

Illustration: Heather McNeil



Centre for Alternative Technology
Canolfan y Dechnoleg Amgen

Graduate school
of the Environment

**Professional Diploma
in Architecture**

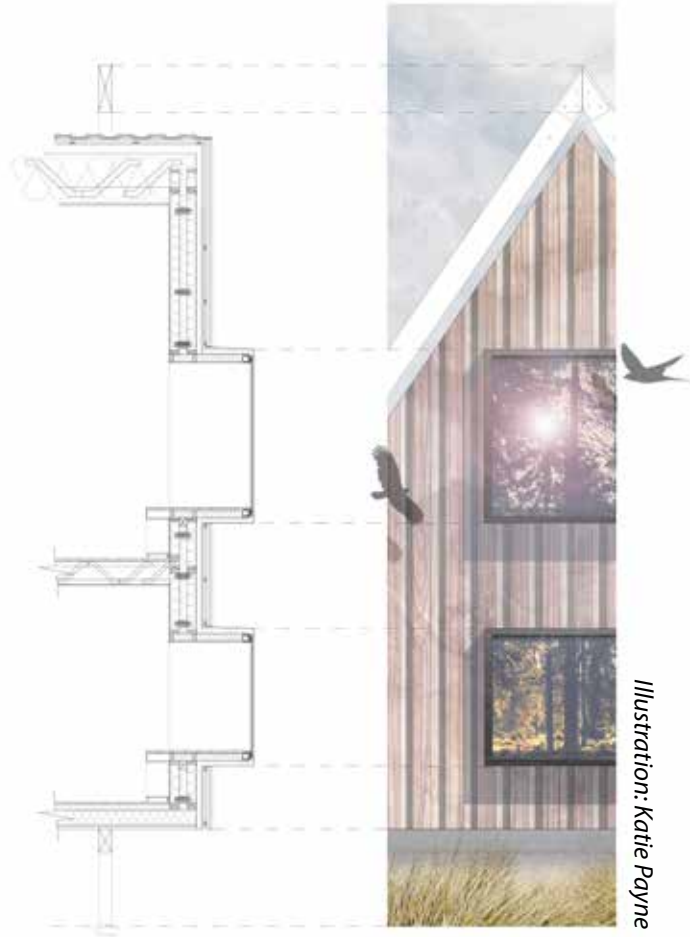
**YEARBOOK
2018**

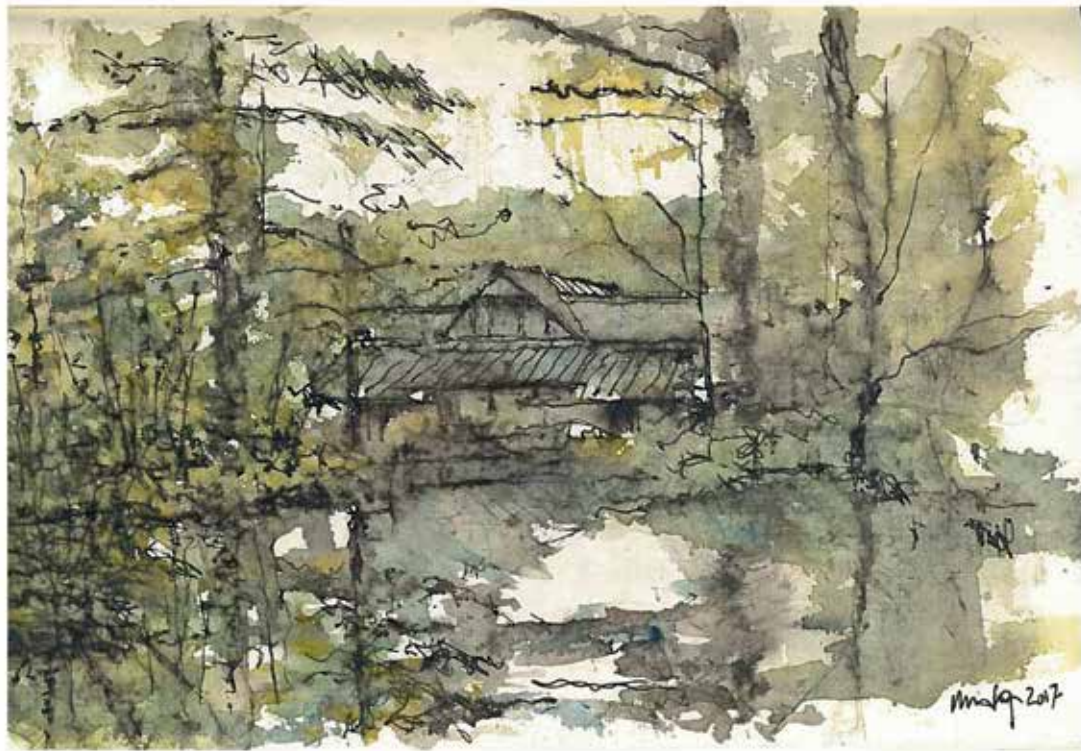
Doing architecture differently

This yearbook showcases the work of students of the Professional Diploma in Architecture at the Centre for Alternative Technology (CAT). Taught at CAT's Graduate School of the Environment and validated by the University of East London, this Part II Architecture course has sustainability at its core.

The projects shown here form part of the Professional Diploma study programme, including summer build projects, building materials week and individual design work of the class of 2018 Architecture graduates.

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Making a real difference in the world we all live in

I first came to CAT in the late 1970s as a fresh, innocent and some would say 'green' first year student with my new friends and colleagues from the Welsh School of Architecture. We were brought here by our year tutor, Bob Fowles, an early and passionate advocate of a greener architecture. It was an eye opening and formative visit. However, as Patrick Hannay said in last year's introduction to this book, 'it's not the arrival that matters' and went on to say in his concluding paragraph that 'leaving CAT is another matter. You will never truly leave.' How right he is.

Of course at that time it was a case of humble beginnings; the WISE building which now houses the CAT Graduate School, was not I believe, even a twinkle in the founders' eyes. As with all good things, there must be change, growth and adaption, and this special place has certainly done that over the years and in doing so has encouraged, perhaps ensured, that others do 'likewise', pushing boundaries, stretching the acceptable.

For me, teaching at WISE CAT is an honour. Every time I visit I learn something new as well as hopefully giving something of value back to the students of today. It is about sharing knowledge, experience, ideas, challenging conventions and about making a real difference in the world we all live in. I always return from there to my home refreshed, excited and

better for my time having been spent amongst a unique collection of delightful individuals – staff and students alike. It seems to attract a range of intelligent, lovely people with open minds, hungry, always, to understand more, seeing instead of just looking.

The drawing and painting course I run teaches us about the importance of context, of going out there into the environment, wherever that may be, to see first-hand and to draw by hand, to record, *en plein air*, outside, sopping up the atmosphere – like the paper of my sketchbook, this little drawing 'CAT in the rain' where the droplets from the sky above fell upon the page to make the paint and the ink run, to capture the sense of place. It could only be there.

Chris Loyn
Principal,
LOYN + CO Architects

Introduction

The students whose work is illustrated in this yearbook all joined CAT's Professional Diploma in Architecture (ProfDip) course in September 2016. They have worked together, played together, laughed together and cried together; all as members of what we affectionately refer to as the 'CAT family'. And what a family it is!

It congregates at its spiritual home, CAT, for one week every month, but its members are never really apart from each other. It is a family based on mutual support, shared learning and, above all, a commitment to sustainable architecture – not sustainability as a 'bolt on' but sustainability as the very foundation stone of the designing and making of buildings and places that respect planet Earth and its ecosystems and will stand the tests of time.

I have seen these students grow as the weeks and months have passed. Many had joined us because they were seeking something different, be it alternatives to 'everyday' architectural practice or a collaborative rather than competitive place of learning (think non-adversarial 'crits'!) or hands-on designing and making. They have all given as much, if not more, than they have taken; I look forward to seeing them change our world for the better.

Their voices will echo in and around Llywngwern Quarry for many years to come.

John Carter
Course Director
January 2018



Live Projects

Summer Build Week

The annual build week of CAT's course is a key part of why people choose to come here. The chance to build your designs yourself is appealing to many architecture students, and this is combined with the opportunity of hands-on learning of various low impact construction techniques. Each design was completely different and in July 2017 five different projects popped up around site, in varying stages of completion, quite clearly the work of architect-builders.

Designs realised were from:

Catherine Dunham

David Elliott

Harriet Smith

Heather McNeill

Katie Payne.



The Slate Circle

The Slate Circle was inspired by the vertical layered formation of slate that can be seen in exposed areas around the CAT Quarry Trail. The project looked at utilising local materials available close to a site, in this case waste slate, and drystone walling principles where by the structure is held together by friction and gravity. Drystone walls are human scale structures hand built to form enclosure and create shelter, which seemed appropriate for a new contemplation space at CAT.

The aim was to give the feeling of sitting in the ground encircled by stone, whilst having views out to the mountain across the valley and up towards the quarry and wind turbine. Just as drystone walls provide a similar function to hedgerows for wildlife, the construction of the slate circle allowed for a variety of holes, nooks and crannies offering a home to a range of insects.

The project was a real team effort and the build was helped by local stone mason Tom Griffiths who was invaluable in sharing his knowledge and expertise on slate as a material; including how to handle it and ensure the structure remained safe. The most important part of the day was the monkey arm warm up before work started to ensure no injuries during the heavy lifting. The team embraced the wet Welsh weather and mud it brought, and spirits were high throughout.

An old pick axe head was found whilst digging out to lay the key stones. It was incorporated into the design of the floor, becoming the centre piece, pointing towards the quarry, as a tribute to the miners.

Concept designer:

Catherine Dunham

Build team:

Catherine Dunham

Caroline Gozdziejewski

Chivonne Koranteng

Luke Roberts

Arjun Chopra



The Bard's Throne

The Bard's Throne is a place of empowerment and contemplation. The design is based on ergonomics of the human body and the quest for a thin edge. The throne was built predominantly using hand tools, with timber grown in the local valley. The build week which saw the Bard's Throne take shape alongside a collection of other student designed projects, was an opportunity for students to work together and develop new practical skills. Technical and physical challenges presented themselves throughout the week and overcoming these challenges was finally met with the reward of a throne to recline in and contemplate the week's achievements.

Concept designer:

David Elliott

Build team:

David Elliot

Guy Crick

Rositsa Atanasova

Charlotte Finden

Caitlin Izard



Camera Obscura

A small strange shingle clad structure by the entrance to the CAT Visitor Centre stands proud in the Welsh weather, still showing the vibrant tone of the recently cut and locally grown larch made into shingles. This structure conceals a dark space using early photography techniques to create a camera obscura, reflecting the outside internally through use of a small aperture.

The project aimed to utilise some typical Segal construction techniques using a lightweight timber frame on four paving slabs, allowing a build team of architecture students to experience the process of physically building in this way. The project also offered insight into the realities of being commissioned for a complicated client with numerous changes made to the design up until the site was levelled. The project offered valuable learning insights as architecture students, including an understanding of the physical time it takes to build. It is due to be finished before summer 2018.

Concept designer:

Harriet Smith

Build team:

Harriet Smith

Alex Lawrie

Erannan Bent

Jack Davies

Tom Phillips



Parabola: A Contemplation Space

A lakeside contemplation space for two formed of a series of four arches, each constructed from interlocking modules which are designed to be self-supporting.

Patterned shadows are created by the angled modules which interplay with the reflections from the water.

The aim of the design was to explore how a series of repeating timber elements could form a self-supporting structure with as few fixings as possible. Initially the design was without mechanical fixings and relied solely on dowels and the self-weight and interlocking connections. The design was also initially conceived as being constructed entirely out of one section size of timber.

As the design developed, it became clear that this was not feasible without a CNC router and the modules would be much stronger constructed from plywood as opposed to softwood.

A compromise was reached and two of the arches were constructed from softwood and two from plywood as part of a material experiment, while the rest of the structure was constructed from local Douglas Fir, and all were cut by hand. The ring beam was screwed together rather than dowelled and the arches reinforced with steel tension cable to laterally stabilise them.

Concept designer:

Heather McNeill

Build team:

Heather McNeill, Aled Jones, John McSeveney, Rosemary Colver, Paula Priest



Reflection

A reflection space for up to four people formed from 14 hexagons and six pentagons each relying on one another for strength and the structure's ability to be self-supporting.

Initially designed as a contemplation pod upon the water, unfortunately site challenges forced the design to be redeveloped. Its original form would have seen clad panels on the side which were openable in various places, creating flexibility within the design and adaptability to the user depending on the environment they wished to relax in.

The piece takes a new form on the landscape, providing views across the valley. Patterned twine within the panels create framed views of the mountains beyond. The structure is fixed using hinges to allow the structure to shrink and swell with the Welsh climate.

The skeletal structure sits lightly on the land as not to affect the area it sits on or to obstruct its beautiful surroundings. It has been constructed from local Douglas Fir, and each cut by hand. Jigs were set up to the perfect angles needed and each piece drilled together. The frames were then joined together with two hinges on each side.

Concept designer:

Katie Payne

Build team:

Katie Payne

Connor Nicoll

Connor Backhouse

Ellie Betham



Materials Week

Materials week in May 2017 was an opportunity to learn in a hands-on way on about sustainable materials allowing students to offer a better understanding when specifying these materials in future.

Workshops and lectures included:

Lime and cement – **Stafford Holmes**

Hemp lime – **John Kearney**

Rammed earth – **Rowland Keable**

Straw – **Lucy Jones**

Lightweight timber structures – **Tim Coleridge**

Green roofs – **Daniel Postma**



2018 Design Projects



ALED JONES

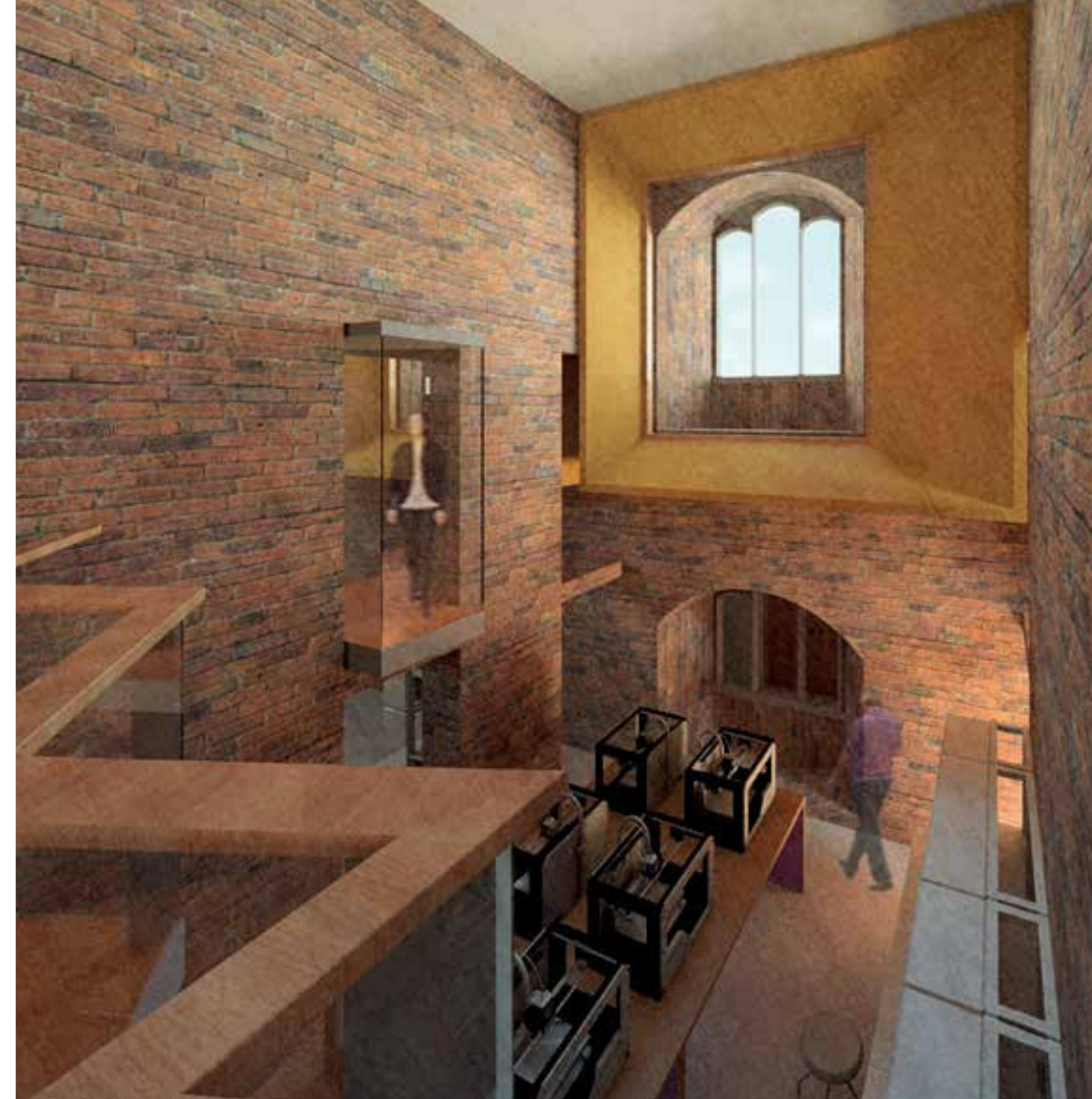
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Ruperra Castle: Re-inhabiting the Ruin

Restoration of historic buildings requires significant financing, which can create exclusivity. Ruperra Castle near Caerphilly is an architectural gem hidden in the landscape, and one of South Wales's most important ruined structures. Troops billeted there during WWII caused an accidental fire that left the castle gutted and its condition has deteriorated ever since.

The proposed scheme is a retreat focusing on design and manufacturing in the form of an innovation centre as a direct response to reduced university funding for research projects. The romance of the ruin is maintained in elements of the design, and new incursions allow re-habitation of the structure. A series of walkways, viewing platforms and exhibition spaces invite the public to engage in the scheme and experience the historic fabric along with the new architecture.

A mixed programme of spaces have been created to test different approaches to creating sustainable architecture within this type of historic building, maintaining remnants of the existing ruin and reflecting the need for new internal environments.





ALEX LAWRIE

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Temple Gateway: Opening the Gateway to New Possibilities

According to Martin Heidegger:

"Buildings are memorials to the engagements of mind with place involved in their construction and alteration over time. Every structure bears the imprint of successive layers of dwelling...Every layer of paint, every drill mark, fitted hook or gouge in a wall is akin to the soot-blackened timbers or caved stones which provide archaeologists with clues...A long way from bookish philosophy, these crafts involved understanding garnered by individual human imaginations, through building and dwelling, from their engagement with the places around them." [Adam Sharr, 2007]

With this in mind, this project aims to create an urban CAT that will be focused on restoration and retro fitting of existing buildings, along with the investigation into new and existing materials, and ways in which to use them.

The context in which this project has been placed is the City of Bristol, due to its connectivity to the rest of the UK and its green ethos. Bristol is currently in the middle of a mass regeneration and because of this many buildings have had to adopt a different purpose, transforming the commercial into residential and bringing the futures of neglected historic buildings into question. These and many other reasons make it a perfect site for the proposal. This will then act as a template that can be transferred to, and adapted for, other cities across the UK and the rest of the world.





ARJUN CHOPRA

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Rethinking Luton

A proposal for a cultural centre of civic importance in the Bury Park area of Luton, on the site of the existing football stadium which is projected to become vacant by 2020. This will include facilities such as music broadcasting and education, cooking, arts and theatre, and a health centre for predominantly young people in the local area; with a sports hall, exhibition space, auditorium, function rooms, market and debating platform for larger public access.

Situated within a tightly knit residential area, the proposal incorporates housing which is sensitive to surrounding forms, explores how a logical gradient is created between the residential and commercial, and how many complex functions can be resolved within a comprehensive morphology. Luton is home to many ethnic minorities and this proposal, being in the heart of a predominantly South Asian Muslim community, attempts to achieve a level of embeddedness and acceptance within their cultural lifestyle, but become also a site of cultural integration, a place for free expression and speech for all people.





CAITLIN IZARD

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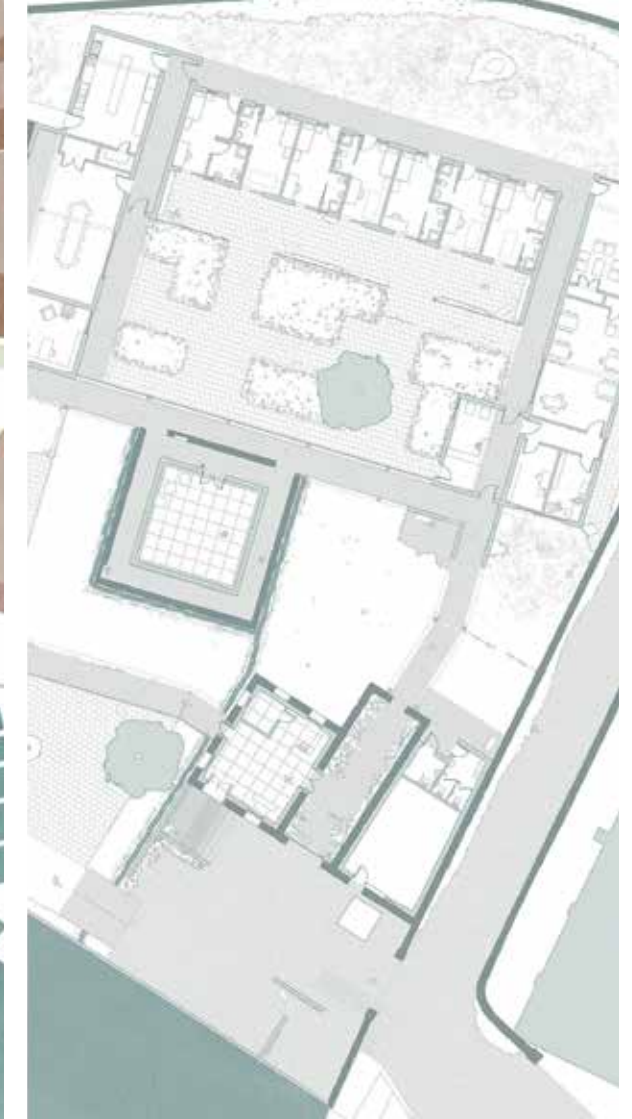
An Urban Retreat

Our urban environment is overcrowded with a consumerist culture of competition and individualism: we are constantly saturated with information and noise from mass media, there is a reduced sense of community, rising inequality, environmental issues, reduced connections to nature and general sensory overload. These factors amongst others contribute to increased psychological illness.

This project, located in the heart of Bristol, repurposes a derelict gas works and aims to create a place of calm in the city. Influenced by mindfulness, the project takes the user on a journey progressing through a series of spaces moving from the public realm to a more private secluded meditation and therapy space.

The provision of educational and horticulture spaces creates social and cultural opportunities whilst reconnecting the urban landscape to nature.

This proposal hopes to improve our wellbeing, and in turn promote more sustainable ways of life.





CAROLINE SCARTEZINI GODZIEJEWSKI

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The R3 Centre

This project aims to tackle mental health as a contemporary growing issue. In modern society, 1 in 4 people are affected by mental health illness during their life time due to a number of different factors ranging from modern style to traumatic experiences and chronic mental illness.

Focused on the town of Banbury (Oxfordshire), the proposed scheme will provide mental health care for the local community and nearby towns. The idea is to create a holistic environment for the patients in order to improve their recovery process, using the local vernacular architecture as a language that brings a feeling of safety to the service users. Traditional and local materials are used in contemporary construction methods in order to achieve better thermal efficiency compared to traditional building methods.

The R3 Centre consists of:

1. Rehabilitate – accommodation for up to 14 people, provided with private en-suite bedrooms, with shared common living areas and therapy rooms as well as outdoor activity spaces.
2. Renew – central main reception and clinical facilities, as well as family meeting rooms at ground level. The upper level houses staff rooms and break out areas as well as general office.
3. Restore – day centre moving from its existing 200m² unfit for purpose facilities. The new headquarters will provide timber and ceramics workshops, as well as art studios, where recovery patients can develop skills, unlock potentials and lead meaningful lives. The café provides food sourced from the gardens to patients and staff, and is open to the general public.





CATHERINE DUNHAM

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Grange-over-Sands Lido

The now derelict, Grade II listed, Grange-over-Sands Bathing Pool opened in 1932, during a time where there was a rise in social democracy and national concern for public health. People were realising the benefits of sunlight, fresh air and exercise and the government supported work commissioned in the public interest. Over 300 lidos were constructed during the interwar period across the UK.

80 years on...

Only a handful of lidos survive. 'Their neglect in recent decades speaks volumes about our return to the private, the indoor and our retreat from collective provision'
– Ken Worpole 1999.

People spend 90% of their time indoors experiencing a disconnection with nature and the outdoors impacting on health, social and environmental problems. The project looks at the restoration and revitalisation of the lido in modern society to promote health and wellbeing. Due to lack of funding available for health and recreational facilities in today's climate, the project explores multi-use and flexibility to make it viable. Existing buildings are reused and modified, and new contemporary additions proposed.





CHARLIE FINDEN

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Common Ground

'Fighting back with the North' – this idea has underpinned an exploration into how we can offer support to marginalised groups, who have suffered tenfold under austerity cuts in recent years. Due to a high dependency on public services in Newcastle Upon Tyne, already disadvantaged groups, such as young mothers, BME women and domestic abuse victims, have been hit the hardest, as severe cuts are passed down to the services on which they depend the most. In a true northern spirit of banding together in the face of adversity, these key groups form a 'public takeover' in the shell of a former power station.

The proposal offers a transparency between a series of workshops, clinics, study spaces, a crèche, and emergency accommodation, breaking down the boundaries which isolate these individual groups. It empowers single parents and those in need of refuge, as pushchair access takes over the landscape and safe public parks spring up inside and around the building.

The architecture itself, an elevated garden which wraps around the existing power station, welcomes its users from across the landscape, creating a series of both intimate and dramatic instances within and around the structure. The opportunities this scheme drives forward give a voice to those hit hardest during these challenging times.





CHIVONNE KORANTENG

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The Retreat, Colindale

Colindale in the London Borough of Barnet was once home to the Central London Sick Asylum (later renamed as Colindale Hospital). Built in 1899, it remained open until 1996, treating a range of diseases including tuberculosis and mental illnesses. Upon closure, most of the original hospital buildings were demolished to make room for housing, save for the Grade II listed administration block which remains today.

My project involves the refurbishment of the Administration Block to restore it to its original use, with the addition of a residential block to provide much-needed beds for mental health patients in the Borough, which is currently operating at full capacity and in dire need, having lost a third of its beds within the last eight years due to funding cuts to mental health services.

The residential block will offer accommodation and respite to 24 mental health patients at a time. Differing from a typical care home, each patient will have their own individual room with access to a private, protected balcony. Their stay, lasting on average 3-4 weeks will be operated like a retreat, offering activities such as culinary therapy and therapeutic horticulture, which have been proven to aid recovery from mental illness.

The buildings will be arranged around a central courtyard, with perforated brick screening the walkways to promote openness but maintain privacy.

As well as being a staff base, the administration block will be opened up to the surrounding community, with a café, library and landscaped gardens. It is hoped that by establishing this facility in the heart of an existing community, more people can be educated on mental health, thus removing the stigma that currently surrounds it.





CONNOR BACKHOUSE

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The Old Sorting Office Development, Bristol

The Old Sorting Office development aims to tackle high cost city living and the lack of connection between people, community and the natural world. By utilising a derelict building in Bristol city centre the retrofit offers a new self-build community who can utilise the site to become self-sufficient in both food and energy production through use of allotments, aeroponics, anaerobic digestion, biomass and solar panels.

The building will utilise its position near to both the main road into Bristol and to the train station to draw in both tourists and scholars of self-building to illustrate how we can live within an urban environment. This will be done through guided tours of the site as well as exhibitions and lectures within the building.

The site will also offer restaurants and a market which residents can use to generate income as well as bringing others into the site. The market sits within a large courtyard allowing light in and creating a warm bright environment for people to shop. The restaurants share amenity spaces to maximise use but offer two different styles of dining, the fast dining experience and the more formal dinner. Past the restaurants sits the cocktail bar which looks over the canal system and offers both covered and external seating. The bar has an herb garden so guests can see ingredients, from plant to beverage before walking out into the public garden to watch an acoustic set.

The project illustrates that we don't need to keep building mass housing outside of a city when we have an unused building stock waiting to be utilised. Here we create housing, green space, jobs, an environment and community, all five minutes from the city centre. Not off the shelf housing which takes our green space and gives little back.





CONNOR NICOLL

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Evolving Stadium

Challenging the common belief that stadia need to be situated away from residential areas due to land availability, congestion and noise pollution, this project aims to fully integrate a stadium as the focus for a new affordable housing community.

Situated on the brownfield site of a demolished power station next to the town centre of Poole, Dorset, the stadium becomes a vision for future energy generation. Together with the permaculture gardens it empowers residents to become more self-sufficient in regards to energy, food and job security. The proposal facilitates a range of community services including breakfast clubs for the elderly, education spaces, function rooms and a sports rehabilitation centre, ensuring the stadium thrives throughout the year and not only on match days.

The architectural ambition for both the housing and stadium design within this project is one of growth and adaptability. The construction method allows interchangeable and adaptable modules to be added, replaced or removed as the site develops over time. This is key, not only to respond to the growing housing demand, but also to the changing fortunes for the sports teams within the stadium. This flexibility of design also allows for a variety of non-sporting events to take place including concerts, festivals, markets and shows.

As seen throughout this project, there is massive potential for stadia design to become increasingly integrated within communities while improving local health and wellbeing. Perhaps this could be the start of a changing perception that will develop into community stadiums of the future.





ELEANOR BETHAM

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Living in a Plastic World

Although many people are recognising the immense scale of plastic pollution, the vast majority of us do not act on this knowledge in our day-to-day lives. Our society sends waste 'away' so that it is no longer visible to us, allowing us to ignore the fact that we devour natural resources and produce huge amounts of unnecessary waste that end up in landfills, the ocean or being incinerated. To break this cycle and encourage change we need to re-establish the connection between our actions and their repercussions and to recognise the true value of natural resources.

Based in Manchester's Northern Quarter, this scheme is a retrofit of an existing multi-storey carpark and will facilitate education in the form of a museum focused on the local impacts of pollution combined with a fixing and upcycling centre to accommodate personal and societal change. In addition, a homeless shelter will provide temporary accommodation to those in need who will also be able to train in repairs, gaining new skills. An upcycled hotel will bring in further income to the project and a wider range of visitors.

The architectural approach taken to the existing structure has been to introduce light into the deep plan of the building by the creation of voids and a street through which connects new public realms surrounding the proposal. Circulation up through the building has been kept within these voids, one of which the car park ramps spiral around.

This project acts as a catalyst for change and could be replicated throughout other cities as we move towards a zero carbon future.





ERANNAN BENT

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Searching for a Post-Industrial Identity

"Her beauty is in the Quay...mainly fortified with stone and strong piles of timber, where a ship of 1,000 tons may ride at anchor." Downey, 1914

Waterford City is a historical walled town in the South-East of Ireland which in the past had strong connections to the River Suir. A once thriving trading port and industrial centre, the city now struggles with high unemployment and emigration, particularly among young people.

Waterford's Quayside, currently a busy road and a car park, is imagined as a place where art and culture can flourish. In a world where fossil fuel shortages have reduced an individual's ability to travel as freely, Waterford becomes a centre where culture and creative skills are exhibited and exchanged. Despite travel restrictions, a network of similar facilities in port cities across the globe enables us to experience and celebrate the culture of these far-away places.

Connecting back to already active public spaces within the city, the proposal provides studios, workshops and exhibition pavilions to facilitate creative industry. The provision of public space centred on culture and the ability of the buildings to open out onto the Quayside promenade encourages interaction between the public and the artists working within.

It is hoped that a space such as this could give a voice and a sense of purpose to those struggling to find their place in a post-industrial city.





GUY CRICK

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Dovercourt Depot

Labelled as the happiest city in the UK, Bristol has seen a significant rise in the population as young couples move in. This sudden influx has caused many growing pains and the ownership of a house in Bristol is now a rare occurrence. In the UK's now second least affordable city, being a home owner requires both a life long commitment to debt and generous financial support to obtain a deposit.

The Dovercourt Depot provides an architectural solution to the housing issues and a remedy to the growing health issues plaguing the city by providing a greater quality of life for those living within it. It offers an integrated community, able to support its inhabitants both financially and socially, whilst promoting physical and mental health.

Live, work, eat and play, are the four fundamental principles the Depot is based around. The site being set up through a Community Land Trust utilises many benefits through financial social lending rates and planning applications. The Naked house principal provides the key requirements to own and begin possessing a large open adaptable space as a home.

The larger community provides ample growing space to provide the site's inhabitants with the majority of their food. A community hub in the form of a canteen, it uses food grown in the community allotments to provide healthy food to locals and visitors, as well as a financial outlet for those growing produce on site. Cooking workshops are held to encourage the use of food as a medium for family cohesion and healthy living.

The project encourages independence and self sufficiency, providing many live work opportunities, nearby offices, workshops and studios in addition to a fabrication lab, both to discourage the current trend of a throw away culture and to reduce the cost of creating a home.

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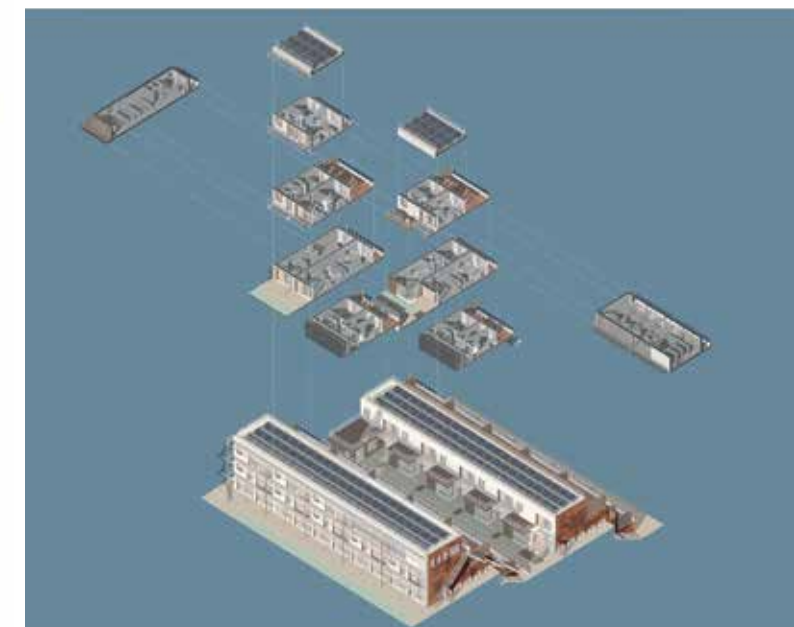
HARRIET SMITH

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Low Rise, High Density – exploring the future of housing estates in London

This project is a response to widespread estate demolitions in London, considering the social, economic and environmental sustainability of estate regeneration. This is set in the context of the current housing crisis, the defunding of mental health support services and increasing inequality throughout the UK. Estate demolition can have a negative impact on residents' physical and mental health, especially the more elderly and vulnerable; it will cause significant air and noise pollution throughout demolition, have a significant carbon footprint, higher than that of retrofitting, and on a wider scale estate demolitions impact the diversity of London with a tendency to increase inequality as people are often displaced. Central Hill Estate in Lambeth, due for demolition, was designed in 1966 by Rosemary Stjernstedt, part of Lambeth Council's architecture department, headed by Ted Hollamby, an advocate of low rise high density housing; the scheme preserved existing trees with buildings below the treeline.

This proposal advocates the retrofitting of this estate with minimal demolition, increasing the diversity of housing typologies and improving fabric performance. Additional infill housing will help fund the retrofitting, common houses throughout the site will help ensure social sustainability, and a new community centre which would be more inclusive and integrated than the existing day centre will be constructed. The community centre provides intergenerational care, combining a day centre for the elderly and a nursery throughout the day with a youth centre in the evenings. Community leisure facilities, advice services, local housing office, café and food cooperative increase the diversity of building users, encouraging informal social interaction between as diverse a population as possible, and offer a wider array of funding opportunities and revenue streams. The scheme suggests an alternate future whereby community infrastructure and the benefits of this are placed above economic value considering the long term health, happiness and diversity of London.





HEATHER MCNEILL

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Machynlleth Gateway: A Replicable Retrofit Solution

We live in an era of unprecedented housing demand, which, coupled with political uncertainties and a lack of direction for the construction industry, has led to an unstable outlook for the future.

Despite the drive to build as many houses as possible, the majority of the housing we will have in 2050 is already built, 99% of which is nowhere near up to standard.

When considering our future, and our ever-dwindling resources, a new approach must be taken to educate the public and challenge their pre-conceptions of a hairy, wobbly 'eco-architecture'.

Professionals need to be trained to undertake the inevitable large-scale retrofit projects as well as constructing new sustainable buildings using both new and traditional building methods.

The Machynlleth Gateway project aims to provide an education centre with on-site accommodation during retrofit works centred around a series of community spaces and routes from the town to the station. It would also act as a catalyst building for a wider sustainable masterplan for the town and surrounding area.

The Aim:

To broaden the basic ideas of adaptive reuse and rehabilitation to encompass the idea of systemic, long-lasting, transformative change across the community as part of three fundamental strands: building, transport and living.

The Philosophy:

Learning by experience. The educational programme will follow four principles which are fundamental to the success of the project: hands-on learning, community integration, sustainable methods and sustainable living.





JACK DAVIES

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In the UK we are fortunate to benefit from the National Health Service. The media has widely covered various funding issues and failure to meet targets by health boards. Health boards have done their best to provide the urgent care required to their oversubscribed services, many feeling the pressure of an elderly population and therefore a surge in care surrounding elder care mental health issues, in particular dementia.

Rather than reactive treatment of sick people we should look at preventative health measures, embedding health in the community and people's everyday lives. By measuring a community's health and researching the health of a town's infrastructure we can discover the health of a high-street.

This project takes the rural market town of Abergavenny and explores how health can be incorporated into the urban grain of the town. Where previously reactive nodal treatment in the form of acute health care typologies has been the norm, this project takes the needs of a community and incorporates treatment and preventative therapies into the urban grain.

Taking a traditional shopfront as the catalyst to entice pedestrians front the highstreets, the user is taken on a journey through a green oasis flanked by the ancient town and architectural intervention. The architecture forms a series of elemental courtyards, toying with the concept of public and private, inside and outside spaces. This green artery pulls the nature beyond the town onto the high street. An architecture where sustainability and health become an incubator for a change in the quality of a community's health.





JOHN MCSEVENEY

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Sheffield Bioenhancement Centre

We live in a world of increasing connectivity. As populations expand, cities grow and technology advances we seek greater synthesis between all spheres of life. Our increasing use of technology (some say reliance) in every aspect of our lives has prompted a growing number of humans to seek greater connectivity with the devices they use through the modification of their bodies. Bioenhancement or biohacking is a relatively new concept but its origins can be traced back to 1958 and the first implanted pacemaker. Modifications available today include sub-dermal implants such as RFID chips, magnets and even biometric trackers but bionic eye implants and other major surgical interventions are in development. We are living through an age of science fiction – what were, in living memory, seemingly fantastical concepts are now every day banalities and the rate of change is such that many feel wary or frightened of this ‘great leap forward’.

In recognition of this growing trend I propose to develop the world’s first Bioenhancement Centre. Based on the site of the Old Coroner’s Court close to Sheffield City Centre and overlooking the River Don, the centre will include full medical facilities to enable the surgical implantation of technological devices. In addition to this a series of workshop spaces will be provided to allow users to work on their own projects and a laboratory will allow research (‘DIY Science’) to be conducted away from commercial/ university facilities. Business incubator pods will facilitate the start-up and growth of companies and the workshops will also allow for the rapid prototyping of ideas. The community (both the building’s users and the wider area) will be provided with a café/ restaurant which will double as a gallery or performance space, a small courtyard garden, and various informal spaces where users can discuss and share ideas.





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Imagine being suddenly placed in a culture alien to your own, where people seem different from you, where you are always in danger of breaking social rules you don't understand, and where you struggle to keep up with the flow of interaction that comes naturally to those around you.

This is what life is like for someone living with autism.

On the cusp of a demographic boom, it's important for architects to truly understand the experience of those who are most sensitive to their surroundings. Rising levels of autism in children brings social anxiety, isolation and difficulty intergrating into everyday situations. The built environment can be overwhelming, alienating and difficult to negotiate.

The inspiration and motivation for my Major Design Project comes from my own situation, dealing with and managing the diagnosis of autism within my son Zachery and is a reaction to the woeful lack of support for families within the UK due to government funding cuts and staff shortages across the country.

The design focuses on bringing together the key services in autism and placing them together in one location. The project has four elements. A space for therapy that considers all aspects of autism and the sensory processing difficulties associated with it. A hub providing those dealing with a diagnosis and their families with a space to get together and learn parent-to-parent and to share experiences and difficulties. A space for families to take respite when required from everyday struggles. A space for young adults finding it hard to fit into society, seeking work and a home of their own. The scheme provides assisted and community living facilities and jobs on site giving opportunities that are often not available to those with a diagnosis, and aims to provide a better quality of life for those with a diagnosis.





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Guernsey's Democratic Centre

As part of my Major Design Project, I looked at the States of Guernsey and what it means for the Island. As the United Kingdom prepares itself to leave the European Union, the States of Guernsey (or the States) find themselves at a crossroads, unsure whether sticking with the UK or to break away to ensure certainty and stability within the Bailiwick. Whichever route is chosen, the States I think need to be re-imagined if they want to remain competitive and stand out on the world stage. For the States to do this, they will need to first address the underlying issues they face and how they want the Islands to move forward in the future.

The States are currently transitioning by moving its public services (ie tax and social security and administration) from several buildings into one or two buildings within the capital St Peter Port. The aim is to streamline services and save money. However, relocating these public services into existing buildings is creating problems with accessibility. These buildings are clearly not fit for 21st Century wellbeing and are simply patching a hole instead of fixing the problem. This is a common complaint from local residents about the States and one of the main barriers to people engaging with the States about current issues.



Main Public Space Outside the Main Entrance



Perspective Section Through Public Spaces, Atrium and Chamber



Proposed Site Plan



PAULA PRIEST

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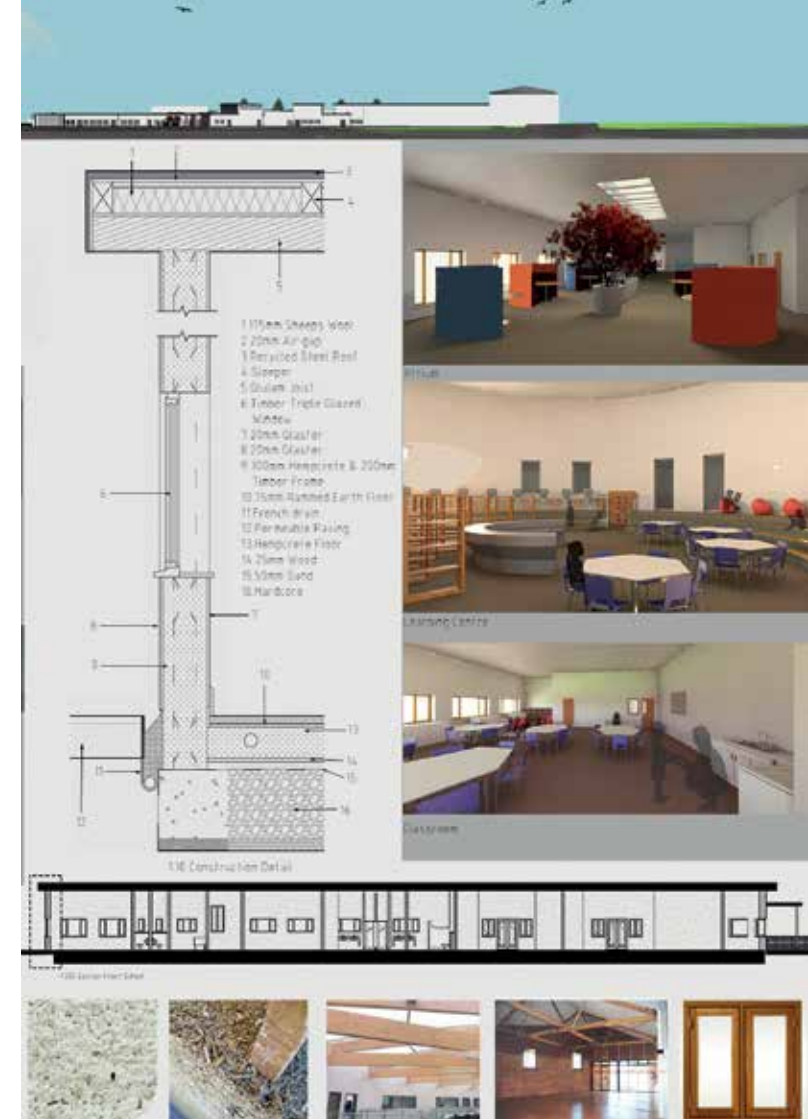
Educating Machynlleth

'Educating Machynlleth' was a project to redesign the schools within the town. The current secondary school needs refurbishment and proposals have been put forward that include combining the primary and secondary schools in a new location. This is the option that I chose, to design a new school, placed more centrally within the centre of town.

My design would allow the schools to share services such as catering, administration and sports as well as some teaching staff. The design was based around a central hub that housed both the library and IT facilities. This also is part of the building strategy. It uses the stack effect to allow the building to be naturally ventilated. The primary and secondary wings then branch off this hub, which also houses the reception, administration and meeting rooms.

The construction of the building uses a timber frame with hempcrete walls. The floor is rammed earth. The roof is recycled steel and the windows are wooden frame with triple glazing.

The exterior areas of the building were designed around allowing the children to learn outside and outside, classroom areas as well as an amphitheatre were placed along a nature walkway. Growing areas were provided for learning and to provide produce for the school kitchen.





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Urban Catalyst: Centre for Sustainable Education

How do we become zero carbon?

Many attempts have been made to create new and adapt existing urban environments, however these attempts failed to properly address the need for sustainable solutions. With so much of our existing urban infrastructure and building fabric set to remain far into the future, we must consider how we are going to upgrade our existing urban fabric, to become more sustainable, rather than simply limiting our sustainable solutions to new-build.

The scheme proposes a sustainable masterplan for the existing town of Dorking, Surrey based on the principles set out in CAT's Zero Carbon Britain. However, in order to achieve this masterplan, a catalyst is required in order to provide the understanding, skills and space for discussion about the future of the town in order for it to embark on its transition to sustainability for the future: an urban catalyst.

This urban catalyst will be a centre for sustainable education, which will demonstrate both retrofit and new-build construction, and house space for teaching and debate, exhibition and community facilities for and around the subject of sustainability.





ROSITSA ATANASOVA

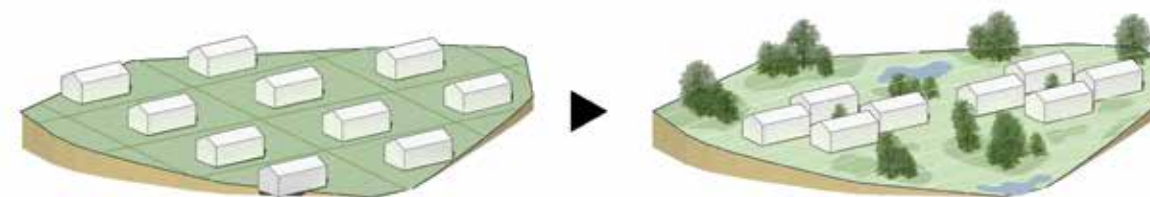
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ОБРАЗЦОВ ДОМ [OBRAZTSOV DOM]

Based in Bulgaria's capital Sofia, this project responds to the repeated criticisms and signals from various international and national organisations about the inadequate juvenile justice system in the country. The current campaign called "Childhood without bars" ("Детство без решетки") aims to achieve a comprehensive reform in the area of juvenile justice. It states that a child, whether victim or perpetrator, must most of all be treated as a child by the law. Moreover, imprisonment is not only detrimental to the child's development but also does not help prevent reoffending. Deprivation of liberty is the most expensive and ineffective way to "deal with" children in conflict with the law.

This project proposes a new type of youth detention centre that weaves together rehabilitation, education and activity but strips down the bars of detention. It aims to offer a safe place that fosters change, growth and empowerment for troubled kids in the age range 14-18. It is designed around the healing and therapeutic qualities of natural light, connection to nature and physical activity. By stripping down the physical and social boundaries between the centre and the community in which it lies, a mutually-beneficial integration is made possible. The centre offers much needed urban space to the local community and hosts movie screenings, shows and exhibitions made by the kids. This constant interaction enables kids to remain connected with their surroundings.

Directly translated from Bulgarian the title of the project means 'example home'.





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Newgale Surf School - Experience Water's Edge

The name Newgale exposes the harshness of the environment the place has to offer right from the outset. Newgale is a well-known surfing beach, situated in West Wales that experiences a diverse weather climate all year round. This scheme intends to save Newgale beach from extreme flooding, and prevent it from becoming a forgotten underwater village.

The development required at Newgale to prevent the flooding provides the perfect opportunity to enhance the site's characteristics and create new architecture that improves the area for locals and tourists. At present a former petrol garage rents out water sport equipment and provides lessons in what is an awkward customer transaction experience.

The new scheme will offer the spectacular views at Newgale but, when necessary, show just glimpses through, saving the reveal for specific moments. Allowing a slight transparency through the building, even offering peaks to alternative activity spaces or individual enclosed courtyards. The building, or buildings, are to be held within two bookend structures where the views between can be controlled. These bookends become key structures within the scheme as they are the first sign of inhabitation when approaching the building from the north or south, and will have the opportunity to catch the eye of passers-by and entice them in.

Structurally the building offers many challenges due to the harshness of the tides and extreme sea waves that pound the south west facing façade. Measures have been taken to incorporate this within the design, allowing the waves to either crash into or flow up the structure. A combination of the two would showcase each method within the architecture and offers the advantages of each.

A major outcome of the scheme is to improve the customer experience when renting and learning about water sports, exploring how sustainable architecture can enhance this experience and also deal with what is considered a harsh environment in a playful manner for one to enjoy.



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Kerriann Falconer
Louise Halestrap

Lucy Jones
Matt Williams
Matthew Redding
Nick Brown
Nick Cramp
Patrick Hannay
Paul Allen
Paul Harries
Paul Williams
Peter Harper
Pete North
Richard Heath
Robert Sakula
Rowland Keable
Ruth Stevenson
Sophia Ceneda
Stafford Holmes
Susan Steet
Tim Coleridge
Tom Barker
Tom Crompton
Tom Griffiths
Tom Woolley
Tony Russell

To My CAT Students of 2017

Most of us met as strangers
Yet we ALL leave as friends
And though distance
separates us once more
Know that even in times
of crisis and danger
If we need one another
Just CALL

You came together
as freshers
Yet you leave with degrees
Plus shared experiences
That'll always be there
You've seen each other
through good times
Through parties and sickness
You've shared emotions
And even laid yourselves bare!

(Although someone did mention something
about a safety hat and boots)

You've had plenty of experience
Of building weird things
With mud
and straw and clay
You drank ales from Snowdonia
Ate food made by vegans
And still managed to study all day!!!

We've shared glitter
And tin cans
Dressed as Aliens too
We've had music and parties galore
We've had record bar takings
Till roll stories recited
I'm not sure if we COULD have managed much more!!!

Now the future awaits us
And no one knows what it'll bring
Though I am sure for you lot
it will involve fabrication
I will come back to my bar
But at night I will look up to the stars
And count the days until we meet again at Graduation!!!!

Good luck everyone, huge love and hugs from **lppy** xxx

Illustration: Charlotte Finden

