

The Twelfth  
Leave.

*"Something in The City"*



**I described the scheme for Which? so as to show how far our techniques had progressed by 1990. Milton Keynes 'boosted' itself as more of a 'city' than its post-WWII forebears of Harlow and Stevenage. But, if one stripped away the soi-disant transatlantic road-grid, and the equally infertile gridded-up facades of its central area buildings, Milton Keynes was still cast from the mould prescribed by the 1947 Redvelopment of Central Areas.**

But there was a project for which we were commissioned, at very much these times of 1987-1990, that was entirely different. It was situated within the urban, and often urbane, boundary of the 'Square Mile'. The 'City' of London was the financial magic carpet that had carried the people of this offshore island over the globe to accumulate the largest empire ever seen and one probably never to be exceeded. Might this 'City' not carry Architecture where I wanted to take it? Certainly its narrow streets were full of the stuff - in every shape and size. Back in the early 1960's, as I became increasingly frustrated and depressed by the futilities of the Architect's Department of London's City Hall, I used to spend my lunchtime walking around these labyrinthine alleys. It was still possible, in those remote times, to see through an oeuil-de-boeuf window, the rubicund face of a city banker, flushed by his necessary wining and dining, set against an apricot-coloured wall. I fantasised my escape from the illiterate proto-consumerist suburbia regressively imposed upon the a-priori Urbane working class by the Attlee-socialism of Europe's biggest Architect's Department. I used these walks to imagine the levels of urbanity that might be possible with that mythical Being: 'A City of London Client'.

Here then, a quarter-century later, was that epiphany - the phone call from the biggest and the best of the city-developers - Stuart Lipton himself - the 'Client of the Age'. Rosehaugh-Stanhope, the company he shared with Geoffrey Bradman, had just completed Broadgate to such acclaim that Mrs. Thatcher launched her 1987 re-election campaign from it. Lipton wanted JOA to design a small, but prominent, building on the Southern, Thames-River, end of another of their huge, 'riding-on-top-of-a-railway', projects that had already proved such a success. Peter Rees, the long-serving Chief of the City of London's Planning Department, advised me that Lipton's projects were the largest yet seen inside the Square Mile. He explained that they were so big, so constructively-constrained and so intertwined with the essential commuter service of the railways, that once begun they could never be stopped. The final permission to build, when received from the ancient 'Court' of the equally ancient 'City' was celebrated by a trainload of Letting Agents, Construction Managers and even a few Architects. We partied around these often-subterranean lines, in a Rosehaugh-Stanhope train. Given special signal-rights, we cruised the rails quaffing and celebrating after the last of the financial industry workers were safely shunted-off to the Northern and Southern suburbs.



re JL HJD MK PA NU

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Chairman The Right Honourable the Lord St John of Fawsley

27 June 1990

Dear Mr Wang

CITY OF LONDON: LUDGATE HILL, BLACKFRIARS-HOLBORN STATION

Members of the Commission at a meeting held on 20 June 1990 met and considered the proposals for the above scheme.

The Commission believes that with the exception of the John Outram building the whole scheme fails to reach the quality of design necessary for such important sites. It believes the master planning approach to this scheme has been a complete failure, having neither created a series of interesting city spaces nor satisfied the need for a coherent approach to urban design. It is disappointed that extra special care has not been taken, in this regard, to the development of the New Bridge Street site in view of the potential commercial advantage presented by the northern buildings. It was for this reason that the Commission in its letter dated 22 January 1988, supported the proposition that: "the distribution of the total bulk which will be established by an outline permission can be considered in a flexible way between the numerous sites concerned".

Yours sincerely

Lord St John of Fawsley  
Chairman

JOA's little building was on Queen Victoria Street. It was the smallest of the five buildings that stretched from the river Thames up to the Farringdon Viaduct that carried the Oxford Road over the long-buried River Fleet.

**JOA's design came to be referred to as the 'little engine'.**



# ANCIENT MONUMENTS SOCIETY

Founded in 1924 for the Study and Conservation of Ancient Monuments,  
Historic Buildings, and Fine Old Craftsmanship

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Dear Sir,

Moiborn - Blackfriars Redevelopment

Thank you for your consultation of 15th June. The writer has inspected the plans and we comment as follows.

The Outram Building remains the same as when we commented before and we continue to believe that it will prove a masterpiece of late 20th century design.

I am afraid the same cannot be said of the other two designs, which remain disappointing.

The three 50M blocks each retain the form and appearance of largely unadorned gridirons. The lower block facing Ludgate Hill attempts animation by slight divergences in window forms, copper spars on the roof and a rusticated pilach, but it remains rather dull. The abutment with the King Led Public House lacks subtlety. The largest of the blocks has distinct echoes of Erno Goldfinger at the Elephant & Castle with the recession and projection of bays within the gridiron rather in the manner of a half-open display cabinet. Otherwise the form is unrelentingly rectilinear. It is important that the development at this point should act as an antidote to the elephantine, recently recast, form of the huge Sixties block immediately adjacent in Ludgate Hill and not ape it.

We urge that architecture of greater animation, greater liveliness and less oppressive form be adopted for this crucially important site.

Yours faithfully,

Chairman: IYOR BELMOR THOMAS, CBE, BA, FSA, FRCGS, FRCGS, FRCGS  
The Secretary: CHRISTOPHER STELL, BA, FSA, FRCGS, FRCGS, FRCGS, FRCGS, FRCGS  
The Editor: PROF. G.I. MERRISON-JONES, BA, MPhil, PhD, FSA, FRCGS, FRCGS, FRCGS, FRCGS, FRCGS

**This 1990's 'Thatcherite Event' sealed the fate of a Modern Architecture of conceptual depth and intellectual quality that was, and still is, needed to rescue that lost Urbanity. I will explain both how and why this catastrophe occurred.**

**JOA were pleased to be appointed to build in 'The City'.**

The only project that JOA had built in London was out in Docklands and really only visible from the River. In fact its most ocular presence in London was a poster on the Underground. It advertised Docklands as a new 'destination'. I heard, that at the height of its topicality, it nearly made the cover of the Telephone Book. We were pipped to that post by my friend Piers Gough and his 'Cascade' of riparian apartments in the form a ziggurat. Perhaps the greatest visibility of the little Pumpng Station was to appear as a stand-in for the whole idea of Post-Modernism within the jolly pages of the Oxford Illustrated Dictionary (see to the left!).

For it was so attractive to the Ancient Monuments Society, the Royal Fine Arts Commisison and the Court of the 'City' that it was said to have "towed the project through to its planning permission".

This 'Tow' came to be needed because the 'Ludgate Project' (as it came to be called) did not please the authorities as much as Broadgate had done. Indeed, it can be seen from their correspondence with Rosehaugh-Stanhope that they did not much like the other four buildings, or even their 'masterplanning' AT ALL.

I introduce our small, complicated, and unbuilt, 'Outram' project so as to illustrate the reasons why it was not built. I have already argued that the fate of a Modern Urbanity was sealed in the summer of 1947, by the ideas imposed by the Attlee Administration through the concepts in 'Redevelopment of Central Areas'. I will now argue that a catastrophe of similar proportions occurred, during the Thatcher Administration, in the 1980's.

post-production

### POST-IMPRESSIONISM

Post-Impressionism is a term first used by British art critic Roger Fry in 1910 to describe the various styles of painting that flourished in France from 1880 to 1910. Generally, the term is used to cover the generation of artists who sought new forms of expression following the pictorial revolution brought about by Impressionism. Among the principal figures in this group were Paul Gauguin, Paul Gauguin, Georges Seurat, and Vincent Van Gogh. Although their individual styles differed markedly, all of these artists developed the Impressionist style far beyond the representational.



The Yellow Christ (1888),  
VINCENT VAN GOGH

TIMELINE



exp. one giving the place, date, etc. and calling the stamp a mark (as envelope etc.) with this.

**postmaster** n. a man in charge of a post office.

**postmill** n. a windmill powered on a post and turning to catch the wind.

**postmistress** n. a woman in charge of a post office.

**postmodernism** n. (in literature, architecture, the arts, etc.) denoting a movement reacting against modernism's tendencies, esp. by drawing attention to former conventions. (2) **postmodernism** n. **postmodernist** n. (2) **postmodernist** n.

**post-mortem** n. 1. (in full **post-mortem examination**) an examination made after death, esp. to determine its cause. 2. a discussion analysing the course and result of a game, election, etc. n. (2) **adj.** after death. [Latin]

**post-natal** adj. characteristic of or relating to the period after childbirth. (2) **post-natally** adv.

**post-natal depression** n. depression suffered by a mother following childbirth.

**Post Office** n. 1. the public department or corporation responsible for postal services and (in some countries) telecommunications. 2. (post office) a room or building where postal business is carried on.

**post office box** n. a numbered place in a post office where letters are kept until called for.

**post-operative** adj. of the period following a surgical operation.

**post-paid** adj. of ads on which postage has been paid.

**postpone** (2) **vt.** to cause or arrange (an event etc.) to take place at a later time. [from Latin *postponere*] (2) **postponable** adj. **postponement** n.

**postprandial** adj. *feral* or *ju.* after dinner or lunch. [based on Latin *postprandium* 'a meal']

**post-production** n. work done on a film, broadcast, etc. after filming or recording has taken place [see, attr.; *post production* (2)].

### POSTMODERN

Postmodernism is a late 20th-century term used in various disciplines to refer to a rejection of modernism's preoccupation with pure form and technique. Postmodern designers use an amalgam of style elements from the past, such as the classical and baroque, introducing ornament, colour, and sculpture, often with ironic intent.



PUMPING STATION (1989), LONDON, ENGLAND

TIMELINE





JOA found ourselves caught-up in a project that was not only physically extensive - covering some ten city blocks, but conceptually large as well. The storyline was that Rosehaugh-Stanhope were introducing, throughout their huge project, **American ways of 'procuring'** (as the verb of choice had it), their new buildings. These methods were 'boosted' as radical, modernising and in opposition to current practices. Some of the ideas were unexceptionable. But a few did strike me as **redolent of the dead and gone 1950's**. They ran **contrary to the advanced technical and social thinking of the last thirty years**. They were also **opposed to JOA's own building-practices** over the the past fifteen years.

## **FIRSTLY WE WERE NOT, ON ANY ACCOUNT, TO USE ANY FIXED EXTERNAL SCAFFOLDING.**

I could not take this notion seriously. All our buildings, except Wadhurst Park, had been **surfaced, externally, in brick**. It was true that brick could be glued onto slabs of pre-cast concrete. But this cost far more. Most of the **skyscrapers of New York were covered in brick**. It was **all laid by hand**, as it continues to be today, **off 'flying' scaffolding** propped from structural steel frames. Pre-fabricating brick into big, heavy, storey-height panels, rather than laying it by hand up on the dizzying 'nth' floor also **eliminated one of its most useful qualities** - one that I had discovered on my first large project, out at Poyle. Brickwork could be stretched and squeezed, like rubber, to cover-up dimensional errors. Brick was **'American'**, cheap, indestructible and **rubbery**. What more did Lipton want?

## **2nd. We were not to 'design' any building-components, like windows and doors and staircases.**

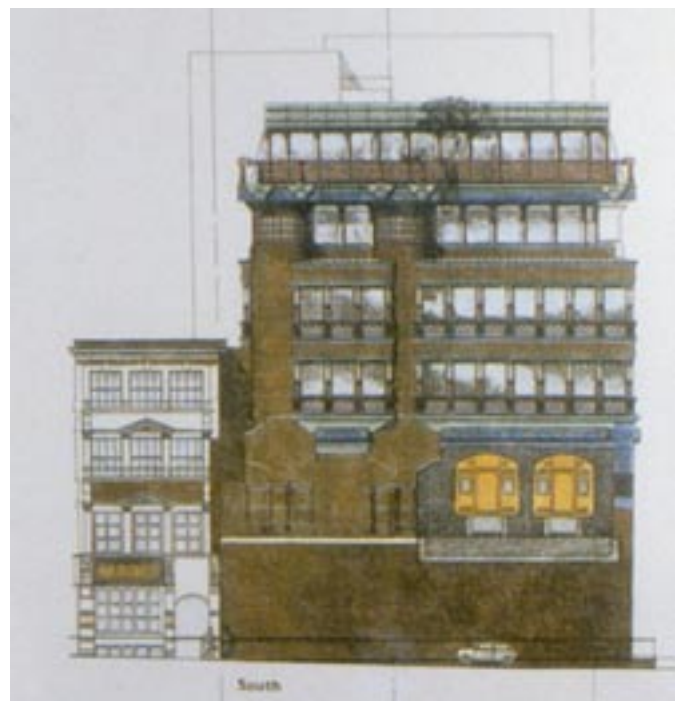
## **3RD. ALL 'COMPONENTS' HAD TO BE CULLED FROM CATALOGUES.**

The second and third injunctions did not overly concern me. I had been **collecting catalogues since my first year of Architectural study, back in 1955**. I never threw them away. It is one of the ways that serious Architects, rather than mere felt-tip doodlers, learn how **buildings are put together**. I had also discovered that if a firm had made something in the past it was usually possible, **if the project was large enough**, to persuade them to make it again - even if it was not in their 'current catalogue'. There was often someone on the manufacturer's staff who remembered making it. Firms who manufacture for Architects have no axe to grind in this respect. They know very well that **every cohort of new Architects that arrives wants nothing better than to trash the 'styles' of the current leaders of the Profession**. **Perfectly good products become 'obsolete' during these inevitable Rites of Oedipus**. The manufacturers and workshops know very well that style is, **predominately, what concerns most Architects**. **Architecture shows**. Engineering does not. The 20C forgot this simple truth, and created a **disaster area called the human lifespace**. It is the reason why 'design' exists at all, and never so urgently as now.

## **4TH. THERE WOULD BE NO 'GENERAL CONTRACTOR' IN CHARGE OF ANY, OR ALL, OF THESE BUILDING-PLOTS.**

All of the work would be **computer-programmed by Bovis, the Consultant Construction Managers**. 'Trade-Contractors' would then take-over exclusive portions of the site so as to build, **all by themselves**, some 'component' like the structural frame, or the external 'curtain wall'. I knew the effects of this from my building at Kensal Road. It created **unnecessary delays and crippling inflexible designs**.

There was a plethora of **time-consuming conferences and reports**, all **manufactured** by the firm of Bovis, who were Project-Managing every one of the five building plots and the railway that ran through us all. But I was pleased to be given plenty of time. There was **much to assimilate** if JOA was to master **these weird injunctions**. Nor was I ignorant of working in the 'city'. I had worked, in 1966-67, under the greatly talented **Bob Gildersleeve** who ran the design and construction of the **new Stock Exchange** when it was re-built by Fitzroy Robinson. I knew what it was to have a 'City' client. **Fitzroy had over ten, - and all at once**. Fitzroy's were, in the 1960's, the Kings of the City.



The old Blackfriars Public House is to the left. It has one of the finest Byzantine-Art Nouveau interiors in London! The Thameslink railway enters JOA's design, travelling North, at the 1st & 2nd floor level, after crossing the River and then Queen Victoria Street. The height restrictions around St. Paul's Cathedral ensured that only four floors could be built over the railway at this point.

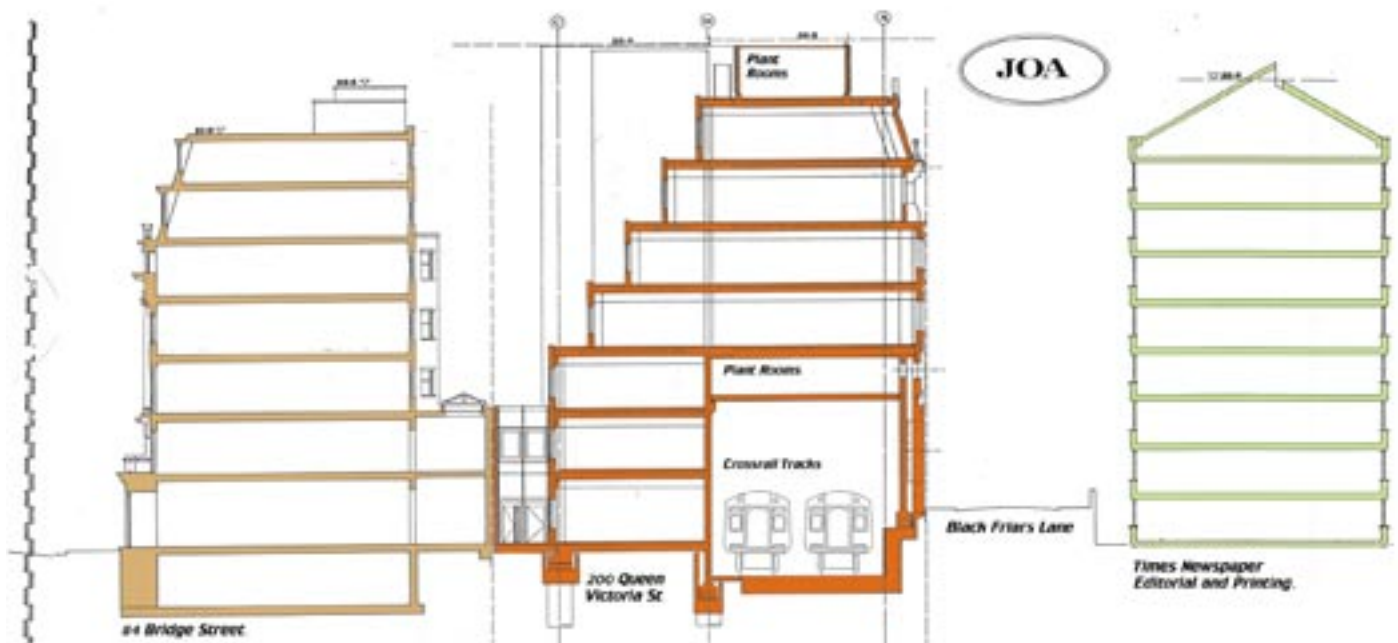


Lipton encouraged us 'new boys' to learn the 'American Method' by examining the buildings he was putting up at Broadgate. I was pleased to do this as well, for it was the way which I had used to learn my own methods, when I bought my almost-new Citroen Safari and toured the warehouse-shed buildings sites of the Southern Counties. Only now we were being shown around vast new buildings within the sound of Bow Bells. I discovered that it was true that they employed no external scaffolding. Their external walls were pre-fabricated in vast slabs, a storey high and ten metres long, with the glass already in the windows. I saw one of these slip its hook and crash to the pavement, all £26,000 of it. By chance no one was hurt. For this also was a discovery. Unlike most of my building sites, which were busy with craftsmen, Lipton's were almost empty. I got the impression, more than once, that there were more blue-suited security-guards than builders.

The external walls were manufactured wherever it was cheapest. One building in Broadgate was sheathed in components made in Minnesota that was assembled on a disused Irish airfield and then ferried over the Irish channel to be trucked into London. The amount of money spent on transport was ludicrous. The reinforcing required to secure the huge walls during transport, and being hoisted into place, was equally irrational. There was more steel in the cladding than holding up the building!

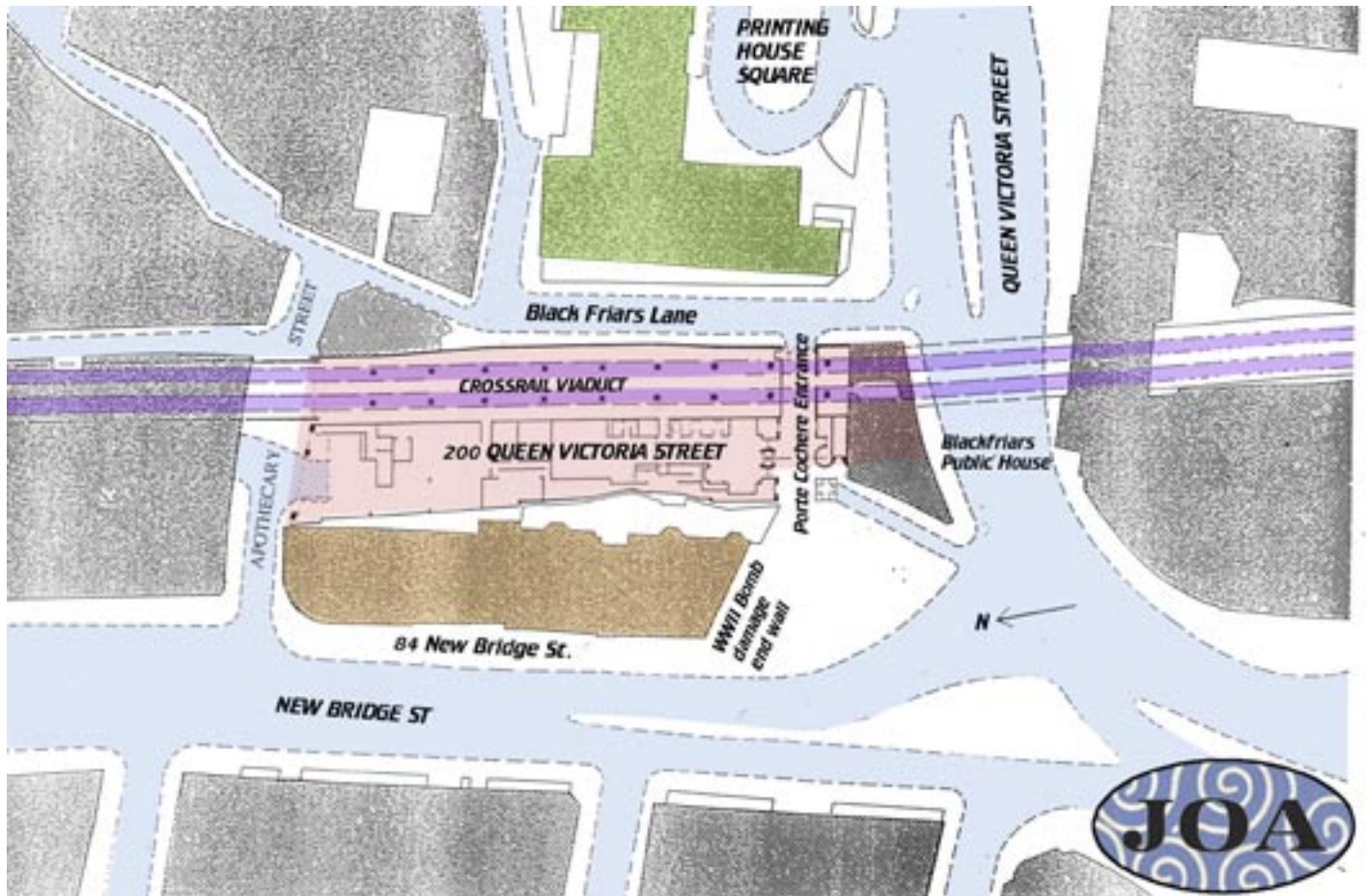
These walls did not impress me technically. They were of thin slices of stone into whose backs stainless bolts had been glued. These bolts were fixed to a thin sheet of galvanised steel. This, in turn, was bolted to a thin steel frame. The rain was allowed to trickle through the gaps between the stone. It was stopped by the galvanised sheet. If it rusted, no one would know until the stone fell off. This was 'rain-screen cladding'!

The Thameslink trains, if still travelling North, came out of our design in a concrete box that led them from the height of a bridge over Queen Victoria Street down to the level of a tunnel under Ludgate Hill, in front of St. Paul's. It would help to rent these buildings if one muffled the airborne noise of the commuter-trains. But this sound-proofing concrete box blocked a street. Such was the enthusiasm of the Planning Committee of the City that it provided steps up and down for their Citizens to tunnel themselves under the 'soundproofing'!



The cross-section, looking North, away from the River, shows how the Railway blasts through the lower two to three floors of our narrow, quite low, but, as one might expect on 'railway land', elongated building. The long-term plan was always to combine it, as one building-plot, with No. 84 Bridge Street (coloured yellow). This would make of it the sort of 'deep' building, with the 'Atrium' that the tenants preferred. It allowed them to make a top-lit 'dealing-room' on the lower floors. A close inspection of these sections shows some modelling of the street elevations of both our design and that of the pre-WWII 84 Bridge St. The section through the building in green, the Post-WWII headquarters and printing works of the august Times of London newspaper, shows it to be what it was - a mere piling up of the squalid architectural illiteracies that have destroyed all Urbanity since the mid-century.





The geometry of these building plots recalls the failure of Wren to re-plan the City of London's streets, even after every building had, in 1666, been burnt to the ground. Such opportunities do not present themselves very often. Not that either Wren, or Hooke, understood the iconography of the building block as an *isola* marooned in an hypostylar infinity. They both proposed terraces, as is the Northern tradition. Every detail of the labyrinthine complexity of this design resided safely in the mind of Niall O'Neil, my naturally-talented project-Architect.

I Liked to **sleep easy at night**, and always had to date. So I put to one side the question of how to design the **external skin** of this building. It was something in which JOA had more than enough experience - even though its urbane context was the fabled 'City'. The building might be only seven storeys high, but it was the most **complicated spatial jig-saw** in my experience. As can be seen on the following page: almost **nothing was rentable on the ground, first and second floors!** And little of that had a **daylit window** with anything that could be called a 'view'. The street plan was a reminder of how the 'square mile' was burnt to the ground in 1666 and then rebuilt, **stupidly**, as the merely **labyrinthine refuge for escaped villeins** that was the **founding spatial geometry** of all 'dark-age' English towns and cities.



The long section through our building shows the railway entering at the right, above Queen Victoria Street, and running down to ground level before entering RHWL's new building to the left. It effectively swept out most of three storeys, leaving only four above - and these got thinner and thinner as they rose, so as to avoid blocking the daylight to No 84 New Bridge Street.



THE FRONT DOOR to the building was formed to the South as a new *Porte Coché* (mauve) behind the Blackfriars Public House, a building whose interior was considered one of the best 50 in London. The 'back door' (mauve) for materials handling, lay at the other, Northern End, off of Apothecary Street. The centre of the building had to accommodate a local district Electrical Sub-station (pink). The rentable area (green) was nominal.



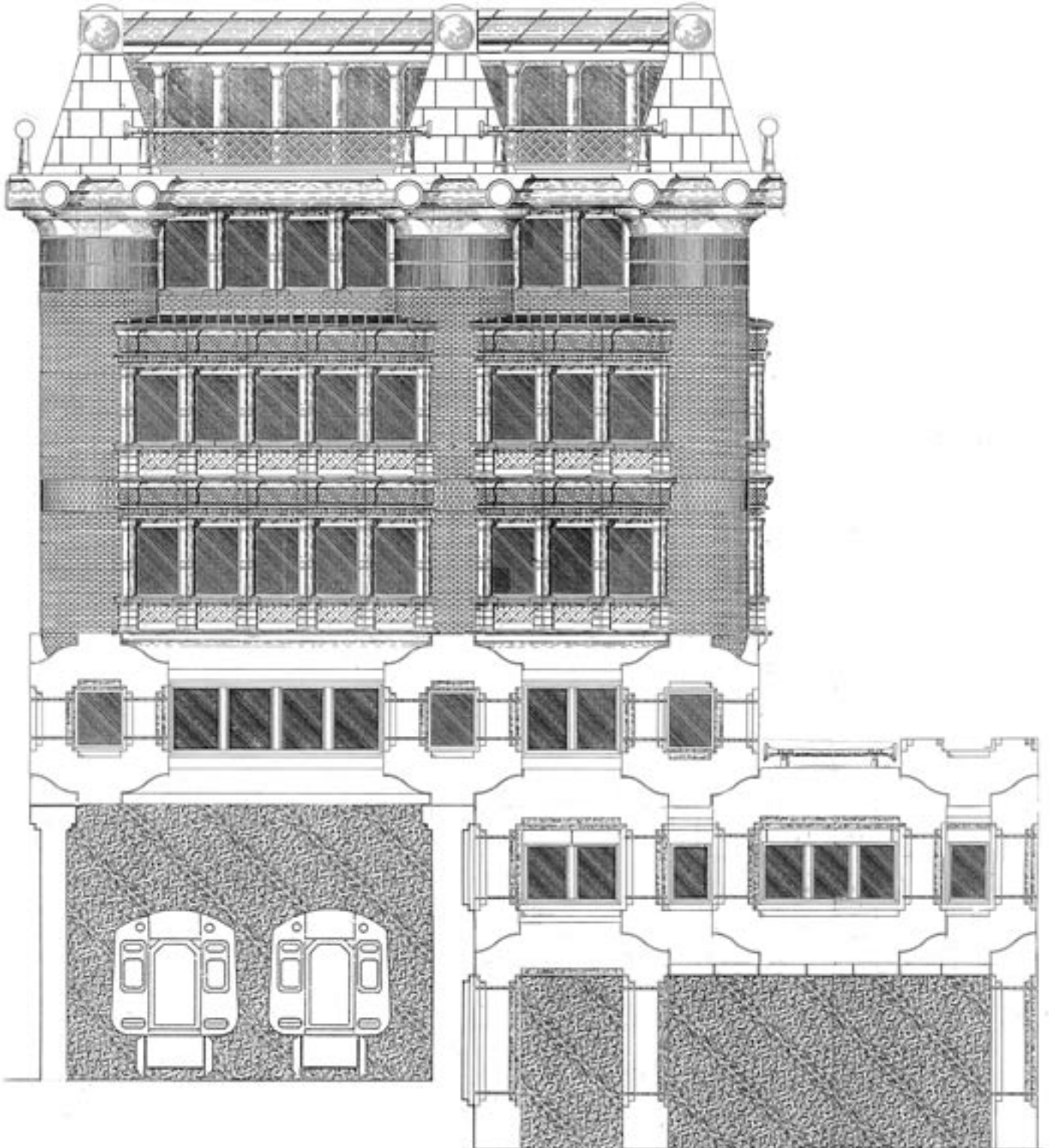
THE FLOOR ABOVE THE STREET was sandwiched between the concrete box around the railway viaduct and the back of No. 84 New Bridge St. There were hardly any windows and none of them had a view of more than ten metres! It could not rent at at 'New City Building' rates. I left a double-volume space above the porte-cochère at Ground Level.



MOST OF THE 2ND FLOOR was also sandwiched between rail and 84 New Bridge St. The yellow area shows a low headroom space, with a floor that stepped up and down over the trains. It was designated Mechanical Plant. I aimed to vent air into it through the big fans from Belfast used on the Isle of Dogs Pumping Station.



The project could not be more different to the 'greenfield' WHICH? H.Q. But a City only becomes one when its Architecture is capable of mediating ideas. The point is not to invent a different Architecture for each building, such as had been 'pioneered' by Stuart Lipton at his enormously influential Stockley Park. The Architects he chose loved being 'different'. It demonstrated their 'star quality'. The totality of their works never became that sine-qua non of Urbanity - a Whole greater than its Parts. It was an elegant demonstration of urbanistic incompetence, softened by beech hedges, asphalt car parkings and resident ducks. Designing 200 QVS was being thrown in at the deep end. But I enjoyed the formal juggling of a 'Sixth Order' dimensioned on the scale of the Isle of Dogs Pumping Station. Lipton, in common with all rent-slab developers, insisted on ribbons of windows. One of the fruits of success is a desk by a window from which to survey the Anthills of Aministration.



The building is Architecturally regular above the level of the rail tunnel. Below that the 'yoked' column (invented for the nearby Petershill Competition described in Lecture Two: 'The Sixth Order', page 2-11), proves itself capable of some ingenious formal juggling. I was not afraid of 'putting too much into' this composition. A start on a truly modern ARCHITECTURE has to be made. It is better made with iconic density and dramatic force. Polite restraint comes after the battle is won and the symbolic narratives have become well-known. Those times are the best for Architecture. But they were not yet upon us in the late 20C!





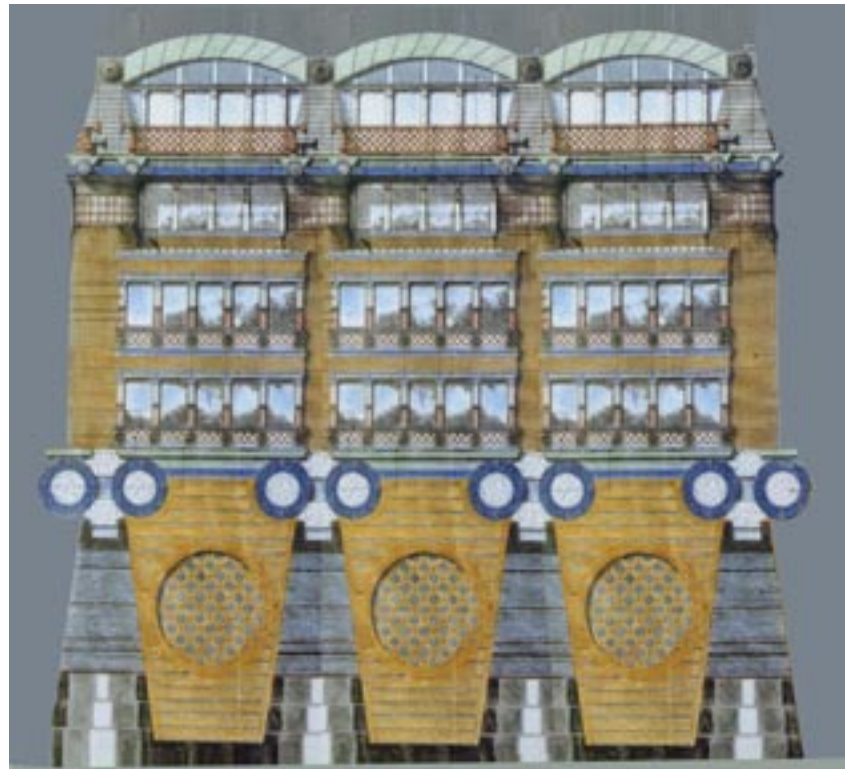
*The long East side facing the suburban-rustic, shed-at-the-bottom-of-the-garden Times Newspaper building. I chose the model of the vertical 'Terrace (or Row) House because it is both very English and because Andrew Saint reports that it was London's sole generic building type up to the late 1880's. It suits the urban 'modesty' of this building-plot. A train can be seen entering from the left on the second floor. Its tracks fall to the right.*

**So, ever-inventive, the columns, just below the capital, where the floor recessed to allow a cornice to project, were made of glass blocks that would glow at night - like the 1999 columns of the Millenium Balcony at Wadhurst Park.**

## **Bricks are thick, rain-absorbing tiles.**



*The entrance to the Porte Cochère from the West, off the little open square created by the Blitz and the post-WWII Road-Engineers, as seen from Blackfriars Court.*



*It was only later that I noticed that the two floors of glazed balconies, resting on 'logs' enlarged so that they could act as circular air-inlets, now resembled the railway carriages otherwise hidden from view by sound-insulating brick plinth. The 'discourse' of signs often works best when hidden from the designer.*

**They can be laid to symbolic patterns and colours - and over curved walls as well. I saw no good reason to abandon this material that had served my purposes so well for the fifteen years of JOA's existence to date. So we ignored this one of 'Lipton's Rules'. But bricks require the use of external scaffolding.**

# **LIPTON REFUSED THIS.**



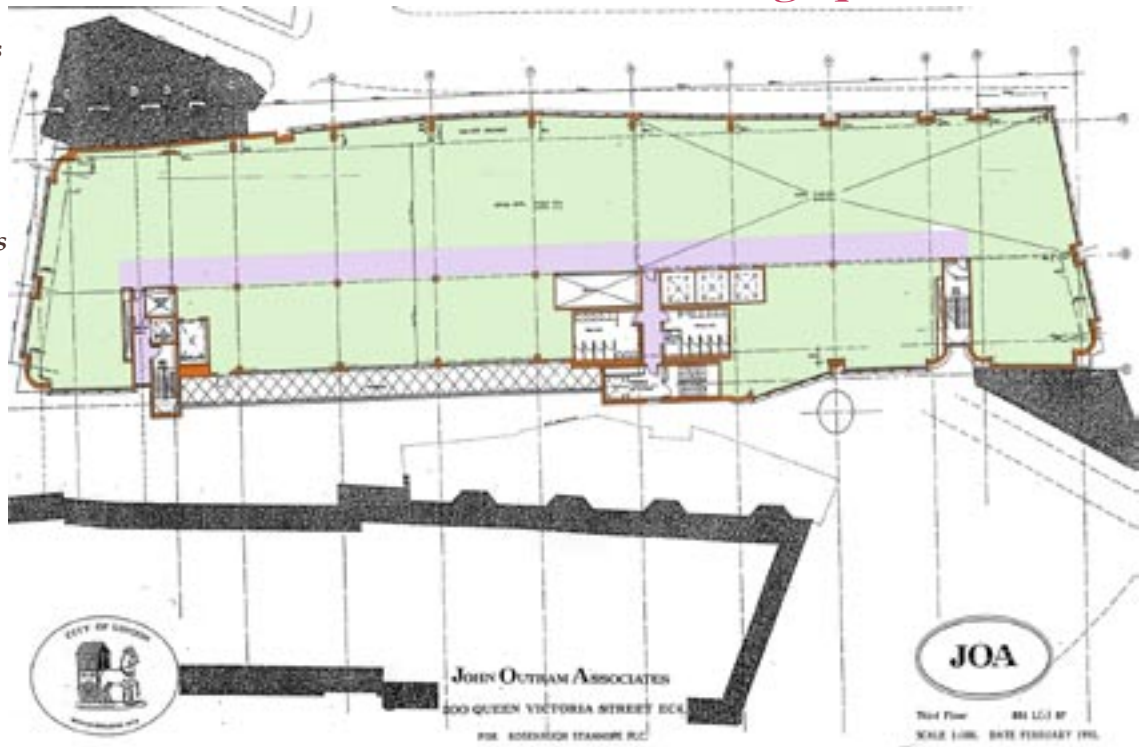
We visited a firm of Attorneys, then located in Lincoln's Inn Fields, who Rosehaugh-Stanhope hoped might take our building. I recall the looks of incredulity they registered when we all asserted, with complete confidence, that the foam on their cappuchinos would not even exhibit a ripple as the Thameslink Trains thundered through three floors of their building. Our consultant structural engineers, Ove Arup, whose railway division were also designing the Crossrail viaducts and tunnels, would pose our steel columns upon gigantic spiral springs.

**Even the vertical water main had a spiral loop in it.**

They assured us that these 'loops and spirals' would isolate our superstructure from the concussing vibrations thumped into the earth by the passing trains. We believed them. Arup's are top Engineers.

**But JOA remained in trouble over the 'scaffolding' question.**

*This was the floor-plate of the two floors immediately above the railway. These 3rd and 4th floors had a perfect depth for daylighting, if not for the cost of a building's perimeter divided by the rentable floor area it enclosed. The two floors above, one of which, the 5th, is illustrated below, were thinner still, and so even better daylit. This was now a nice little building for a company, like a firm of distinguished attorneys, who could make something of its distinctive design.*

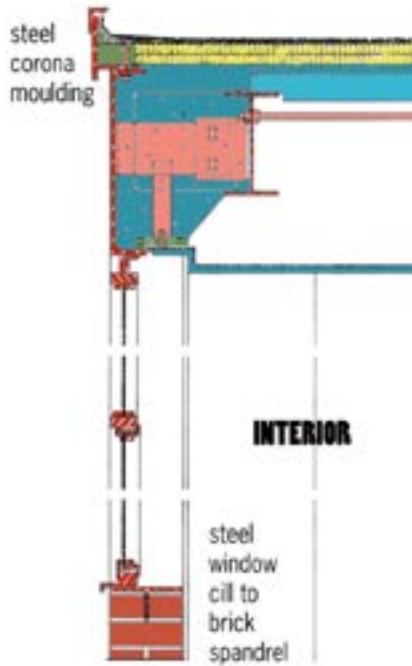


We were taken to Belgium and shown vast factories, capitalised to mass-produce pre-cast 'plattenbau' houses to repair the ravages of WWII. Another Dutchman promised us, plausibly, to reproduce the look of concrete in cast aluminium. His main business was military vehicles. A man from Vienna appeared who could imitate thinly-sliced granite, the



cladding material of the moment, in enamelled steel. Then a lady came over from Rome. She could imitate almost anything in cast glass. Her main problem was that the Mafia controlled the Alpine segment of the traffic in the huge 'Low-Loaders' needed to transport large chunks of building-facade. We would need a secondary assembly-space, like the disused Irish airfields used for Minnesota's contribution to London's pre-fab glories.





125. Vertical Sections through outside wall

The aphorism of Mies van der Rohe, that "Less is More", does not apply to the infamous technical inadequacy of his epochal, 1945, IIT buildings. He makes his Architecture out of rolled steel beams. Seemingly the most commonplace and proletarian of means, his steel is, in reality, specially re-straightened at more than three times the cost of the factory-gate metal. This is because as it comes, molten, off the rollers it warps as it cools. When steel is clad in masonry finishes this twisting is unimportant. When it is used as a finished surface, the steel is no longer 'factory-made' but hand-made. The machine-made 'modernity' of his architecture is a fraud. Its real power descends from a vestigially Roman corona-moulding to his 'Classical' steel cornice!



**THIS IS THE ORIGINAL 'COOL SCHOOL' ARCHITECTURE THAT RAINSCREEN IS TRYING, MOSTLY, TO COPY:** The gift of European Modernism to the USA was an architecture devoted to a cult of obsolescence and waste that masqueraded as technicity, economy, and efficiency. The cost of the energy needed to heat and cool the flimsy, uninsulated, unshaded envelopes of Mies' 1945 buildings for (ironically) the Illinois Institute of Technology, would, at today's energy-values, exceed the cost of the entire building after a mere decade. Only a technical ignoramus would build such things in a Continental climate which moves from -30 °F to +40 °F in the summer sun. This architecture of waste was espoused by the political establishments of the emergent Consumerist State. They saw its potential to stimulate economic turnover and the tax revenues that would result. Mies conjured the ghosts of German Neo-Classicism from the savage soil of the Prairie. It was a barren crop.

**So I set JOA to a serious study of this 'rainscreen' cladding technology.**

**I found that the 'New Fast-Track 1980's Developer' was stuck between a rock and hard place.**



126. Horizontal Section through outside wall

The plan of the external wall shows that nothing but a sheet of bare steel would sometimes stand between the occupants of this Alumni club and the ferocious winters and summers of the American Midwest. The steel would rust and the un-absorbent bricks would leak without a cavity. Everything would run with condensation in the winter. 'Modernists' love the proletarian infantility of its brutally simple construction. There is also the guilty frisson of the forbidden Neo-Classicism - plausibly re-figured as an 'industrial vernacular'.

The **ROCK** was the desire of the **Public** - expressed through planning committees, mortgage companies, and persons knowledgeable in building construction and materials - for **buildings with a solid look and feel** as well as a **cultured, even 'historic', shape**. Not only do such constructions enjoy many technical advantages, but it is the function of 'that which has been built' to evince a sense of **peace, solidity and security**. It does this so as to allow the **homeostatic processes** of the human lifespan to proceed without undue self-advertisement - in the way that they do in our own bodies. This allows the higher functions of the conscious mind to operate without interruption by being reminded of corporal activities. The French understand the need for this better than the English. This is why they fit their 'Metro' with rubber tyres. One can think and talk in such public places. On The London Underground one can only, moronically, mindlessly and dully **'Feel the Force'**.

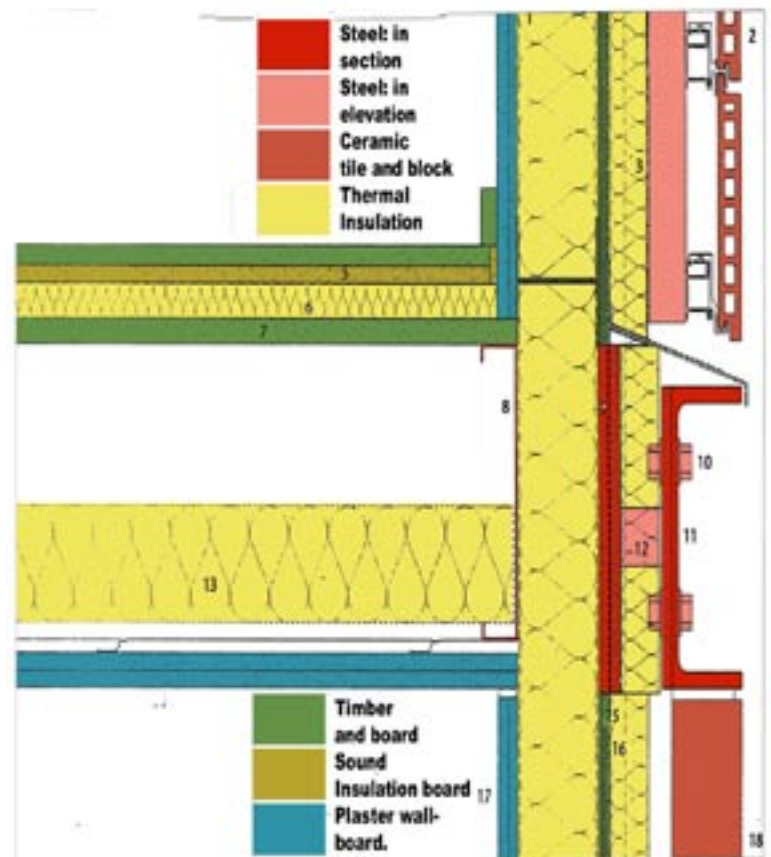
'High-Tech' Architects who plan buildings which actively **'interact'** with their physical environments are **spanner-wielding haptics** with no capacity, or need, for a **'conceptual' discourse**. To them the mind is a muscle whose main 'architectural' ambition is to be constantly twitching in its mute body.

**The New Developer's 'HARD PLACE' was their project to globalise the construction process and their insistence on factory-made facades which could be erected without scaffolding.**

The result of this was the **lightweight facade** that was apparently 'heavy' - i.e. 'made of **solid stone**'. Limestone proved too soft to 'drape. Only granite would serve - a stone on its way to having been volcanically fused into glass. This **glassy rock** was sliced as thin as possible (like 19mm (3/4") and had stainless steel pins **glued** into its back. These were then fixed to a storey height, 6 metre-long (20'0") **galvanised steel frame** that held them, like **lithic, paper-hung, advertisements** for **'Nature'**, up in the air.

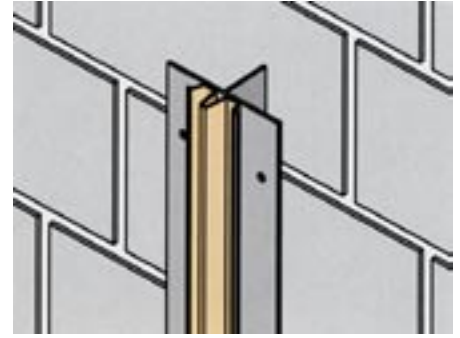
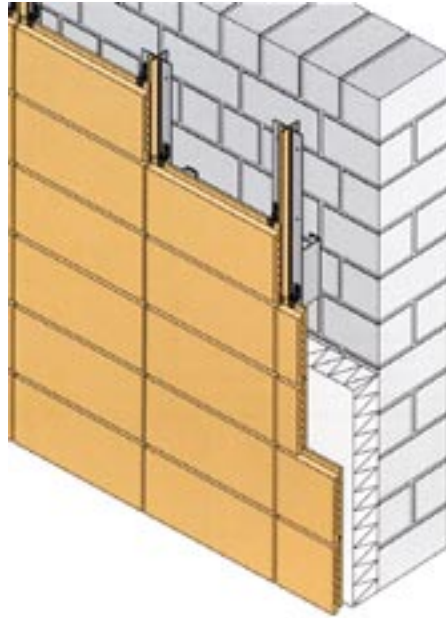


The contemporary version of the 'ticky-tacky' box so dear to the English spirit of cottaging. Here is the frame hung with 'shingles'. Nothing transmits sound better than a light-weight building framed in thin steel. An impact on one part travels around like sound piped down the strings and body of a tensioned-up guitar. One must have chemical aids to sleep in such twanged-up structures.

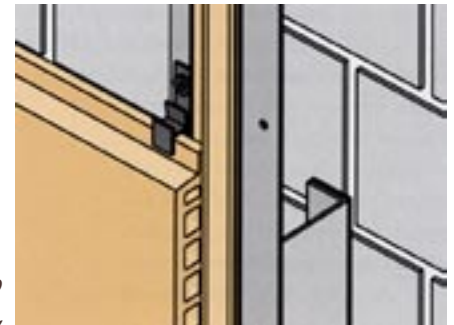


A section cut through the outer wall of the rainscreen cladding from the block to the left. It shows that the floor and walls are made from thin pieces of folded steel (8), that hold thick slabs of fibrous thermal and sound insulation (5,6 & 13). These are surfaced, on the outside with big clay slabs (2), hung on clips, and decorative steel T-Beams (10, 11 & 12), so as to symbolise that 'truth-to-structure-and-materials' ethic dear to the 18C Rigorists and Mies van der Rohe. The interior is surfaced with wood-chip slabs and plaster-and-card boards (17).





Folded and extruded aluminium is fixed, with stainless steel bolts, to a strong backing, like a block wall.



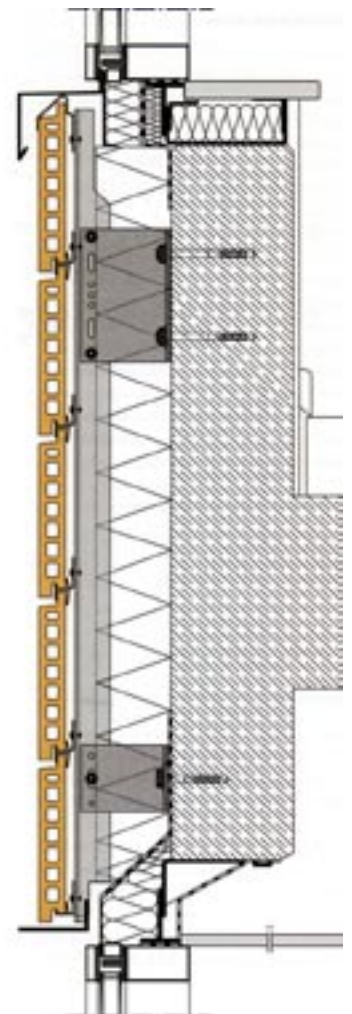
Ceramic slabs are held by corrodible aluminium pop-riquets.

Why is the curved face of this building so crudely made? If it had been covered in brick at least the ceramic wall would have been smoothly rounded. The slabs of clay are extruded onto conveyor-belts. They can not be made curved. It is more expensive than brickwork. It cannot be inspected or mended. It is inherently short-lived.

The reason for the clumsy appearance is that the real bricks are covered over in a framework of very thin folded metal onto which is hung large flat plates of ceramic, stone or metal. Rainscreen removes the Architect's ability to design shapes and patterns. This does not disturb an iconically illiterate construction culture. Indeed it protects it by papering-over its dissimulations.

These thin sheets of granite could not be cemented into place, as could have been bricks or blocks of stone. Mortar would have fallen through into the cavity behind the suspended sheets of stone. The rain itself fell through the wide gaps between the granite sheets. So something had to be interposed between the granite and the steel frames. At first this was a thin sheet of galvanised steel. Many big, 1980's-Boomtime, buildings were built like this. Then it was accepted that thin steel, even if zinc-coated, would soon corrode. So a stainless steel sheet was used to stop the rain. Even so the pins in the back of the granite punched through this 'rainscreen'. This flimsy trash was made in places like Minnesota. It was shipped across the Atlantic and assembled on old airfields in Northern Ireland. Then the low-loaders came in, by road and ferry, up to London.

JOA worked on this technology for three years. It was irrational and wasteful of energetic and material resources. It had only one driving imperative. This was to depopulate the building site and erect a facade as early as possible in the construction sequence so as to allow re-financing at a lower rate of interest. In short it was a technology driven by a political and financial strategy. This can be judged successful on its own terms. But when judged technically it is my belief that rainscreen cladding technology will prove to be a source of building defects of unprecedented scale. The facade sheets (whose role, ironically, is exclusively ornamental) are always 'secretly fixed'. They are supposed, after all, to look like blocks or stone (or granite). This means that once erected, no one can check how they were suspended or how these supports are corroding. This is both an invitation to cheat by using inferior materials and a prohibition upon any sort of periodic inspection and repair. Such walls either endure or fail catastrophically. There is no middle way. They can not be 'maintained' by the removal and replacement of fatigued fixings. In short this is not a 'sustainable' method of finishing a wall.



A section cut through the external wall shows heavy clay slabs hung on invisible aluminium clips fixed with stainless steel screws.

Most cathodic, noble, or resistant to corrosion

- |                                     |  |
|-------------------------------------|--|
| Platinum                            | Aluminium components are often fixed with stainless steel, but the combination encourages corrosion                                    |
| Gold                                |  |
| Graphite                            |  |
| Titanium                            |  |
| Silver                              |  |
| Chlorimet 3                         |  |
| Hastelloy C                         |  |
| ● 18-8 Mo stainless steel (passive) |  |
| ● 18-8 stainless steel (passive)    |  |
| Chromium steel >11 % Cr (passive)   |  |
| Inconel (passive)                   |  |
| Nickel (passive)                    |  |
| Silver solder                       |  |
| Monel                               |  |
| Bronzes                             |  |
| ○ Copper                            |  |
| Brasses                             |  |
| Chlorimet 2                         | ● The further that a metal is from the other, in this Galvanic Table, the faster the 'anode' (in this case aluminium) will be corroded |
| Hastelloy B                         |  |
| Inconel (active)                    |  |
| Nickel (active)                     |  |
| Tin                                 |  |
| Lead                                |  |
| Lead-tin solders                    |  |
| 18-8 Mo stainless steel (active)    |  |
| 18-8 stainless steel (active)       |  |
| Ni-resist                           |  |
| Chromium steel >11 % Cr (active)    |  |
| Cast iron                           |  |
| Steel or iron                       |  |
| ● 2024 aluminium                    |  |
| Cadmium                             |  |
| Commercially pure aluminium         |  |
| Zinc                                |  |
| Magnesium and its alloys            |  |

Most anodic or easy to corrode



This table shows how dissimilar metals corrode in rainwater. Brick and stone are always fixed with stainless steel. This is not so with Rainscreens. RAINSCREEN' Claddings admit rain. Acids are dissolved in rainwater. Dust is carried by the air. Rain deposits all this in the crevices behind the cladding. It keeps the aluminium damp and in-contact with stainless steel bolts and washers. Structural decay, by corrosion, is both inevitable, invisible and, ultimately, un-reinsurable..

Everyone who has ever bought a computer or talked to a printer knows that the more dots per inch, or pixels on the screen, the more detail you can capture. Brickwork is a crude enough palette on which to inscribe the means to a literate lifespaces. One can do nothing with a medium as crude as 'rainscreen'. Insects enjoy a more conceptually sophisticated iconosphere than these humans as they are 'cheered up' with some slabs of yellow.

**This terrible technology had already had a disastrous effect upon the overall design of buildings, effectively preventing any sort of well-made, hand finished, sculpted exterior. Then it had a knock-on effect upon the way that buildings were designed and specified in detail. It was understood, from the top to the bottom of the management of the 'New Developers', that large-panel pre-fabricated rainscreen was merely a way of FAKING solid, heavy, durable structures. It was always suspected that this could lead to technical defects.**



There arose a desire to insure the Developer against such failings.

The normal person to sue for a defect of design was the Architect. But the '80's Fast-Track-Developers believed, with some reason, that this technically irrational technology, constructed thousand of miles from the site to which it would then be moved, never to move again, was best insured by its manufacturer, back in Minnesota (or wherever). But then what of the erection and fixing of this 'no hands' architecture to the steel and concrete armature of the building? Would not this create shared responsibilities which would be impossible to pin down? Collateral Warranty Insurance was invented.

Give a bricklayer this simple pattern and he will love his work. Hi-Tech architects talk of populating the Moon. They do not even know how to dwell on Earth.



JOA listened patiently to all of these **ambassadors of prefabrication**. Bovis, taking their cue from Rosehaugh-Stanhope, **wanted to make buildings lighter**. But this was merely to make the huge building-fragments resulting from offsite prefabrication easier to move and erect. Yet I knew that **mass was important to the physics of good building**. It gave **thermal stability - eliminating air-conditioning in a climate like Britain's**. Mass gave **acoustic privacy**. Mass gave **durable fire-proofing**. Vincent Wang, our immediate Client-contact from Stanhope's reported to me in anguished tones over the phone: "**John why is that City-Planners want buildings to be 'HEAVY'?**" I wanted to turn his question around and ask him **why he wanted them to be light**, and moved for hundreds of miles when, once installed as a building they would never move again? Buckminster Fuller, an Engineer who built nothing of use to Urbanity, was the idol of the Architects who Stanhope hired.

But if big-panel prefabrication was key to this Client, JOA would invent a panel that used the **bricks and concrete we already knew**. But we would **not merely imitate hand-laid brickwork**, a technique which destroyed its qualities. The cranes were lifting huge loads. JOA had already **'proved' far cleverer concrete than any in Belgium**. We would go further. We would earn the epithet applied by Michael Graves - a-propos JOA's work in the USA:

*"You have to keep your eye on Outram. He does not know when to stop".*

We describe in Lecture 15 pp 09-12: 'The Photolithic', the 'Masonry Tile' which JOA invented, for Stuart Lipton and Stanhope. We took a sample and technical drawings to the component-manufacturers and the big precast concrete panel makers. They were all within Great Britain. Bovis went with us. They costed it and it came to **no more than Broadgate's Bishopsgate building then being built by Bovis for Skidmore Owings and Merrill**.



THE ROYAL FINEART COMMISSION  
7 St James's Square London SW1Y 4JU  
Telephone 01-839 6557

Chairman The Right Honourable the Lord St John of Fawley  
Secretary Sheila Castonino, CBE, MA, FRIBA

2 November 1989

Dear Mr Wang

CITY OF LONDON: LUDGATE HILL, BLACKFRIARS-HOLBORN STATION, SOUTHERN SECTION  
(Outram Partnership Scheme)

Members of the Commission at a meeting held on 25 October 1989 met and considered the proposals for the above scheme.

The Commission welcomes the design for this building and believes that it will make an exciting addition to the city's rich and varied architecture. It hopes, however, that the opportunity will be taken to heal the wounds caused by the highway engineers by extending the development across the blank end of the building on New Bridge Street and so removing a major eye-sore in the street scene. It asks the City of London to take the initiative and to encourage this to happen.

Yours sincerely

Lord St John of Fawley  
Chairman

Vincent Wang Esq  
Design Director  
Stanhope Properties PLC  
10 Bruton Street  
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W1

c.c.  
J G H Outram Esq RIBA 1906 Finiafa  
Partner  
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Pat Scott Esq  
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Sophie Andree  
English Heritage

Roger Rowson Esq  
Joint Chief Executive  
Rosehaugh Stanhope Developments PLC

Mrs Annie Hampson  
Assistant City Planning Officer  
City of London



Our little building had been singled-out, from the other five, for praise by the all of the authorities. It would be more economic if it could be joined, back to back to 84 New Bridge Street. It would then be a 'groundscraper', with included Atrium. The REAC also wanted the 'bombsite' end wall of No. 84 to be given a properly Urbane facade. We obliged by cladding it in 'Masonry Tiles'.

These are full-size samples of the 'Masonry Tile' that we developed for Stuart Lipton's drive towards Large-Panel Building (LPB). They are made of concrete into which have been cast pieces of bricks sliced-up by the diamond saws that were in everyday industrial use..

The Bishopsgate frontage, on the South-East corner of Rosehaugh-Stanhope's Broadgate project was the most prominent of its entire street-perimeter. Its American antecedents were supposed, when designed in the mid-1980's, to recall the early-20C Architecture of Chicago. Certainly it sports the characteristic 'Chicago Window' of a large central pane flanked by smaller ones. Yet I see little in its overall composition to connect it to the admired commercial architecture of that city. If it descends from any 'illustrious' parent it is a tendency towards a formalism (frequently observed in US commercial firms) that leads back to the high status once enjoyed by the Parisian Beaux Arts. Its massing of centre and wings recalls the form of terrace blocks, found all over London, that provided a unified side to a space like a garden square. The ground and mezzanine street frontage gives a generous public, two-level arcade that is most unusual for the constricted pavements of London.

**IN SHORT ITS STREET-CULTURE IS AMONGST THE MOST ADMIRABLY URBANE IN BROADGATE.**

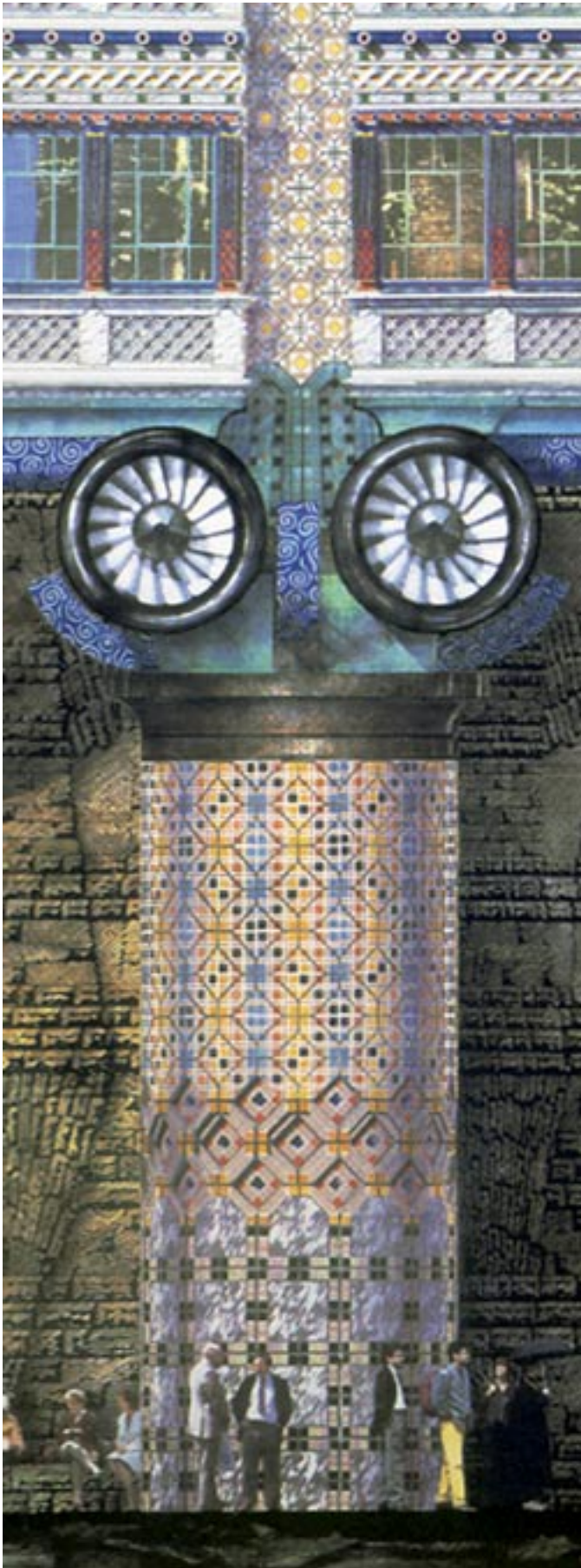
Yet many are uncomfortable with the crudity of its detailed modelling.

The blame for this lies squarely with the DRIVE TOWARDS LARGE-SCALE PREFABRICATION. The external walls are covered in a granite rainscreen of 'plattenbau' type. This construction rose to prominence in East Germany after WWII. The cities were destroyed, Labour was scarce. Housing was mass-produced by a dictatorial state. These soulless barracks of housing estates now lie empty and decaying in their hundreds of thousands as German consumers became capable of buying alternatives. Large-panel building systems are cheap. But making them look 'interesting' is expensive. Granite is a very hard stone - typically mined in Brazil and cut in Italy where it is processed into thin slabs by very expensive machinery. A building-budget will allow one to make a hole in a big slab and fit a window into it. Any further sculpting or fine decoration is uneconomic. The pattern and shine on the polished granite is thought to be enough for the human eye and mind. This can be true for a kitchen worktop. But somewhat more is needed for the street-facade of a great city.



Broadgate's 135 & 155 Bishopsgate blocks are 'PLATTENBAU BEAUX ARTS' - East Germany's answer to Paris. They are built of panels, one storey high and one window wide. Check the black lines. The walls are thin slices of granite glued to a light steel frame. The openings are a big sheet of plate glass decorated by stuck-on 'Chicago' window-bars.





*Modelling a material is expensive.  
Changing its colour is easier.*

## Two of the cheapest materials in building are brick and concrete.

They require very little transport. Brick lasts for millenia. Concrete is not that old. But it is progressing technically faster than any other building material.

**This is because it is synthetic.**

Original combinations of brick and concrete underlay JOA's rise to Architectural prominence.

The blue concrete members have white spirals inlaid into them - a technique which we used both in Britain, the USA and the Netherlands. We later used white concrete inlaid with blue. The same can be said of our technique of inlaying brick into concrete. Concrete, which can be of any colour and many surfaces, is a 'glue' which can secure any object. One lays it into a mould and pours wet concrete over its back. Surplus concrete can be removed with weak hydrochloric acid - a normal process or cleaning down new brickwork as the burnt clay does not dissolve like cement. The 'Masonry Tile' (Lecture 15: 'The Photolithic' pages 10-13) was our novelty for Lipton. It used the wet-grind discing that we had already perfected at the hands of David Knowles. David was elected, ten years later, "Concrete Operative of the Year" for his brilliant achievements in precast finishes - many of them prototyped with JOA.

The fundamental economy of our material processing allows us to spend more on formal manipulation. But even here our needs are modest. I merely place ready-cut bricks into a pre-formed mould, before concreting them into the interlocking, mazy, patterns of the Masonry Tile. I do not aim for fine mouldings that imitate the carved stones of Classicism. My approach to 'Classicism', and indeed to 'Architecture' in its broadest senses, has been to travel upstream to its generic iconographies, and enliven these in ways more suited to my own time. Indeed, although aesthetics is never absent from my mind, it is the meaning of these colours, patterns and even shapes which always has the priority in JOA's designs.

*This is the prefabricated cladding that was costed as comparable, per square metre of surface, to the one built along Bishopsgate.*

**A human livespace that is merely aesthetic is a livespace for the Dull.**

The Aestheticization of Architecture in the late 19C, particularly by L'Art Nouveau, gave birth to the unending conceptual dullness of the diverse attempts of the 20C to 'make sense' of the Architectural medium. Its Savants failed, time after time, book after book, to crack the genetic code of their subject.

**Until finally, at an event at which I was present, Architecture, after 9,000 years, collapsed and vanished completely.**



The Critics divided us into the four High-Tech boys and then Stirling and Outram. We two were classified as unclassifiable and then, much to the annoyance of Stirling, compared.

**It was at the 1991 Venice Biennale of Architecture that James Stirling was celebrated as the world's most admired Architect. It was there, also, in the Pavilion of the USA, that Peter Eisenmann displayed his work, accompanied by the sound-track of the gastric bumping and grinding of a (his?) digestive system. In the room next to Eisenmann was the work of Frank Gehry, who would have gone on to displace Stirling as global No. 1 - even had not Big Jim died on June 22 1992 - ten months later.**

Stirling's native appetite for 'anything designed' developed, with a confidence usually lacking in the English, into an omnivorous hunger for Architecture as such. It made him the most erudite master of form. His genius was aptly put by Summerson as the Conjuror and Juggler, His method was to allow others in his office to initiate and then to come in and convert/pervert the composition with inversions and tropes that employed his vast memory of forms. The later buildings, such as Stuttgart and Melsungen, are works of true genius. The field of his success was the motorised landscape of the late 20C. His genius failed when it came up against the iconically compacted decoration of the finest 19C and 20C buildings of the City of London, as it did at at No 1 Poultry.



JOA at the '91 Biennale. Hopkins lay to the left, through the big doorway. Foster lay behind the Camera, and behind that, Stirling. Rogers and Grimshaw were on the other side of Stirling. Stirling as befitted his status, put on a display of 'curatorial' modesty comprising inimitable axonometrics of his many projects. Foster's was merely a few giant black-and-white photo-enlargements. Dissatisfied by the size of one of these incomprehensible sheets of chaste grey, Foster sent his private plane back to London to return with one that was 150 mm taller. The replacement used ALL of the wall between skirting and cornice. Foster's book was hinged in aluminium and bound in aluminium. Those with the physical strength to leaf through it found some more photos and the usual epithets. It was as dull as the exhibit of Michael Hopkins. But Michael's photographs were better. He had commissioned the venerated photographer Eric de Maré. Rogers had a two metre high model of a building in Japan that, like a construction crane, seemed to suspend part of itself off a hook.

Grimshaw was a day late to arrive, making an entrance of which any Italian would be proud. He was preceded by the Reuters announcement of a big competition win in Berlin. My experience of lecturing in Italy was that only one projector was available and almost no audience. Negotiations quickly produced the obligatory second projector and the audience was merely waiting outside, hoping to be the last to enter. As with the Hellenes, a life without a dramatic problematics is a mere foreshadowing of the bloodless boredom of Hades.

Grimshaw's room housed a model of huge scale and weight that looked like a very fast aeroplane. It was billed as an hypothetical airport. It was hoped that being seen by a prospective airport-builder, it might engage him by a process of sympathetic magic. I believe it succeeded. The British Pavilion was as anarchic and as full of powerful Architecture as Britain used to be. But, even after a century, our Pavilion still had no loos in its vast basement. As in Versailles, the 'Beauties' do not defecate. One went for that, by the kind permission of the Governments of Australia and New Zealand, to the otherwise Spartan wood and metal pavilion designed by the justly-admired Glenn Murcutt.



I am sure that Stirling's heart must have missed a beat when he walked into the **US Pavilion**.

He must have realised that all of his erudition and cunning was useless when faced by two so-called Architects who revelled in the destruction and dispersal of everything he had worked so hard to master. He was faced by the **terminal collapse of the Medium he knew**, a termination which, as history clearly shows, **had not been defended by the genius of his own inventions**. For Stirling, like the Corbusier whose methods he shared, left no 'school-of-Stirling'. Corbusier, by choice, wrote advertising copy and Stirling, by choice, did not write at all. He wanted to be **inimitable -the only one and number one** at that.



Making the hand-drawn 2300 x 1960 mm photorealistic collage of 200 Queen Victoria Street for the 1991 Biennale. From L to R: Elizabeth Gregory, Nina Noor, Sally McKay and Uma Mahadeva. Almost everyone who worked on the huge collages and patterns was female. The gender stereotype is strong in this area.



Waiting, outside the office, to load the largest panel into the special Art Transport truck. Its suspension could be tuned to be so soft that it listed like a boat. Nothing was damaged as it took it all across the Alps to Italy.

Yet an Architectural culture without a **Theory** dies with the death of the Architect. For without a theory there are merely good and bad **imitations** - nothing but repro-pastiche.

**WHO KNEW WHAT STIRLING'S WORKS REALLY MEANT IF NOT STIRLING?**

**WOULD STIRLING HAVE FOUGHT 'DECON'?**

Or would he have buckled-under and become a 'De(~~con~~)structivist', like many of his other contemporaries? I can not see him **giving-up all that he knew**. For what do the Architectural ignoramuses of Deconstruction feed upon beyond the random scraps left over after some Boolean-Parametric number-crunching?

Stirling remained entirely focussed upon his ambition to become No. 1. He never wavered from the time I first met him in 1956, as my **soi-disant second-year tutor**, until I appeared **tete-a-tete** with him in a BBC radio interview on the 1991 Biennale. I do not think he ever forgave me for refusing, in 1966, his offer of a job. I refused because **I had never forgotten** the way he **assimilated** (with his usual genius) the ideas of the students he supposedly tutored in the 1950s.

**My ideas are my own.**

**I HAVE FEW ENOUGH OF THEM. I WAS NOT GOING TO 'GIVE' THEM TO HIM, AS HIS EMPLOYEE, TO MAKE INTO HIS OWN.**

Stirling never worked for Lipton. I doubt if he was ever asked. He was too '**je suis contre**' for the suit-wearing Square-Mile culture of the 1980's. Besides, his entry for the Bracken House Competition of 1988 was **one of his worst designs**. As I already said, Stirling failed in the dense city. But Foster and Rogers, who were also JOA's neighbours in the British pavilion, had worked for Rosehaugh Stanhope. They would not have had any iconic qualms paper-hanging **brain-dead sheets of glass** over **skinny steel frames**.

**And the frames certainly were skinny.**

**AFTERWORD for the TWELFTH LECTURE: 'SOMETHING IN THE CITY'.**

*JOA had , by 1986, come to the general notice. We had built the Rausing House, Harp Heating and the Isle of Dogs Pumping Station. We had achieved the publication of many competitions and other unbuilt projects and been interviewed, at least, for the Sainsbury Wing Extension. So Stuart Lipton, the most prominent Developer of the day, asked JOA to work on the second of his huge City of London projects. While, even in the City, a small speculative office building was of less real status than many of our previous projects, being 'chosen' by Stuart gave a young Architectural firm the Seal of Approval that one was now part of the New Thatcherite Order.*

*Not that we knew what this really meant!*

*Then, in the middle of this, We were given a budget of £10,000 and asked to join Stirling, Foster, Rogers, Grimshaw and Hopkins in the British Pavilion of the Venice Biennale. It seemed a lot of money to be just 'given' when one was always battling to be paid fees. But the opportunity to 'compete', at this level, and in Italy, every red-blooded Architects passion, and in Venice, where Rima and I had been married! It was all too seductive! No expense could be spared on a passion of such dimensions! In fact it was all, as we discovered when we participated in its rituals, for the greater glory of Italia, who turned-out to be the miserable bunch of scribblers who promoted the haptic Aldo Rossi while secretly ridiculing his 'innocence'. But then, which is one of the consolations of culture, the products can be enjoyed without meeting its authors. Passions, when transformed into media, have no more need for their human inventors.*

*The office moved, bought a complicated phone system, more Apple computers, a huge Canon printer-copier and in three years grew to over 20 qualified Architects. We took on a secretary and had to let her go when she arbitrarily increased her salary and wanted a bigger desk than an Architect's drawing-station. A question of pencil-envy. One of the reasons we bought computers back in 1981 was that I could not see the point of waiting over a week for a typed letter, as I used to in Louis de Soissons, back in the 1960's. Anyone literate can do a letter on a computer. So, in the whole history of my firm, we never had a typist, a telephonist or, indeed, except for this one, a secretary of any sort.*

*I prescribed the filing system (the Swedish CiSfb), and designed the peculiar 'hanging-fruit' system of library storage boxes. One knew when papers had to be 'retired' because material fatigue caused the cardboard library box to fall off the wall. It was better than the more commonplace 'geological' filing, in which the older papers are to be found in the lower strata.*