both in winter and in summer, and which will require the minimum of energy to run. The design is therefore highly insulated and air-tight and has been designed to run in the summer without cooling energy input. The targets U-values for the project are 0.2W/m²k for the walls, 0.15 W/m²k for the floor and 0.8W/m²k for the sloping roof. Cross ventilation is provided through the building and additional cooling to the incoming air is provided in the summer months by using water misters which will cool the air down as it enters the structure. The roof will be translucent and yet will achieve the same thermal performance as if it were opaque. Heating will be provided by a wood pellet boiler feeding a wet under floor heating system. The heating pipes will be visible through a translucent surface and coloured water will be used to indicate water temperature. The wood pellets are made from recycled saw dust waste and are carbon neutral in the sense that the tree has already absorbed the equivalent carbon which is released through burning when it was alive.

Electrical energy will come from the array of solar panels and wind turbines mounted on masts to the east of the building, the mechanical garden or thicket. These will be linked into the national grid so that any surplus is exported to the grid and peak demands dealt with from the grid. This combination of the solar panels and wind turbines is expected to generate approximately 9750kWh/y which enables our engineers to predict that the building will produce, from renewable sources, almost as much energy as it consumes. This makes the building an 80% carbon neutral building in use and it is believed that through careful management this figure could easily rise.

6 Conclusion
The project, although at an early stage is demonstrating that, in the least promising of circumstances, innovative design is not only possible, but is welcomed when people are engaged with the process of design. The project has demonstrated that as long as design is not seen as something which is done to people, but rather is something that is done with them, surprising and high quality results can emerge. The project as a whole has much to do and is only at the beginning of its work, but the positive start thus far has demonstrated that ‘ordinary’ people in this case the people of Hull, can and will aspire to the best if they are given the opportunity to do so.

References