Life should be abundant, enjoyable and beautiful.

By Diarmuid Ó Súilleabháin
Acknowledgments

Special thanks to my parents, family and friends without whom none of this would be possible.

Thanks to all of the staff and students in the school of architecture at the University of Limerick.
Abstract

My thesis began with an interest in large forms in the landscape and how they might be designed sustainably. These artifices are gigantic pieces of infrastructure that are generally have short lives and have little if any architectural consideration. What might these space look like if they and their afterlives we designed to be enriching places.

As the future function of a building is not predictable, the buildings form and forms ability to make a place took on a more important role within the work of this thesis. Investigations included formal studies in order to create an architectural language and speculative impositions of large forms upon the landscape (See Figure 0). The proposed Liquid Natural Gas storage and distribution facility in Ballylongford, County Kerry (due to begin construction in the next year) is to be the latest giant in the Shannon Estuary, again designed with no afterlife and devoid of architecture, I chose this as my site to test my ideas.

The product of this investigation is a L.N.G. storage facility, designed as an enriching place that will transcend its original function in time. Rather than being a closed off area, sculpted ground and paths connect the site to its immediate environment and the global scale milieu with which the River Shannon is engaged with.
0. Collage of super imposition of form onto the landscape
Introduction

How to live sustainably is one of the great questions of our time. The UN Secretary General, Ban Ki-moon, cites global warming as “the top most priority issue, not just for the United Nations but for the whole international community, and even for humanity”. This is not the first problem that is global in its scale but it is the first that requires a unified concerted global effort to solve it.

We are now at a very interesting crossroads as our sustainable world of the future is being reluctantly imagined. As we contemplate the meaning of sustainability, our question should be how is it we reconstruct society in a way that only sustainable living will be possible. It is interesting to imagine what form the sustainable landscape and architecture will take. An architecture designed with the future in mind, means an architecture that is not just concerned with its designed function but must speculate and allow for unpredictable future functions.

At the top of the agenda of the sustainable discourse is energy and what sustainable energy might be, but very little consideration is given over to what form the new landscape might take or what to do with the old. This is an opportunity that presents itself in the Liquid Natural Gas facility (see figure 1) to be built on the bank of the River Shannon estuary in Ballylongford, County Kerry.

Often overlooked, often hidden away, the landscapes and architectures of energy production and distribution surround us. As humans consume energy, energy in turn consumes space. As Rania Ghosn notes; “[Energy] exploits space as a resource, a site of production, a transportation channel, an environment for consumption, and a place for capital accumulation. Whether oil pipelines, dams, solar panels, nuclear plants or wind parks, all industrial energy systems employ space, capital, and technology to construct their geographies of power and inscribe their technological order as a mode of organization of social, economic, and political relations.”

This geography of energy is vital for the maintenance of living standards of humanity and improving standards of living world wide. These pieces of infrastructure are generally of a very large (if not of a super) scale, take up large areas of ground and contain very large forms that can be seen for great distances. Despite this, very little aesthetic consideration is given to these in design. Often architectural consideration only goes so far as to diminish the visual impact of these behemoths.

Society’s acceptance that there is a type of space that can only be ugly, and must be kept from view as best possible, especially when it is these giants that afford such a great standard of living is questionable. Infrastructure has not always been treated in this way, in the past infrastructure was celebrated. Battersea Power Station built in London exists today as a ruin only because it was designed so well. Bridges have in the past been some of the most designed and celebrated structures built, but this is often not the case today. As Santiago Calatrava observes;

“If you look back over the history of nineteenth and twentieth century bridges many are very special and significant structures. They were given stone

1. Site Layout Plan for Shannon L.N.G. Terminal

[1] Taken from the documentary, A Burning Question (2010), made by RTÉ, available to watch at, http://www.earthhorizon.ie/home/productions/a-burning-question

cladding, sculpted loins or railings, even angels holding the lamps as in the case of Alexander III bridge in Paris. This attitude disappeared as a result of World War II [...] hundreds of bridges all over Europe had to be rebuilt quickly. It was out of necessity that a school of purely functionalist bridge design sprang up. A good bridge was a simple one and above all, a cheap one.\(^3\)

Compared to these bridges, our geography of energy is neglecting the opportunity to become a beautiful and enhancing element in our landscape rather than simply being conceived as visual pollution.

We are now at a point of transition between geographies of energy, the intention that in time, energy will be produced in a manner that is not injurious to the planet. This will require a change in how energy is produced, transported and delivered. As the old energies become obsolete, design faces the challenge of imagining the afterlives of these spaces as much as their first function.

As the future function of structures are not determinable, the building must use its form more in order to make places that transcend their initial function. As future sustainable energy production is not something that can be predicted and is indeed beyond what is expected of the architecture student, the Ballylongford Liquid Natural Gas storage and distribution facility, due to commense construction within the next year, is the perfect case study to speculate on the future uses of a soon to become obsolete facility.

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Page 24 - 26
Chapter 01: What Is Sustainability

Sustainability is generally described as the capacity to endure. In ecology, it describes how biological systems remain diverse and productive over time. Healthy wetlands and forests are examples of sustainable biological systems. For humans, sustainability is the potential for long-term maintenance of well-being, which has environmental, economic and social dimensions. How can we act in order to develop a sustainable world? After a series of ecological catastrophes and the growth of the environmentalist and green movements in the 1960s and 70s, the United Nations General Assembly recognized that environmental problems were global in nature and determined that it was in the common interest of all nations to establish policies for sustainable development. In 1983, the Brundtland Commission was convened by the UN. The report of the Bruntland commission, “Our Common Future”, deals with sustainable development and the change of politics needed for achieving that. The report’s definition of the term sustainable development is well known and one of the most often used:

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two main concepts: The concept of ‘needs’, in particular the essential needs of the world’s poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.”

The definition lacks somewhat in ambition. It doesn’t describe a radically new way of living. By its own rule, if the people on earth were essentially living in exactly the same way that we are today in 5000 years time, we would be meeting the Brundtland report, but it would be hardly true that humanity had developed. The second concept quoted fails to highlight technology’s potential positive role in sustainable development.

Our question should be how is it we reconstruct society in a way that only sustainable living will be possible within the limits of our environments capacities; creating a durable global ecology that will make flora and fauna suffer as infrequently as possible from lack in the future. As architects we must imagine how we can create beauty in this new landscape.

To begin to design in a sustainable manner, one first must define what one means by sustainability. The term sustainability may seem immediately intelligible, but is on interrogation highly ambiguous. As Mark Jarzombek observes in his essay, “Sustainability: Between Fuzzy Systems and Wicked Problems”, the concept of sustainability can range from a transpoliticized American universalism, to neo-Hellenistic, arts-and-crafts return to the simple life. Even in William McDonough and Michael Braungart’s eminently readable and ostensibly practical book, Cradle to Cradle: Remaking the way we make

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http://www.un-documents.net/ocf-02.htm#

5 Mark Jarzombek, Sustainability: Between Fuzzy Systems and Wicked Problems - Published in Blueprints Vol. 21 No.1 (Winter 2003)
Pages 6-9
Despite the term sustainability being open to interpretation, it is also prone to misconceptions based on one’s definition of nature, which is equally ambiguous. These are: a misconception between nature and industry; a misunderstanding of natural and unnatural; and a misconception that people are divorced from their natural environment.

People’s misconceived distinction that nature and industry are two completely separate spheres is problematic. By separating the two, people are reneging on a commitment to their own environment by allowing a space within it where things can diminish it. This mindset is necessary for the continuing of the status quo, similar to the way Gilles Deleuze and Félix Guattari observe, in their book, Capitalism And Schizophrenia 1: Anti-Œdipus (1977), that from a Marxist perspective certain presuppositions are necessary for the misleading of the proletariat to be blind of how they are being controlled:

“It is probable that at a certain level nature and industry are two separate and distinct things: from one point of view, industry is the opposite of nature; from another, industry extracts its raw materials from nature: from yet another, it returns its refuse to nature; and so on. Even within society this characteristic man-nature, industry-nature, society-nature relationship is responsible for the distinction of relatively autonomous spheres that are called production, distribution and consumption. But in general this level of distinction examined from the point of view of formal structures, presupposes (as Marx demonstrated) not only the existence of capital and the division of labour, but also the false consciousness that the capitalist being necessarily acquires, both of itself and of the supposedly fixed elements within the over all process. For the real truth of the matter - the glaring, sober truth that resides in delirium - is that there are no such thing as relatively independent spheres or circuits.”

People’s concept of what is natural and unnatural is another major misconception. As Deleuze and Guattari established that for example, the distinction between what is nature and industry is misleading, so too are distinctions between what is natural and unnatural. Agriculture for example is generally seen as being a very natural practice, where as in fact it has exactly the same effect on the landscape as super scale industry. It is the practice of the monoculture and it is the antithesis of diverse ground. But people see fields as being natural, even hedgerows and ditches in Ireland are protected from development due to shelter they give to flora and fauna. I would sympathize with Stewart Brand’s frustration with people notions of what is natural:

“Natural food […] no product of agriculture is in the slightest bit natural to an ecologist! you take a nice complex ecosystem, chop it into rectangles, clear it to the ground, and hammer it into perpetual early succession! You bust its sod, flatten it flat and drench it with vast quantities of constant water! Then you populate it with uniform monocrops of profoundly damaged plants incapable of living on their own! Every food plant is a pathetic narrow specialist on one skill, inbred for thousands of years to a state of genetic idiocy! These plants are so fragile, they had to domesticate humans just to take endless care of them!”

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6 William McDonough & Michael Braungart, Cradle to Cradle: Remaking the Ways we Make Things (London: Vintage, 2009)

7 Gilles Deleuze and Félix Guattari, Capitalism and Schizophrenia 1: Anti-Œdipus (1977) page 3,4

8 Stewart Brand, Whole Earth Discipline: Why Dense Cities,
This is so obviously apparent in desert farms (see figures 3 and 4) which are often seen as great feats of man bringing life to a territory even though there are altering a local ecology that has developed over a great period of time.

Another nature myth that is popular asserts that we in western society, living in our technological artificial environments, are divorced from our natural environment. It demands that we understand that we are a part of nature and not just abstract engineers that exploit the earth. This is very dangerous as it comes from a false perception that nature is a harmonious, organic, balanced reproducing organism that would reproduce itself happily for the duration of time, but for it being disturbed and destroyed through human hubris and technological exploitation. This is not the case; humans are not separate to nature. Nature is anything but harmonious. It has been a massive series of catastrophes, death and extinctions. The Earth will one day be consumed by the sun; the generator of life on earth will become the ultimate terminator of life. Catastrophes in the past have completely changed the planet and these are things which are beyond any lived understanding we have of disaster. These catastrophes are not necessarily a bad thing, humans benefit from them, as Slavoj Žižek points out:

“Nature is not a balanced totality which then we humans disturb. Nature is a big series of unimaginable catastrophes. We profit from them. What is our main source of energy today, oil. Are we aware what is oil? Oil reserves under the earth are the material remains of an unimaginable catastrophe [...]. Can you imagine what type of catastrophe had to occur on earth”.9

Our attempts at designing or making things that are sustainable are hampered and confused by these misconceptions; what is natural and industry; what is natural and unnatural; that we are divorced from our environments. Although well intentioned and earnest, many of these sustainable attempts have turned out to be more injurious to the planet in the long term as they have failed to look scientifically and without sentiment at the problems. As Matthew Taylor has pointed out, “Copernicus, Galileo and Newton helped lay the ground for the enlightenment by revealing that the laws of nature failed to conform to religious doctrine but also they failed to conform to intuition”.10

The best example of this can be seen in people’s attitudes to nuclear energy. People are frightened of nuclear energy based on disasters which have happened in the past such as; Hiroshima and Nagasaki, Japan (1944), Windscale, England (1957); Three Mile Island, U.S.A. (1979); Chernobyl, Ukraine (1987); Fukushima, Japan (2011). Driven by environmentalist and green movements, the self appointed guardians and experts on all matters sustainable, the growth of nuclear power has been lobbied against and restricted. Since then coal, a material that should have become obsolete 20 years ago, is more popular than ever. It is the largest worldwide anthropogenic source of released carbon dioxide. As Stewart Brand observes in his book, Whole Earth Discipline: Why Dense Cities, Nuclear Power, Genetically Modified Crops, Restored Wildlands, Radical Science and

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Geoengineering are Essential, coal per person-lifetime produces “68 tons of solid waste and 77 tons of carbon dioxide”. Comparatively, nuclear waste, brand observes, is minuscule in size, “one Coke can’s worth per person-lifetime of electricity if it was all nuclear”. In terms of energy production to waste, Brand notes;

“A 1-gigawatt nuclear plant converts 20 tons of fuel a year into 20 tons of waste, which is so dense it fills just two dry-storage casks, each one a cylinder 18 feet high, 10 feet in diameter. By contrast, a 1-gigawatt coal plant burns 3 million tons of fuel a year and produces 7 million tons of CO₂, all of which immediately goes into everyone’s atmosphere, where no one can control it, and no one knows what it is really up to. That’s not counting the fly ash and flue gases from coal - the world’s largest source of released radioactivity, full of heavy metals, including lead, arsenic, and most of the neurotoxic mercury that has so suffused the food chain that pregnant women are advised not to eat wild fish and shellfish. The air pollution from coal burning is estimated to cause 30,000 deaths a year from lung disease in the United States, and 350,000 in China”.

The combined total of deaths is essentially the same as the population of Counties Clare, Limerick and North Kerry which is about 365,000 persons. Compare nuclear to coal and you see that each nuclear power station built swathes out of a country’s pollution.

Despite the best of intentions of the green and environmental movements, the global environment is now in a worse state than at the time of the respective movements origins in the 1960s, and this has been caused by taking the misconceptions above as truths. Slavoj Žižek has described how altruistic motives only served as a remedy to slavery

“The worst slave owners were those who were kind to their slaves, and so prevented the core of the system being realized by those who suffered from it and understood by those that contemplated it […] It is simply repairing with the right hand what has been destroyed by the left.”

What Žižek demands is we create a society in which slavery is impossible. This will cure the problem of slavery finally. Our question should be how do we make cures as opposed to remedies. As architects we can speculate on what form might an architecture that is clear on its concepts of nature and sustainability take. These designs need to account for unpredictable future changes in its function as our technologies and society change, and makes spaces that are ecologically and spatially diverse.


Chapter 02: Form

We now understand that the function of buildings can change with time. A building's form no longer needs to be an expression of the initial internal process. Louis Sullivan's "form ever follows function" no longer can apply because you cannot predict the next function of a building. Even though a function informs the general shape of a building, the form can be seen as independent of this and even the building's most remarkable factor. The form can, in itself separate from function, create a place that can transcend its original designed use.

If we are to make form in a way that is sustainable it must reflect the characteristics of sustainability rather than the current mode. If variety and diversity are the defining characteristics of sustainability, then uniformity and sameness define the opposite. These two antonyms of sustainability are two of the attributes of industrialised production. Generally, industrialisation, as we have seen earlier with agriculture, has served to reduce variety, and often the more standardised elements used in building the less variety of space is produced. This is problematic in terms of space creating. If, as Rem Koolhaas describes, architecture is the "utopian enterprise", the ideal spaces architects set out to create surely should not evoke barren landscapes lacking in variety and diversity. In her review of satirical blog, Unhappy Hipsters: It’s Lonely In The Modern World (See Figure 5), Ingrid Fetell writes of how restrained modernism can show how plainness and a lack of variety can produce spaces which are lacking in vibrancy and delight:

“I think that modernism’s restrained quality is fundamentally in tension with the idea of delight. Delight is an emotion of abundance — a celebration of sensation and richness. Delight and joy are primally connected to wellness, and wellness in nature is lush, plump, vibrant, and bountiful. Throughout our evolution, these were the aesthetics that would signal a good place to settle — one that provided adequate water, food, and shelter to sustain life. The matte, bare surfaces beloved of modernists signal something else entirely. I can’t help but think there must be something primal within us that understands such stripped down spaces as inhospitable — the emotional equivalent of dry desert, or fallow fields.”

It is not just modernism that extols this lifeless architecture and being, but currently design and architecture magazines. How is it we, as experts in understanding space, are so comfortable with mirthless photography, where we see people who are shot in solitary, pensive poses or in strangely non-interactive groups. What would a psychologist make of these scenes and would they like to see them propagated?

Modern design aesthetic came from a desire to leave behind the excesses of the 19th century. Modernist Architects wanted buildings to be simplified to the point that ornament could be eliminated completely and a building’s form could represent a clarity never seen before in architecture. It is this pared back spareness, clean lines and neutral colours that create this sense of spareness. These well intentioned spaces were aspiring for a zen-like


tranquility but more often than not produced melancholic isolation. As Stephen Pinker observes:

“The belief that human tastes are reversible cultural preferences has led social planners to write of people’s enjoyment of ornament, natural light, and human scale and force millions of people to live in drab cement boxes.”

This new clarity represents not only the opposite of sustainability but also makes forms which are less capable of transcending their original uses.

As we have seen the characteristics of industrialisation are contrary to the type of space that we are trying to make. As we have no alternative to our industrialised system of production, is it possible to have an industrialised society and variety in experience and the creation of delightful spaces. In other words, can you have a limited set things and make beautiful, abundant and enjoyable space? Gilles Deleuze was interested in what he called ‘unlimited Finity’ in which a finite number of components would produce an infinite number of combinations. There are three pieces of music that use this method in all very different ways; Laurent Garnier’s, Acid Eiffel (1993); Steve Reich’s, It’s Gonna Rain (1965); Morton Feldman’s, The Swallows of Salagan (1960).

Laurent Garnier’s Acid House record, Acid Eiffel\(^ \text{18} \) (1993), consists of about 12 tracks. Each track is a loop that repeats throughout the whole piece, never changing, only some being altered by phasing effects. Some of the tracks are different lengths. Garnier uses the sound levels as the means by which he creates a sense of change. The levels of all the tracks are slowly rising and lowering at different frequencies from one another. Sometimes only two or three are heard, other times most of them can be heard. The combinations of different tracks together create a completely different scenes and feelings for the duration of the track, with no two being identical.

Steve Reich’s work and use of phasing in It’s Gonna Rain (1965) is the most pared down way of approaching this. It’s Gonna Rain consists of two identical samples are repeated at a very slightly different speed until they loop back upon themselves again after some time. This phasing causes a flanging effect and then rhythmic separation to occur as the piece move through its cycle. As the cycle unfolds, melodies are created by the pieces clashing over one and other. Although two identical components are used, they are never heard the same way in the piece.

In some of the compositions of Morton Feldman, such as The Swallows of Salagan (1960), he would write pieces in which the musicians made some of the decisions in terms of how long something would be played or what notes would be played, or when they would start playing or change playing. The pieces were not hermetically sealed but meant that each time the piece was played it would sound completely different.

An architectural work that uses a finite number of components to create spaces that are varied, well considered and extremely generous are Jean Renaudie’s Givors projects (see figure 6, figure 7 on next page, and figure 8 on second next page). Seemingly chaotic there is a governing set of parameters behind its design; 45 degree angles, multiple aspect dwellings, generous garden space (often twice that of the interior space) et cetera.

I have tested these ideas in three primer projects in order to design spaces that are abundant, beautiful and enjoyable. These projects were; a cold storage facility in


\(^{18}\) Laurent Garnier, Acid Eiffel (Detroit: Fragile Records, 1993)
7. (Above) Photograph of kitchen in table space in one of the Givors apartments

8. (Right) Photograph of main entrance into Givors scheme
Chapter 03: Work

When the 800m diameter harbour and angular lagoon were built by constructing long walls into the Shannon Estuary, in what is now Shannon Airport, it was for purely practical reasons: a sheltered port for the flying boats and a pond for the purpose of draining the area of the runways. However, now that the harbour is no longer operational, this area has become an ecologically diverse ground. The harbour is a very striking enclosure because of its form. The lagoon has become a bird sanctuary. Here a large scale groundwork and intensifying of the use of the ground has resulted in both an airport and a more diverse ecology. My desire with the site was to expand the diverse flora and fauna that came to exist here artificially by removing the car park and replacing it with multistory car park drums on higher ground, and by imposing a folded landscape (see figures 9, 10 and 11); In doing so, giving the arrivée at Shannon the most unexpected airport landscapes on exiting the airport, a wildlife reserve. I worked with an origami (see figure 12, on next page) inspired folded surfaces language on the site to express a deliberate landscaping idea and also because in the building a large span storage buildings on the site, this way of building has certain advantages. It was a language that could be reproduced again and again with many different interpretations and variations. As Farshid Moussavi notes about this type of structure:

“Folded plates distribute loads along the surfaces of the plate and along the seams between the folds, across three dimensions, producing structures composed of surface and linear elements […] When the surface is folded, increasing the depth of each of the folds increases their overall resistance, enabling the surface of the plate to function as a beam”. 19

Tempelhof has a rich and growing ecology and a ground that was largely untouched by modern farming or building since the 1920s. The park was unrecognizable as a park and it was being occupied in ways that other city parks don’t allow. The park is being made by the users rather than prescribed to them, and nobody seemed to be lost without axial routes or monuments, water features or grand entrances. Since the closure of the airport, there has been a large unplanned ecological succession and growth in diversity of flora and fauna on the site. This is because as Otto von Guericke observed, “nature loves a vacuum”20. In Europe’s most famous shrinking city, I was baffled by the need to build anew rather than to take advantage of what was already there. There are so many empty building and vacant plots in the city. Do the people of the most polluted, industrialized and populous country in Europe really need to take over an area of long uninterrupted and diversifying ecology?

I proposed leaving the park as it is so as to allow the site to continue to be occupied in the way it currently is, allowing the ecological succession of the site to develop further of its own accord towards its climax. In order to retain the meadowland nature of the site, a flock of sheep would be introduced rather than using machines to keep down the grass (See figure 13, on second next page).

In the University of Limerick two things struck me; the lack of clarity in the reading of the university, and its escapist passive landscape. The reading of the University of Limerick campus buildings is very unclear. It lacks in the analogue natural way that Stansted Airport can be...
12. Origami study models in folded thin white card exploring ideas on roof making for the cold storage facility and as landscape.
Thesis Proposal
Abundance Rather than Limits

VACANSOPAPUROSOPHOBIA
The Fear of the Bare Page
13. Tempelhof final presentation board. On the left are some of the flora and fauna that have moved into the site. On the right are collage images of how the future of the airport would be inhabited.
read. Norman Foster describes that, “Stansted strove for the analogue experience - like the hands on a traditional watch face: you look at it and instantly you know what time it is”. Even the entrance to the building is difficult to find. The campus is tied together by a conservative landscape that sits as nothing more than a passive background that by its nature contradicts the nature of a university.

The explanation of this landscape may be found in James Corner’s book Recovering Landscape (1999): rather than being passive neat background landscape can be an agent in producing an enriching culture. He points out that dreams of new landscapes have been mostly overshadowed by concerns for conservation and preservation during the latter part of the 20th Century and this has caused landscaping to have stagnated into nothing more than a soothing image; a visual remedy for people’s anxieties with modern living. This he blames on the media’s portrayal of landscape as one that typically invokes idealized images of countryside devoid of modern technology, urbanization and change. The university is technological and as urbanised as anywhere else on the River Shannon. As Corner observes, Landscape is presented as a place to escape the present anxieties of the present and the future:

“That the scene itself displaces viewers, keeps them at a safe and uninvolved distance, and thus presents the landscape as little more than an aesthetic object of attention, escapes the attention of the gazing subject, as does the face that the scenic moment literally transports viewers back in time, effectively decontextualising from the very real ills of the present. Obviously, looking at the landscape is a seductive and seemingly innocent affair, one that provides delight and pleasure for many, especially given the incredible and still rising popularity of tourism, National Park attendance, and weekend drives in the country. Clearly, the public does not find the landscape’s scenic beauty at all a problem.”

This is a major problem because this conservative landscaping does not allow the extending the range of what life has to offer. In fact it offers nothing. Corner notes, “There is simply nothing to look forward to […] both evil and invention are hidden, and the viewer is allowed to momentarily forget and escape from past and present difficulties, finding compensation in the recollection of earlier, “simpler” times”. A university is one place where the anxieties of the present and future should be fully engaged with as a university is a place associated with clear thoughts and breaking new ground rather than propagating the preexisting.

As my two previous projects were essentially landscaping exercises, I choose to picked a new main entrance to the main building as my brief so as to do a definitely built work. The sloped glass facade that is the public reception to the built campus is vague. There is no clear front to this building. There is no back either. Plassey House offers a front of sorts in the courtyard, but its front actually faces the other way, away from the campus. The courtyard itself is isolated from the rest of the campus by the entrance and Jean Monnet Theatre but not the theatre’s tiered floor. My proposal was to remove the whole four floor section of building between the entrance plaza and the courtyard to connect the isolated courtyard to the rest of the campus (see figure 13). This area includes the entrance and the Jean Monnet Theatre. In its place I proposed a large clear entrance and reception that

21 David Jenkins, Editor, Norman Foster: Works 3 (Munich; London: Prestel, 2006) page 41
22 James Corner, Editor, Recovering Landscape: Essays in Contemporary Landscape Architecture (New York, Princeton Architectural Press, 1999) page 156
23 Ibid.
link the courtyard and entrance plaza visually, the retained amphitheater of the Jean Monet forming the stepped passageway to the courtyard from the entrance point. I chose to use a very strong form in making the entrance, a cylinder, in order to draw people's attention to it, but also to have a conversation with the very angular Concert Hall building on the courtyard.
Chapter 04: Ballylongford Liquid Natural Gas

In the Shannon Estuary two of the misconceptions discussed in chapter 01 - nature and industry, and what is natural and unnatural - are attendant. The estuary is home to approximately 250,000 people who live in a dispersed consistent weave of one off housing. There is very little urban fabric on the estuary after the city, which itself is declining and shrinking as people move out to the countryside. These misconceptions can be most easily observed in the opposition in the locality to further industrialisation on the river due to concerns over visual and environmental pollution. This has resulted in the only architectural consideration in the design of the L.N.G., that its visual impact be lessened as much as possible (see figure 17, on second next page). Large earth works will be employed to cut the containers into a shelf in the estuary bank. Its sixty-one metre tall drums hide behind a 30 metre tall earthen berm; four giants with poor self esteem.

The Shannon Estuary has long been a site of large scale industry and energy production in Ireland and will be in the future. Stretching 85 kilometres between Limerick City and Loop Head it covers some 500 square kilometres of water. It is one of the most industrialised areas in Ireland, 40% of Ireland’s imports enter along the estuary channel and most of this is processed on the estuary banks in making 40% of the State’s electricity and refining bauxite. It is the site of Ireland’s largest airport and largest hydroelectric power plant. 90% of the land is used for intensive agriculture. You can trace the history of energy production down the estuary. Starting in 1924 with Ardnacrusha hydroelectric power station (See Figure 14) at the beginning of the estuary, to the oil powered Tarbert power plant in 1969 and now being converted to gas, to the coal burning Moneypoint power station commission in 1979 as a result of the oil crisis, to the latest proposed

Liquid Natural Gas storage facility in Ballylongford in north County Kerry (See figure 18), the next generation of the estuary’s energy infrastructure. Energy is at the same time the provider of our great living standard and is also, in its production, diminishing our environment. This detrimental effect has made us question how we make our energy and how we should make energy in the future.

There are essentially three routes people can go on for the future of energy production; continue as is, despite knowing that energy sources will become extinct; return to a pre-industrialized life of subsistence; produce energy by entirely sustainable means. To continue the status quo, is very obviously myopic. To return to a life of pre-industrialised subsistence is questionable, as it would mean a step backwards in human development and the carrying capacity of the earth for this way of living is only capable of supporting a human population of about 1billion. Considering our current population at 7 billion, we can see that what is damaging our ecological diversity is also that which supports our own life. This level of energy production is not something that can be done without. In fact, there is a direct relationship between the intensity of energy consumption by society and the development of humanity, as Norman Foster notes;

“There is a very interesting social imperative, in terms of increasing the concentration of energy. The relationship between infant mortality and energy is dramatically lower in those countries which are energy intensive, and life expectancy is dramatically higher in those areas of high energy consumption, and also birth rate in terms of those regions with low power high fertility. So increasing in power could be a force to stabilize the worlds population. And likewise the index of human development - a complex thing about education, emancipation or indeed political freedom - all relate to the intensity of energy consumed by a society. So there is a very strong social moral intensive for

14. Plate of orginal design of Ardnacrusha
the distribution and availability of energy”.24

Despite the obvious environmental negative effects, we should be very aware of these positives that energy brings. The imperative is to determine ways in which energy can be produced in a way that is not injurious the worlds ecology’s. As Jonathan Chapman and Nick Gant point out,

“The response to the AIDS pandemic is not to try and stop everyone in the world having sex, but rather, to think about safer ways for individuals to go about it. This may well be a favourable consumer destiny than asking people to do without, which is rather like asking a vampire to stop sucking blood. As with Dracula, our desire to consume is not necessarily our fault, and the sooner we come to terms with this, the sooner we can move forward; doom and gloom cultures of guilt and self-loathing are deeply counterproductive in terms of real progress. Sustainable design methodologies that fail to accommodate human desires are useless unless consumers actually embrace them, engage with them and essentially invest in them.”25

There is a lead in time to this point, and for the time being things will have to be built which are damaging, such as the L.N.G. storage and distribution facility.

Considering what we have discussed, it is interesting to ask ourselves whether Ardnacrusha and Ballylongford LNG are remedies or cures. Built in an austere functionalist style (see figure 15), Ardnacrusha was built to “harness the waters of the River Shannon in the west of Ireland to power the national electric grid and enable the eventual rural electrification of Ireland”26. It consisted of the building of a huge dam and a power station at Ardnacrusha, County Clare and a large weir at Parteen (see figure 16) some miles up river. It was an expensive, vast and ambitious undertaking at the time for the new state, but it was an important commercial which also served to boost Ireland’s international reputation. It was for a time the largest hydroelectric dam in the world and it was the largest engineering project that Ireland had ever seen. When it was switched on it provided 200% of all the electricity needs to the state from a completely renewable source. With time, demands have increased and now Ardnacrusha’s full capacity supplies 2% - 3% of Ireland’s electricity needs.

Ballylongford LNG (see figure 17 on next page), due to begin construction in the coming year, will be used for buying gas on the open market, storing it in the tanks and distributing it into the national gas grid. In order to do this, a 25km long connection will have to be built from the site to join up with the grid at Foynes, County Limerick. The storage facility itself will consist of four 200,000m cubed storage drums, a materials pier, a pump pier and about 10,000m cubed of administration or services buildings built on 250 acres of land on the bank of the estuary in Ballylongford (See Appendix 1 for full brief). There is no grand Ardnacrusha style big idea, it won’t be operational as a gas storage and distribution facility in 80 years as there won’t be the gas to fill it, and it won’t make ripples internationally.

Both facilities are no cure to our energy needs but at least Ardnacrusha was a ‘cure’ to energy needs of its period and was a well considered and designed space.

24 Norman Foster
http://www.youtube.com/watch?v=Q-JfSTHet7Q


15. (Top) Turbine Hall building after completion
16. (Bottom) Parteen Weir
17. Section of Shannon L.N.G.'s proposed design of the L.N.G storage and distribution facility at the Ballylongford site. It is due to begin construction within the year. The storage drums built of a shelf cut into the bank of the estuary. During operation one L.N.G. tanker ship (in section on left of drawing) will visit the site every 3 days on overage to refill the drums.
18. Map of the Shannon estuary. The site of the L.N.G. storage facility is outlined in red. The channel of sheltered deep water that allows for large scale shipping on the estuary is illustrated in light blue.
In Ballylongford, we find a gigantic scheme completely devoid of architecture, that will be short lived. What if Ballylongford L.N.G. was architecturally considered and its afterlife designed in an act of place making that will transcend its original uses and produce a space that is an agent in producing an enriching culture on the site.

By using the speculative process of imposing large forms on the landscape (see figure 19), and using my formal studies as ways of manipulating the ground or forms in the program, the new brief was developed

The product of this is a L.N.G. storage facility, that is an enriching place that will, through its design, transcend its original function in time. Rather than being a closed off giant, considered sculpted ground, arrangement of forms and paths connect the site to its immediate environment, the global scale industrial milieu that the River Shannon is engaged with. You arrive into the site with one view, experience it, and leave with a different view.

19. (Above) Imposition Study. Model on aerial photograph of the mouth of the River Liffey

20. (Right) Study renderings done of potential manipulated surfaces of the drums with the intention of linking the drums to the language of the manipulated landscape, they also are to play with the light as it falls on their surfaces.
21. Early plaster speculative form studies made exploring roof surface, enclosure, walls, and layering.
22. Later plaster speculative form studies made exploring possible
ground plane treatments and screens.
23. Map of the Shannon Estuary showing site location and the other large scale built objects and interventions on the estuary are illustrated in red.
26. (Left) Image of sightlines on the site, the building is located in the axis of Carricafoule Castle and Tarbert Powerstation. Viewable from this point are Scattery Island, Kilrush Lock and Moneypoint Powerstation. The circles illustrate the dense pattern of ringfort settlement in the area.

27. (Right) Image of current passenger ferry routes to Ireland (grey dashed lines). The proposed route of a cruise liners around the island (Black dashed lines).

29. (Middle) Ground Floor Plan of Terminal Pumphouse building. Terminal concourse on Left, Pumphouse on right.

30. (Right) First Floor of Terminal Pumphouse building.
31. Section through drum on site and processing buildings. LNG jetty and Moneypoint Power Station seen in elevation.
32. (Top) Section through the reservoir wall showing building and drums in elevation.

33. (Bottom) Section through the car park for the cruise liners.
35. Photomontage of the Gallery area.
36. Photomontage of the restaurant area with view into pumphouse.
37. Photomontage of ralk through the facility. Shown is what can be experienced on the site; LNG tankers, cruise liners, storage drums, tankers and container ships in anchorage, walkers, wildlife, faceted landscape.
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4. Segmented pivot irrigation field in Teton River, Montana.
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6. Images from upper floors of the Givors apartment complex, by Patrice Goulet

7. Photograph of kitchen in table space in one of the Givors apartments, by Patrice Goulet

8. Photograph of main entrance into Givors scheme, by Patrice Goulet

9. Rendering of car park drum, by author

10. Site plan of proposal. Three drums are placed adjacent to the airport building, Image by author

11. Model made in grey card of the proposal, by author, photographed by Louis Ryan

12. Origami study models in folded thin white card exploring ideas on roof making for the cold storage facility and as landscape, by author, photographed by Louis Ryan

13. Tempelhof final presentation board, by author

14. Plate of orginal design of Ardnacrusha
15. Turbine Hall building after completion
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17. Section of Shannon L.N.G.’s proposed design of the storage drums, pier and berms.

18. Map of the Shannon estuary. Site of the L.N.G. storage facility is outlined in Red. The channel of sheltered deep water is illustrated in light blue, by author

19. Impossiton Study. Model on ariel photograph, by author

20. Study renderings done of potential manipulated surfaces of the drums with the intention of linking the drums to the language of the manipulated landscape, they also are to play with the light as it falls on their surfaces. Renders by author.

21. Early plaster speculative form studies made exploring roof surface, enclosure, walls, and layering. Photographed by Louis Ryan

22. Later plaster speculative form studies made exploring possible ground plane treatments and screens. Photographed by Louis Ryan

23. Image by author

24. Image by author

25. Image by author

26. Image by author

27. Image by author

28. Image by author

29. Image by author

30. Image by author

31. Image by author

32. Image by author

33. Image by author

34. Image by author

35. Image by author

36. Image by author

37. Image by author
Appendix 1

Ballylongford LNG Brief

4 200,000㎥ capacity Liquid Natural Gas Storage Tanks
1 750㎥ Administration Building
Entrance 107㎥
Administration 363㎥
Open Plan Office
5 Offices
Meeting Room
Store/Copy Room
Reception Area
Toilet
Lobby
- Visitor Centre
Exhibition Space
Canteen
Kitchen
Pantry/Store
Classroom
Service Area
1 Import Jetty
- Minimum Draft -26m to Mudline
Roadway Along Jetty
Pumphouse
Unloading Arm
Jetty Monitoring House
1 250㎥ Gas Metering Building
1 2000㎥ Boiler House
1 405㎥ Firewater Pumphouse
1 650㎥ Utility Area Substation
1 72㎥ Local Instrument Equipment Room
1 650㎥ Processes Area Substation
1 600㎥ Main Substation
1 72㎥ Guard House
1 1320㎥ Compressor House
1 1300㎥ Workshop Warehouse Building
1 1150㎥ Control Room

1 650㎥ Pump and Screen Washing Facility

Total 800,000㎥ Gas Storage Drums + 9869㎥ Administration and Service Buildings