Architecture as Necessity – Celebrating the Everyday

Norman Foster at Finlandia Hall, Helsinki 19 October 2006

TO CONDENSE THE PROCESS of a very complex subject – the building of an architectural project – we can summarise that it requires a client, an architect, a large team of many disciplines and a contractor. Sometimes it is necessary to state the obvious, and perhaps one of the most obvious things is that an architect has no power as such. An architect cannot really direct anybody to do anything, whether on or off a building site. The only thing an architect can do is to advocate. You can never underestimate the power of advocacy. In the end, to be effective you have to achieve partnerships with individuals. For all of our most successful projects, without exception, there have been one or two key people with whom we as the architects and the wider team of consultants have formed a connection. These people can be found equally in either the private or public domains and they have a shared desire for quality. In my experience, quality is never about money; rather, it is an attitude of mind.

THE CRITICAL IMPORTANCE of individuals to the process of realising built projects is, I feel, the key to my architectural agenda. Of course we can all talk about the importance of buildings, but I would say

that however passionate as an architect one is about buildings, you must concede that they are certainly less important than the infrastructure which binds them together. That is, the infrastructure of public spaces, of urban connections, of pedestrian and circulation routes. The earlier speaker [TBC] anticipated this by stating: 'Bridges and public spaces are the urban glue binding individuals together.' Ultimately our memory of Helsinki is less likely to be of this fantastic building, Finlandia Hall, which inspires me each time I visit. Nor is it likely to be the hotel in which we are staying. It is the city of Helsinki that is out there with all of its manifestations of infrastructures. And the quality of any settlement essentially comes down to its public spaces, transport, connectivity and lastly - but undoubtedly most importantly – the ecology of that city, with its implications of energy and indeed of survival.

> Buildings - Infrastructure Density - Mixed Use Public Space Transport - Connectivity Ecology - Energy

TO ILLUSTRATE THESE IDEAS of both human connectivity and ecological urbanity I will present several projects, both past and present, and the early-90s Commerzbank building in Frankfurt is a good building to begin with.

WHEN WE STARTED THAT project, the tallest building in Frankfurt – the existing Commerzbank Tower – was something in the order of 29 storeys. The German administration at that time was antifinance and anti-banking and this project really happened because of an interrelationship between ourselves, Rainer Wend (who was Frankfurt's then planning officer), the very dominant Green lobby in the city and the bank itself headed by its chairman Martin Kohlhaussen and his deputy Herr Terra. Synthesising all of these









Plot ratio increase condition: New civic and public space.

different factions, the tower as realised turned out to be the first green skyscraper, and the tallest building in Europe. The planning guidelines that we had faced at the outset, quite interestingly, were very much about the need for sustaining the urban edge of the historic street pattern. So, all of the city's tall buildings are characteristically set back.

And again, the consequence of our partnership between public and private domains ultimately created an urban shortcut at the base of the tower – a pedestrianised route through the city block, linking the bank with Frankfurt's Museum of Contemporary Art. It was a collaboration between local restaurateurs, the Museum and the bank and the resulting civic artery was really about giving something back to the city centre.

Inside, with its sky-gardens, the design of the tower questioned a conventional high-rise in terms of energy. In this way, it relates to a sequence of tall buildings produced by our office which began with the Hong Kong and Shanghai Bank. Set against the conventional tower model, in which only those occupying the perimeter can enjoy light and views, the Commerzbank was very much about seeking a climatic response which would have at its heart a vertical space interspersed by a series of internal gardens that would work socially in terms of breaking down the scale, but also ecologically in terms of using a high quantity of fresh air. The sky-gardens introduce green lungs right into the heart of the skyscraper.





Use of air conditioning/natural ventilation in offices

IT WAS THIS EXPERIENCE with the

Commerzbank that really made the Swiss Re building possible. As in Frankfurt, there is a relationship here in the City of London site between the density of the tall building and the public space that surrounds it. The Swiss Re tower itself occupies only a relatively small part of its site, and through this seeks to give over to the public domain easily accessible, usable space. It is interesting to compare this model with more standard approaches. We could, for example, have provided a lower, deeper building on the site, and have gone right to the edge of the pavement. We actually began with this conventional, orthogonal model, but then started to pull it in, to profile it and taper it. This was done for a variety of reasons – not only for the aesthetic implications on the skyline, but also for the way in which you might introduce natural ventilation to dramatically reduce energy consumption, and also to dramatise the internal spaces of the tower for people deeper inside the building. We then sliced open this tapered form to create the same kinds of lungs as at Frankfurt, carving out channels right into the central core, so that you could get sunlight deep into the internal spaces.





Aerodynamically, however, the lungs would not work as simple vertical slots. What we needed to do was to twist them, so that they could face whatever direction the wind was coming from. In this way, the lungs became spiralling spaces that use the wind to create high and low pressure points, rather like an aircraft wing, circulating the air. We then finally superimposed onto the face of the tower an external structural grid which dissipates the load, while reducing the amount of steel structure, and in turn giving the building its specific visual identity. The form of Swiss Re in this way is inextricably linked not only to the ecology of the building, but also to the concept of public space at the base of the building.



THESE THEMES OF ECOLOGY and of an expanded public urban realm have also been explored in cultural buildings as much as private commissions. One such example is the Carré d'Art médiathèque we built in the small city of Nîmes in the south of France. The site was next to one of France's best preserved Roman temples - the Maison Carrée - and although the competition looked at the specific area earmarked for the new médiathèque, we suggested that the total site should be examined, including the Roman temple. What is difficult to see in aerial photographs from that time is the squalor of that part of the city. The temple was basically encaged by the streets around it, and so our approach was that the new médiathèque should be more than just an individual building but could actually transform the quality of urban life, acting as a catalyst for renewal beyond its own perimeter.

I mentioned earlier, every good project needs a champion, and without question, the champion of this project was the mayor of Nîmes, Jean Bousquet. He supported us wholeheartedly in seeing the brief as a chance to reinvent the city, to transform Nîmes with this single site, beginning with the gallery above and a new café life below. Through the effects of culture, of communication, and the importance of community, which includes local inhabitants and art-loving visitors, Nîmes is now a magnetic place. Ultimately, this vibrancy was celebrated the moment Bousquet secured finance from Paris for the project with a series of posters around the city. In them he's saying: audacity, cheekiness - it works. We're going to get the médiathèque, we've got the funds!





IF BOUSQUET WAS THE CHAMPION

in Nîmes, then in Barcelona it was undoubtedly mayor Pasqual Maragall. At the time that we came to this project for a telecommunications tower, which again was an international architectural competition, the skyline overlooking the city was threatened by a whole series of existing, illegal structures relating to the communications industry. There were three individual towers planned by the three separate communication companies to coincide with the Olympics. Maragall's achievement was to cross the divide between the public and private worlds and essentially make it a precondition of the brief that there would be only one tower to be run by one company that would represent the interests of the three separate monopolies. Though much could be said about the ensuing bloodshed and battles in forming a single entity, as designers supporting Maragall's intention for a single tower, what is critical is that it has become a focal point across the city as well as being a primary Olympic project.

WE USED THESE KINDS OF experiences with figures like Bousquet and Maragall to organise a conference in London together with the Architectural Foundation called London in the 21st Century. This was in 1989. Tony Blair, then just a shadow backbencher, appeared, and there were various other important figures like Simon Jenkins and Ken Livingstone.



In my own presentation, almost as an aside, I described London's Horseguards Parade as probably the largest openair car-park in Europe, and a national disgrace. Interestingly, this was then taken up by the media, and the area around was quickly addressed. It is now quite difficult to imagine just how bad it was before. Our memories really are relatively short term.

SIGNIFICANTLY, HORSEGUARDS PARADE

also provoked another project, which again was the subject of an international competition – the so-called World Squares which addressed a particular area of central London from Trafalgar Square



London's Horseguards Parade

World Squares



London: pedestrian connectivity



across to the Embankment and down to the Houses of Parliament, and which was to encourage questions about the setting of historic buildings in London, the balance of public transport, and improvements to the quality of urban life. It turned out to be a project that involved a considerable amount of research - more than 300 organisations, public exhibitions, many thousands of leaflets, 27,000 motorists interviewed, and amongst other things the first map of London produced by Space Syntax, showing pedestrian connectivity. Dominant streets with a high connectivity are marked in red, while streets with little or no connectivity are coded in blues and other colder colours.



Trafalgar Square a few years ago





Without going fully into the detailed process, it is an interesting reminder to show just how bad Trafalgar Square was only a few years ago. As the photograph of one of our members of staff illustrates, it was extremely difficult simply to cross the road into the Square from the front of the National Gallery. In reintegrating the Square back into the fabric of the surrounding streets and encouraging connectivity, the key champion behind our proposals was mayor of London, Ken Livingstone. Although he does not have absolute, autocratic power to effect change, again his powers of advocacy in these circumstances tipped the balance and created now a space that in a way has not only literally become the heart of the nation, but also very much like London's living room.



Trafalgar Square as London's living room













Millennium Bridge

I AM OFTEN ASKED what my favourite projects are or which of our projects are the most important. Without any hesitation, as an architect and someone involved with many building projects in London, I would say that Trafalgar Square and our Millennium Bridge, providing a pedestrian crossing over the Thames between St Paul's and Tate Modern, has had an influence beyond any individual building. Again, we return to the importance of infrastructure. You can never really quantify architectural success over failure, or of the aesthetic advantages of crossing a river while being able to enjoy views up and down that river unimpeded by structural supports. But there are some things you can measure. You can measure the number of visitors. You can measure the economic benefits; you can see how a structure affects hotel occupancy. And although nobody has actually done it,

you could relate however many million crossings that have been made over the bridge to the economic growth of its two adjoining boroughs – so that a single piece of architectural infrastructure can have a clear economic dimension as well as its aesthetic one.

STATISTICAL REFERENCES LIKE THESE

are really quite revealing. When I visited the Venice Biennale, I was introduced to the previous mayor of Bogota, Enrique Penalosa. In talking with him, I was fascinated by his passion for the quality of the environment and how over a 12-year period changes in the physical environment had resulted in a drastic reduction of homicides within the population of Bogata. Since 1993, the city has introduced the largest network of bicycle paths in the developing world, rebalancing the city between human and

Bogota



40% increased visitors to St Paul's £100m economic benefit in a year Hotel and catering up 23% Up to 8 million crossings per year

Bogota – crime rate



Bogota – urban planning initiatives by Mayor Penalosa

- 250km bicycle paths largest network in developing world
- Reduction in private car use
- Traffic congestion control
- Bus Rapid Transit network
- Planted 100,000 trees
- 45km and 17km long linear parks
- 20 hectare urban park
- Regenerated urban Plaza

mechanically powered transport, while also improving the bus network, landscaping and so on. Interestingly, violent crime statistics have fallen quite dramatically over the same period. This then led me, almost as an aside, to see how Bogota's statistics compared with places that one might know closer to home – places like London, New York, and, completely off the scale, Washington DC.

A PARALLEL VIEW OF SOCIAL change can be taken if we consider the role of schools and their importance in affecting social agendas. Our office has had the privilege to examine this relationship through its involvement in the Academy initiative, introduced by the Blair administration, which aims to raise education standards by combining private and public enterprise. We have designed of a number of academies, two of which I will show you today. The first is the Bexley Business Academy which is sited in a rather deprived outlying area of London. Previously the school was very much at the bottom of the UK academic ladder and as the images attest, the external and internal changes we designed are significant.







Bogota



Bexley Business Academy

What you cannot measure, but what becomes known from what you see and hear is a change of attitude – the social transformation that comes when a new building replaces an old one. Academically, you can clearly measure the improved performance of this school in contrast to its predecessor, the Thamesmead Community College. Or more dramatically, if we look at the statistics for another of our projects – the Djanogly City Academy in Nottingham – the students' academic performance rose from the bottom of the UK ladder to the top in the four-year period following its re-design.

I AM NOT SUGGESTING THAT this transformation is totally due to the architecture because it is not, but it is a very important component of change. Alongside the architecture new teaching methods are established as well as a broader partnership between private sponsors and the government's own education



Thamesmead Community College, Bexley

initiatives. For me, what is particularly encouraging is that the academies provide a chance to improve both teaching methods and academic performance, and simultaneously produce more beautiful, aesthetically satisfying spaces that raise the level of expectations of a younger generation in terms of the quality of the environment. I have never seen any reason why we cannot maintain both these improvements and I believe passionately that these two things go hand in hand.



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Djanogly Academy Nottingham



As much as understanding the

correlation between academic and aesthetic performance, the academies programme also helped us understand how global patterns can be brought to bear on local conditions. The importance of thinking globally yet responding to particular local conditions has best results when working closely with the characteristics of each place and local collaborators. Our urban extension to the city of Milan called Santa Guilia considers this, but before I discuss that project in detail I would like to contextualise its wider perspective. In urban terms, issues of pollution, climate warming and temperature change cannot be separated from energy. That is, the consumption of energy and the production of energy. If we simplistically say that buildings account for about half the energy in an industrialised society, and transport

probably around a third of the energy, and industry the rest, then essentially, the architectural profession is directly responsible for almost three quarters of the energy that we consume. Obviously, we need to try and reduce this consumption. But unfortunately, what quickly becomes apparent when we start to engage in any analysis of this energy use is that even if we created the impossible – the equivalent of perpetual motion, i.e. a dwelling that was carbon-free and a workplace that was carbon-free – unfortunately we would still be faced with a very serious problem.

I WON'T TAKE YOU THROUGH this in detail, but in energy terms the worst case scenario is that you are typically driving to and from your place of residence to your place of work each day. Firstly, you can start to improve upon this energy performance by providing an eco-home



and driving a hybrid car. Progressively, you can work down and soon realise that significant energy savings are only to be found when a higher degree of density is achieved and consideration is given to the link between greater density, public transport and a mixture of uses. To study these linkages at an urban level we looked at a number of different cities. For example, in a very low-density city like Detroit you will see that as a model it is totally dependent on the individual car, and as a consequence is a very high consumer of energy. What is interesting is the comparison between Detroit and Copenhagen, a compact European city model, yet one with a very similar population size and climate. Detroit has only half the density of Copenhagen, yet it consumes ten times more energy. These figures, in part, explode the myth that if we create high density cities, then we are somehow more socially deprived and that we lose a certain quality of living. I would suggest that history does not support that argument. Look at Monaco or Hong Kong for example, two of the densest cities in the world. One is arguably a city of great affluence; the other displays an interesting commercial and cultural mix.



Detroit 2,600 /sq km Copenhagen 5,800 /sq km Detroit uses 10x the energy of Copenhagen



Density versus energy use





Hong Kong 17,536 /sq km Monaco 16,486 /sq km



To take a similar example closer to home, we can look at London's densities. According to land values, the most desirable parts of London are Notting Hill, Chelsea, Kensington, Belgravia and Mayfair. In each instance, their densities are many times greater than some of London's poorest areas, and indeed have even higher densities than modern development planning guidelines stipulate.

RETURNING TO SANTA GIULIA, OUR

project sought to suggest an alternative to the problems of the city of Milan itself, which were car problems, security, and a lack of green space. These issues tended to send a lot of families out to the suburbs, resulting in an unsustainable and indeed very uncomfortable commute between suburb and city centre. Our proposal sought to provide an alternative, offering the best of Milan's civic urbanity

simultaneous to the security and greenness of the suburbs. On a typical brownfield site of the former Montedison and Redaelli industrial complexes, just four kilometres from the cathedral square, Santa Guilia provides mixed-use urban living at a very high density (comparable to London and indeed to urban Milan itself) and a considerable amount of green space. The site will accommodate 10,000 residents, 50,000 visitors, and a variety of building types from hotels, offices, conference centres, and apartment blocks to large-scale retailing and strong cultural components. A key infrastructural element of the scheme is its public transport, that connects to a tram route extending from the heart of Milan. The site also has very good connections with high speed train links, road networks, and the metro system.



Notting Hill 200 dwellings per hectare 13,700 /sq km Typical modern dev. 25 dwellings per hectare 4,800 /sq km







- Santa Giulia
- Church • 111-hectare site

Health club

- 33-hectare Park
- Visitors: 50,000 • Hotels

Residents: 10,000

- Offices
- Conference
- Retail and restaurants
- People/sq km: With park 10,811 Without park16,600

But within the site itself, we placed great importance on pedestrian movement, using a 300-metre radius or a walking time of 3-5 minutes, as a module for development. Designed around a large central open public space, the scheme looked to synthesise the architectural DNA of Milan that is so vital – high-density mixed-use shops and apartment blocks – with large tracts of open, park space, so that the urban experience would juxtapose the street life of cafes, bars, galleries and restaurants, with generous green areas.

Community centre





Population density

Within 300m:

Walking time 3-5 minutes

If there are 5000 people within comfortable walking distance of the community centre

Population density – 200 people per hectare



IF SANTA GIULIA WAS LARGELY a dialogue between a private developer and the public domain, then what about those projects that are very much grounded within a national interest? In other words, the bureaucratic processes involved in realising a project democratically. An interesting comparison can be drawn through building types. Take, for example, two airports currently under construction: Heathrow's Terminal 5 and our project for Beijing. When it opens in 2008, the Beijing airport will have completed its four-year construction period. This length of time just happens to be exactly the same period of time that it took for completion of the public enquiry into Terminal 5. At this particular point, if I was inviting reactions, I am sure every hand would go up and say, well ours is a democratic society and China is not a democratic society in the same sense. This cannot, of course, be argued against, but throughout all of those years of enquiries and discussions and



debates, was there any doubt that Terminal 5 would not happen? Was it not a foregone conclusion, public enquiry or not? I would strongly suggest that it was. Our use of public enquiries, for which the outcome may never be known, is generally regarded as a key part of the democratic process. However, I think that in issues of absolute national priority – such as a new airport hub – there is probably little doubt at all.

LET US ALSO LOOK AT the scale of the two specific airports, and see the enormity of the undertaking in Beijing. If Heathrow is considered as a project that has developed slowly over more than fifty years, and you took the unbuilt Terminal 5, plus terminals 1, 2, 3, and 4, and then added 17 per cent to the space, you would have the collective size of Beijing airport – over one million square metres. In terms of its scale alone,

Heathrow: 50 years Terminals 1 + 2 + 3 + 4 + 5 + 17% = 1,060,000 sqm 11,405,600 sqft



Beijing Airport: 5 years 1,060,000 sqm 11,405,600 sqft





Beijing Airport



it is an urban project. But paralleling its apparent size is the speed with which China has also urbanised. Apart from two systems – the baggage handling and the tracked transit that are made in Germany – everything in that vast building has been made in China. Alongside its scale is also the level of quality that China's manufacturers have been able to achieve. For example, the sculptural, sloping columns on the outside of the building would be difficult to achieve in Europe. No-one would have been able to do it. This quality is not simply a result of numbers alone, even though the site has 50,000 operatives working 24 hours a day, seven days a week. It is about a very high degree of coordination and skill, creativity and intelligence. The environmental goals are also interesting. Aside from a five-year plan that encourages biomass and wind power, the Olympic agenda proposes that 90 per cent of street lamps use solar power; 90 per cent of hot water should be drawn from solar heating; and wind power should generate 20 per cent of the electricity for Olympic venues, many of which will feature photovoltaic panels. With the 2012 Olympics just around the corner, this airport is clearly part of that initiative.

Beijing Olympics 2008

- 90% of the city's street lamps to use solar power
- Solar heating for 90% of water used for bathing
- Wind power generating 20% of the electricity for Olympic venues, many ofwhich will also feature large solar photovoltaic panels
- Ground source heat pumps providing central heating and air conditioning for an area of 400,000 square metres

Beijing Airport





Building Energy Performance Name of Building Greater London Authority HG Carlifficate Type Building Type White or Part of Bulls Advis Rub Energy Asset Design More Energy Efficient Long Energy Efficient Artus 98 8 139 adornal Camulators Martushings **Naming Matters** Mathead Asiast Watting Multi-ad Salarrad California Methodology Gal with the the balance was an included a second GB 2006

FROM OUR OWN EXPERIENCES in North America, the European Union and in the US too, we are currently starting to look at the criteria of environmental goals – how should an individual building be labelled and quantified in terms of its environmental proposals? I think that this raises interesting questions. For example, will buildings let or sell a lot faster if they perform well environmentally? Will clients sue the designers if the building does not deliver the promised design energy rating? Will tenants sue landlords if the building does not deliver the asset energy ratings in operation?

Not surprisingly, I have come to expect innovation and the pursuit of sustainability in the workplace to emerge from designs for owner occupiers. It is no accident that the design concept of Swiss Re can trace its lineage back to the Commerzbank tower and the HSBC headquarters in Hong Kong – all of which were commissioned by and for private companies led by entrepreneurs. The financial strategy for developers who create space for the rental market is inevitably different, but eventually innovation does filter down.

Implications

- Will buildings sell or let faster if they perform well environmentally?
- Will clients sue designers if the building does not deliver the design energy rating in operation?
- Will tenants sue landlords if the building does not deliver the asset energy rating in operation?

A RECENT EXAMPLE within the financial square mile is Walbrook Square. In London, this project is groundbreaking for its strong green agenda that was pursued at the request of the developer, Legal and General. For the first time, the developers see the demonstration of financial and ecological sustainability in that the green credentials of this building can be seen to command premium rent. This is increasingly true as more companies adopt green policies as part of their corporate mission. Recently, for example, HSBC has adopted its own zero-carbon manifesto. Though sustainable practice is normal in a nation like Germany, which has been a world leader in this field, Mr Paavo Lipponen also revealed to me Finland's success in leading sustainable development.

Walbrook Square in London





Hearst Corporation headquarters in New York

THE SAME KIND OF EMBRACE of environmental issues was also very much in evidence at the formal opening in October 2006 of the Hearst Corporation headquarters in New York. This is a building that uses outside air which is then filtered to ventilate internal spaces for 80 per cent of the year, rather like the strategies learned from the Commerzbank. The main lobby of the building, a semi public space, has its own waterfall, designed by the artist, Jamie Carpenter,

which in itself is part of the environmental concept for the building as a whole. Like Swiss Re, the structural diagrid reduces the amount of steel by some twenty per cent, with eighty-five per cent of that steel coming from recycled sources. As a consequence, Hearst has become the first LEED accredited building in Manhattan – a Leader in Energy and Environmental Design, a fact that Hearst is, rightly, remarkably proud of.







I WANT TO END WITH an early example of our interest in sustainability that reflects our recognition of Germany's progressive energy attitudes. The Reichstag building in Berlin illustrates how a project can go right into the political heart of a nation, and the importance that governments can have in terms of writing and being seen to adopt green legislation. The Reichstag not only represents architecture as a political symbol of a newly unified Germany, but it also models a new level of environmentally conscious architecture. The glass cupola at the top of the building is designed to signal the transparent democratic processes that take part below, but environmentally it also drives the building, reflecting sunlight deep into the assembly space while also helping to circulate the movement of natural air throughout the whole building.



The Reichstag building in Berlin







3m visitors per year – the most visited parliament building in the world









Reichstag: CO2 Emissions in Tonnes per Year

The Reichstag is also supported by sources of energy which are all renewable – it does not use oil, gas or coal. In this case, it uses the biomass of sunflower seed oil which is burnt in a co-generator to produce very clean electricity. Excess heat throughout the building is also converted into cooling, and the growth of plants within the interior spaces helps absorb carbon dioxide. All of these green devices are really a development from the Cold War and East Germany's desire to be independent of the Soviet Bloc's control of fossil fuel power. Accordingly, it developed this green technology. Again, the advantage of having a fresher environment as a consequence of these design strategies cannot be quantified. But what you can quantify is their carbon reduction. If, in 1992, at the time of the Reichstag competition, the building was producing the equivalent of 7,000 tonnes of carbon dioxide, now, not only as a governmental headquarters, but as a power station for its Berlin quarter, the figures are just 440 tonnes. This illustrates a 94 per cent reduction and is virtually pollution free.

As addressed in my opening point,

I believe advocacy is a key to positive change. For the Reichstag, advocacy could be said to be found in the united approach to a progressive agenda that, by most standards, was unusually well resolved between a political body and our desire for a sustainable architectural solution. Democracy here was marked not only by the process, but also by the building's mark on the skyline. However, the built presence of the Reichstag also marks just the tip of an iceberg, beneath which issues of public space, infrastructure and transport sit. Good architecture is holistic - it does not separate building and engineering, but is an encompassing vision that carries aspiration and ambition and is led by those who champion innovation.

