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Constructing Brutalism

In situ knowledge and skill on London's South Bank

Christine Wall

Architectural histories of twentieth-century buildings are noticeable for the glaring omission of any analysis of the building site, with investigation invariably halting at the site entrance and so effectively excluding both labour and social history. This chapter intends to breach this artificial boundary surrounding modern architecture through an examination of the site processes involved in the construction of the South Bank Arts Complex, in particular the Queen Elizabeth Hall and the Hayward Gallery. Both are examples of state-subsidized public buildings constructed before the structure of the British building industry changed, in the latter part of the twentieth century, from traditional contracting firms, with their own directly employed labour force, to an industry consisting of a mainly self-employed workforce and a corresponding disappearance of traditional, medium-sized firms.

Oral history accounts by men who worked on the South Bank reveal the continued presence of skills and social organization, which pre-date the use of concrete and the technological advances of the mid-twentieth century. ¹ As such, the production process in Bloch's formulation can be seen as 'non-simultaneous' with both contemporary site processes and the architectural, avant-garde design of the scheme.

New Brutalism on the south bank

The south bank of the Thames in the 1940s offered a stark contrast to the grandeur of the north shore, being described in Abercrombie and Forshaw's plan for the reconstruction of London as presenting "a depressing semi-derelict appearance, lacking in any sense of that dignity and order appropriate to its location at the centre of London".² The County of London Plan proposed to remedy this by developing the area to create "a great cultural centre and a series of splendid riverside buildings". A concise version of the plan, published in 1943 with lavish illustrations, set out a framework for a "great assembly hall", a concert hall, theatre, public parks, cafes, restaurants and new river crossings to link to the north bank. Overall, the proposal intended a strip of public spaces stretching for nearly two miles along the riverbank and linked by new roads and bridges to end the perceived isolation of this part of the south bank from central London. It was anticipated that the entire scheme would take up to 50 years to complete.³

The first of these cultural buildings to appear was the Festival Hall, opened in 1951 as part of the Festival of Britain, which was in some ways a dress rehearsal for the role anticipated for the south bank in the post-war period. After the Festival of Britain's temporary buildings were dismantled in 1952, there was a hiatus in building activity for a few years until the early 1960s, when the London County Council's (LCC) Architect's Special Division, under Norman Engleback, presented plans for the concert hall and art gallery, later named the Hayward Gallery and the Queen Elizabeth Concert Hall (QEH). These were later followed by proposals for the National Theatre designed by Denys Lasdun.

The initial design proposals for the Queen Elizabeth Hall and Hayward Gallery, also known as the South Bank Arts Complex and now recognised as key examples of Brutalist

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architecture, were designed by a team including Warren Chalk, Ron Herron and Dennis Crompton who were soon to set up the avant-garde practice, Archigram. The term New Brutalism, popularised by Reyner Banham, was conceived to describe an architectural position, epitomized by the Smithsons, in radical opposition to the white functionalism of the modern movement and came into use in the early 1950s in relation to work by the Smithsons and Team 10.⁴ Brutalist design sought to expose the raw materials used in production, which in the case of in situ concrete meant the board marks of the formwork. Architectural critics at the time praised the use of “raw potent concrete” as an antidote to the “slick glass and shiny surfaces now emasculating architecture” and in particular the light and dry prefabrication of Scandinavian modernism, “the people’s architecture”.⁵ On the South Bank, two examples of these historical manifestations of modern architecture are realized in the juxtaposition of the Royal Festival Hall with its vast, fenestrated façade facing the river, sited next to the complex, massed forms and walkways of the QEH and Hayward Gallery.

The Smithson’s and Team 10’s rejection of the orthodoxies of the Modern Movement and its traditional city planning components such as squares and avenues informed the design for the South Bank Arts Complex. Here the team at the LCC intended to create egalitarian spaces by designing a non-hierarchical group of buildings where any clearly delimited constructions at ground level were eliminated. Instead, the buildings were to be connected to each other at multiple levels through separate bridges, decks and walkways for vehicles and pedestrians, creating a single urban web or system, unified by the construction material, concrete. The buildings themselves did not follow any traditional architectural composition rules and the architects intended that it should not be possible “to distinguish front from back, top from bottom, inside from outside”.⁶ This then, was an unusually complex and difficult structure for

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which the designers also demanded high quality detailing to joints and finish. The architectural conception of these structures as vast art-objects relied on a concrete finish of exacting standards, which could only be achieved through highly skilled work on the timber formwork, the placing of concrete and striking of the formwork. All the structural finishes, both internal and external, were to be of board-marked concrete, an imprint of the timber formwork, which, in the case of the Hayward and QEH, consisted of six-inch boards alternately set back by an eighth of an inch to create a textured surface.

After going out to tender, the contract was awarded to Higgs and Hill, a traditional firm with a directly employed workforce and a reputation for high-quality work.

The post-war construction industry

The period following the Second World War was one of great change in the British construction industry including its industrial relations, training system, structure and size of firms, and form of employment for manual workers. In the decades immediately following the war, there were an estimated 130,000 building firms in Britain, but by the end of the 1960s these had reduced in number to around 73,000. At the same time, there was a large increase in the number of 'super-firms', for example Wimpey, McAlpine and Wates, who employed over 1,000 workers. Many of these firms had acquired technical and organizational expertise on large war contracts, especially in the use of concrete, and subsequently played major roles in post-war reconstruction. An increase in large complex construction sites was accompanied by the use of both light and heavy mechanized plants, vast areas of scaffolding and new occupational specialisms in for example concreting, steel-fixing, formwork and crane-driving. A comprehensive survey of

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building trade operatives' work carried out in 1966 found that in addition to the eight core apprenticeship trades there were over 30 specialist trades classed as semi-skilled, excluding plant operatives.⁸

Neither training system, based on traditional craft apprenticeships, nor trade union structure encompassed this proliferation of new occupations. Trade union membership was split into 21 different organizations along craft lines with non-craft members, that is, those occupations without an apprenticeship route to skilled status and thus deemed semi- or unskilled, found in large general unions. All of these unions were represented at national negotiation level under the umbrella organization of the National Federation of Building Trade Operatives (NFBTO).

Britain, unlike for example Germany, did not have any apprenticeships or any other form of training resulting in an occupational qualification for concrete workers, although the Cement and Concrete Association ran short courses on “making and placing”, the range of new occupations associated with building in concrete, including steelbenders and fixers, plant operatives and formwork carpenters, were classed as semi-skilled.⁹ These occupations were, however, frequently undertaken by men who had served apprenticeships in the traditional trades, but the numbers of apprentices, and the system itself, were severely weakened in the post-war period. The reasons for this originated in the reduction of training during the war years, apart from an exemplary but small-scale, state-funded apprenticeship scheme. At the end of the war, the government handed the organization for training back to industry, and without any statutory legislation to support apprenticeships, the system began to decline.¹⁰ Despite the formation of the Construction Industry Training Board (CITB) in 1964, the number of apprentices continued to fall, from 109,200 in 1963 to 75,000 by 1971.

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Much of this decline in training can be connected to the rise of the lump labour contract in the post-war period. Lump labour was a form of wage contract, where a contractor would hire workers on a labour-only basis, who were technically self-employed, and pay them an agreed lump sum for an agreed amount of work. In reality, these 'self-employed' performed the same tasks on site as directly employed workers, but they had a different legal and tax status. Initially, and up until the early 1970s, the contractor hiring the lump labour had no responsibilities, in terms of income tax deduction, the payment of National Insurance contributions, holiday pay, sick pay or any of the other costs normally paid by an employer, as these were supposedly borne by the workers. As a result, lump workers received a higher rate of pay than their directly employed counterparts. They also had an incentive in getting the work finished as quickly as possible, and were renowned for moving on quickly between sites.¹¹ Thus there was no interest in training apprentices or in high-quality workmanship. This system also contributed to the decline of the trade unions in the post-war period, as workers on 'the lump' were non-unionized. In 1965 they made up 20 percent of the construction workforce and by the 1980s the 'self-employed' were approaching the 50 percent mark. The vast majority of training was carried out in small and medium-sized firms, but these very firms were either disappearing or shedding their directly employed manual workforce at a rapid rate throughout the 1960s, adding to the crisis in skilled workers.¹²

Despite the increased use of mechanized plant on site in the 1960s, the industry was still criticized for its lack of innovation. In her classic work, *The British Building Industry: Four Studies in Response and Resistance to Change*, Marion Bowley (1966) noted that by the end of the Second World War, technical knowledge in construction had outstripped architectural and building practice. Her analysis of the system by which buildings are produced found that the

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separation of design from production was a serious defect in organization. Contract norms still gave architects the powerful position of supervising the whole building process after creating designs that were first handed to engineers for structural detailing and then to surveyors for costing. Bowley blamed the architectural profession of being the weak link in the chain of production and innovation due to architects' lack of technical knowledge and ignorance of costing, resulting in designs of no "economic rationality". The government-sponsored Emmerson Report, published in 1962, also found the industry out of step with other sectors, in particular manufacturing and engineering, concluding that "In no other important industry is the responsibility for design so far removed from the responsibility for production."¹³

The construction industry in the 1960s, especially in London and the south east, was working to capacity on a large number of schemes, including new satellite towns to the north and east of London, slum clearance and mass housing, road building and power stations. Between the mid-1960s and mid-1970s the manual construction workforce was never less than a million strong, but there were constant labour shortages and continuous shortages of skilled workers. Despite the widespread use of concrete, skills were usually acquired on the job while knowledge and expertise remained with the concrete gangs, foremen and site engineers and within the firms who employed them.

Building site memories: the requirement for skill

The contract for the QEH and Hayward Gallery was awarded to Higgs and Hill, a medium-sized traditional firm based in south London with a reputation for high-quality work. They had recently completed the BBC Studios and were working on alterations to the Royal Festival Hall,

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and work began in 1963. The first manifestation of a gulf between design and construction came with the realization by Higgs and Hill staff that they were going to have to provide the detailed drawings for all the formwork.

As Glan Davies, general foreman on the Queen Elizabeth Hall put it, “The architects designed where the walls were, they designed the cavity, they designed the pattern. But not how to do it. We had to find the way of doing it.”¹⁴ The architects’ drawings, and the drawings from the project engineers, Ove Arup Associates, did just as Glan said, but they were not in any way shop drawings with information on, for example the number and position of clamps, where to place the shuttering bolts, or where to position the electrical conduits. Each piece of shuttering was unique, and to keep pace with the construction program the contractors set up a drawing workshop on site, with twelve full-time draughtsmen who produced the over 1,000 shop drawings for the concrete formwork. Each drawing was checked by the architects, and according to Rodney Bond, former Assistant Project Manager:

We used to traipse up to County Hall every day with drawings . . . done that . . . this is what you want? Yeah, approved, signed it. They had to approve every drawing. It was fantastic control. We got on really well with the architects in the end. They were all LCC employees. Yes. Well, they were happy to see us interpreting their drawings!

After approval by the architects, the drawings then passed to the joiners’ shop where the actual formwork was put together. There were three workshops where more than 1,000 square yards of formwork was put together per week.¹⁵ In all, over 1,000 working or ‘shop’ drawings were produced for the formwork on the Concert Hall and Art Gallery scheme but, unfortunately, none of them has as yet been located in any archives. Despite the production of detailed

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construction drawings the site process proved to be unexpectedly difficult. [Figure 6.1 shows the site in its early stages and the mushroom columns described by, and](#) Ted Newbery, one of the site foremen on the Hayward Gallery, [who](#) recollected that they had never had to work with concrete to such an exacting specification before.

Everything was leveled and done within 5 mm, which is a quarter of an inch. . . . And that was done by a certain step on Waterloo Bridge, we made a datum, so that it would never be disturbed or whatever, and everything was leveled – the tops of a shutter being poured was leveled to within 5 mm. And that is exceptional! believe me! And it caused a few problems.

The first column we did, and poured concrete, and it was struck down, and right down the bottom, about the size . . . well, less than the size of a dinner plate, there was a little bit of spoiling in the concrete, and that would have been below ground level at the finish, but we were made to take it down. Yeah, terrible! So, anyway, we took it down, but a lesson was well learnt.

[insert Figure 6.1 here]

Figure 6.1 View of early stages in construction showing the position of mushroom columns

In the lower right-hand side of the photograph carpenters, using hand tools, can be seen working on a piece of formwork.

Source: Photograph used with permission of Rodney Bond.

There was an elaborate and hierarchical system of checks and approvals by the LCC clerks of works and engineers that had to be completed before any concrete was poured, but the finish was still largely determined by the precision of the formwork. Much of this work was undertaken by hand, and [Figure 6.2](#) shows a group of carpenters working on piece of formwork

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on site. Large pieces were assembled in the site joinery workshop, but smaller, complex forms, for example the curved staircases, were made in situ, and fine adjustments were also made on site. The use of handheld power tools in the early 1960s was rare, and only hand tools such as planes, saws, chisels, hammers and screwdrivers were used.

[insert Figure 6.2 here]

Figure 6.2 Carpenters working on site on formwork

Source: Photograph reproduced from ‘Concert Hall and Art Gallery’. *Crown Journal* 142, March–April (1966) with permission.

Once the formwork was in place, supported by an elaborate system of scaffolding, the steel reinforcement was inserted by the steel benders and fixers and the concrete pour itself was done with great care, as Glan Davies describes:

We did it slowly, we didn’t rush it, and we carefully monitored, with torches, looking down inside the shutter as the concrete was placed in and vibrated. What you had to be very careful is, with these heavy vibrators that you use internally in concrete, if it got on the face of the shutter, it would take the markings of the sawn board off, and that is what they didn’t want. On an ordinary wall, on ordinary shuttering, that didn’t matter so much, but we had to be very, very careful on that. And it was a slow operation.

Ted Newbery and Glan Davies had both served apprenticeships as carpenters and joiners and worked on the tools for the firm for a numbers of years before moving into supervisory positions. Both were adamant that without their experience as skilled tradesmen they would not have been able to run a job that required such rigour, precision and frequent problem solving. On the few occasions when small patches of concrete needed repair, the site project manager,

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another former carpenter, spent hours making good so that it was impossible to tell the ‘faked grain’ he had created from the rest of the concrete.

Ted remembered that he, and most carpenters at that time, had two sets of tools: one for concrete work and one for second fix work. Their training and experience enabled them to move between outdoor, large-scale shuttering work and the internal fitting of precision joinery fixtures, although in the case of the South Bank Arts complex there was little difference in the tolerances required for these different tasks.

Delays to the construction program on both schemes were blamed from the outset on a shortage of skilled workers, a long-standing problem for the industry but particularly acute in the post-war period. In 1965, Glan Davies stated in the industry press that “the acute shortage [is] of good carpenters skilled enough to maintain the high standards required.”¹⁶

Labour shortages on the South Bank scheme were resolved by recruitment from new sources of skilled labour arriving in Britain in the post-war years, for in addition to Irish migration significant numbers of Caribbean and Indian workers also entered the industry. Of the many migrants who came to Britain and worked in building, it is the Sikhs who are remembered as being particularly highly skilled. It is difficult to know exactly how many Sikhs were employed, as industry statistics were not broken down by ethnicity, but by 1979 it was claimed that 40,000 Sikhs worked in construction.¹⁷ Michael Houlihan, an Irish scaffolder working on the South Bank scheme, remembers that among the carpenters there were a number of Sikh gangs, who were much admired for the quality of their workmanship. He recalled:

It must have been around that time that they started coming over . . . that crowd were on the south bank there and . . . at that time, we’d never seen Sikhs before, like with the turbans and their beards and all the rest of it, but by God were they

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first-class tradesmen! . . . and they had all their own tools that they'd brought with them from . . . Amritsar or wherever they had come from. They were first-class carpenters. I mean, the antiquated tools, as they appeared to us, and how well they could manipulate them to provide the finish . . . It was just incredible, you had to be very precise. It wasn't the normal, you know, crash, bang, wallop kind of shuttering. The Sikhs were first-class craftsmen . . . And they were first-class trade unionists as well! . . . Yes, the quality of work, well, I suppose that's why those Sikhs were employed there, because of their skill.

Peter Day, the site engineer on the Queen Elizabeth Hall, also remembers the Sikhs using bow drills, a tool dating back to antiquity, and squatting while they worked rather than using saw stools.

On visits to gurdwaras in Slough and Southall in an attempt to find men who had worked on the South Bank schemes, I spoke with a number of elderly carpenters who had arrived in Britain in the post-war years. One of them, Mr. Sital Singh Lall, told me of how when he first went on site, the foreman laughed at his tools, so he set up a competition between himself, using his bow-drill, and an English carpenter using a bit and brace, to see who could drill through a piece of timber the fastest. The bow drill has a cord wrapped around the drill and held taut by a bow. Holding the drill vertically, the carpenter moves the bow back and forth while pressing down on alternate turns, and while many regard this as primitive and less efficient in comparison with a bit and auger, nevertheless Mr. Lall won the contest. When I enquired where he had trained as a carpenter he replied, "I am Ramgarhia, we are all carpenters, my father, my grandfather, all carpenters." The skill of the Ramgarhia caste was renowned. One interviewee recalled visiting the home of a Sikh carpenter and finding that he had re-used scrap timber

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plywood from discarded formwork to make household furniture including a chest of drawers and shelving. **18**

Both schemes cost far more than anticipated because of the time and care required to build with board-marked concrete as a finish as seen in Figure 6.3. When the buildings were finally opened the popular press had a field day. *Daily Mail* readers voted them the ugliest buildings in Britain and only the avant-garde of the architectural profession and their supporting critics praised the buildings, and in some cases even this was qualified. **19** The men who spent years working on the painstaking and laborious construction process gave mixed responses, and when we interviewed them, they were all well aware of how the buildings they had constructed were represented in the media. However, Glan Davies remained convinced that the buildings should be judged on the quality of the construction material, and on those terms the buildings were a remarkable success because the standard of the concrete was ‘superb’.

[insert Figure 6.3 here]

Figure 6.3 Higgs and Hill crane towering over freshly struck concrete on the South Bank scheme

Source: Photograph courtesy of Rodney Bond.

‘Non-simultaneity’ in architecture and construction

Bloch’s famous dictum, stated in *Heritage of Our Times*, that “Not all people exist in the same Now” is somewhat clarified by the text that immediately follows:

They do so only externally, through the fact that they can be seen today. But they are thereby not yet living at the same time with the others. They rather carry an

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earlier element with them: this interferes. Depending on where someone stands physically, and above all in terms of class, he has his times.²⁰

Bloch used these terms at the beginning of his perceptive, and still prescient, analysis of the rise of fascism in Germany, where the term *Ungleichzeitigkeit* or non-simultaneity (also translated as non-contemporaneity) refers to archaic and deep-seated mentalities persisting into the twentieth century and which, at a time of socioeconomic crisis, the Nazi party effectively distorted in the creation of the Third Reich.²¹ This understanding of an uneven social development is not unique to Bloch, originating with Marx, and has appeared in the work of many cultural historians, including Jameson's analysis of post-modernity, but it is with Raymond Williams's notions of residual, emergent and dominant cultural formations²² that Bloch's work has some resonance. For Bloch, the "deep-seated elements" of traditional social structures can have either positive or negative outcomes dependent on the ideological framework under which they emerge, so that he did not condemn outdated social formations and their manifestations, instead seeing them as an essential part of Communism, and also acknowledging their role in the requirement for a multi-layered, multi-spatial, polyrhythmic dialectic, spearheaded by the proletariat.²³

The building process of the South Bank Arts complex can be regarded as exhibiting non-simultaneous characteristics on a number of levels. While the gap between design and construction was then, and still is, paradigmatic of the relationship between architects and builders, the entire building sector in the 1960s was perceived as in need of modernization and as out of step with progress and productive efficiency in manufacturing and other industrial sectors. This was not the case with civil engineering, where engineers and contractors demonstrated closer working relationships. The young team responsible for the design of the QEH and Hayward considered themselves in the architectural vanguard in creating a "deliberately

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unresolved . . . fragment of a new city”²⁴ using the ubiquitous building material of the 1960s: concrete. Designing with in situ concrete construction enabled them to exploit the distinctively malleable and sculptural nature of the material and demonstrate their virtuosity, in both the massing of form and the surface finish.²⁵ However, the specification for the concrete finish required precision carpentry and joinery, closer to cabinet-making standards in the making and placing of the formwork, a factor which architects, according to Forty’s account, were well aware of at the time. This requirement for precision was also the case for the overall scheme as shown in the unusual (for the time) tolerances expected on site. Even though the production process was partly mechanized with the use of cranes, hoists, mixers and other on-site plant, it was therefore reliant on a level of workmanship which could only be found in a workforce formed by a high standard of education and training, (at the time this was via apprenticeships), experience and knowledge of site processes.

The hierarchical social organization of the site also dated back to the nineteenth century, and while the complexity of the scheme demanded a high number of specialist subcontractors, the core business was directed by the main contractor and their staff and alongside their directly employed skilled workers. They were monitored by the client’s representative on site, in this case the LCC clerk of works who in turn reported to the architects and engineers. The construction site itself therefore was a site of complex social relationships, as recounted by the site engineers, but it also became an important focus socially, not just as the site of production with drawing offices, site offices, joinery workshops, concrete batching plant and a vast and slowly growing concrete structure, but also where shelter and meals were provided and wages calculated and paid every week. It was also the locus for experiment and invention, necessitated by the contractors being given a specification for which there were no instructions. One example

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was the finding that by filling the mushroom column formwork with water for a couple of days, the timber expanded to close up any gaps between the boards. It was then emptied before the concrete pour via a plug at the bottom. Another example was a solution devised by Glan Davies to ensure a 3” gap for acoustic purposes between concrete walls. This was a system, much praised in the trade press, consisting of mild steel ‘U’ channels that were bolted to the ply shutters. The channels “were held away from the concreted walls with greased mild steel rods that could be blocked to the required gap width, and easily withdrawn to allow striking”.²⁶

It is not surprising to find that all the men interviewed who were former employees stated that the job would not have been possible if casual, self-employed tradesmen had been involved. The social cohesion of a traditional, paternalistic firm, where everyone was known by name, and apprentices trained and rewarded for their efforts, ensured that standards of workmanship were high. The firm’s reputation was consolidated with every successful building completed and celebrated in the in-house company magazine the *Crown Journal*. Higgs and Hill was based in Vauxhall at the Crown Works, where it ran an extensive timber store, joinery workshop, metalworking shop and stonemason’s yard dating back to 1874. Career progression within the company hierarchy was encouraged so that suitable candidates moved from skilled occupations into management positions. This was especially important in providing a team of site managers with expert knowledge of the construction process. In this respect the organization, and very existence, of the firm was non-simultaneous with contemporary changes in the industry and it was, in many respects, an organization that had changed little since its formation in the late nineteenth century. Many medium-sized firms like Higgs and Hill were severely affected by the ‘stop-go’ changes in economic policy throughout the 1960s and also by the introduction of Selective Employment Tax in 1966, which resulted in many giving preference to subcontracted

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labour over directly employed.²⁷ Higgs and Hill, however, proved remarkably resilient and continued operating, including building the nearby South Bank Television studios in 1972 and restoring Windsor Castle in the early 1990s, until finally entering into receivership in 1996. In Bloch's formulation the continued success of this firm is due to its utilization of non-contemporaneous elements, the 'wealth of the past', residing in its traditionally trained and highly skilled workforce.

The South Bank Arts buildings have not been granted listed status and are at present under a certificate of immunity from listing granted by the Secretary of State and valid until 2017, despite active campaigning by the Twentieth Century Society and an appraisal by Historic England recommending their protection. This stated that

the complex is significant as part of an original experiment in the methodology of British architectural design, a rare design by some of the most original architectural thinkers of the 1960s and a demonstration of their preoccupation with the informal relationship between structure, function and services, which remains an important theorem today.²⁸

However, in architectural terms there is a contradiction inherent in the specification that becomes apparent only when site processes are examined to reveal that these lauded examples of New Brutalism were built in a manner closer to nineteenth-century Arts and Crafts architecture than that of the contemporary rhetoric of the 'white-heat' of technological revolution that characterizes the 1960s. Nowhere is Bloch's concept of non-simultaneity more clearly demonstrated than in the tools and working practices of an Indian carpenter, which originate in antiquity, and who has learnt his skill within an ancient system of family networks. The class position of these newly arrived workers, and that of their co-workers on site, was far removed

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from the professional educated cohort of designers based at the LCC Architect's Department, and yet the skill and knowledge of these men was essential to the success of the architectural design. In the decades leading up to the end of the twentieth century this type of firm, with its stable form of employment for skilled workers and where wages were not based purely on speed but also on quality of output, had almost completely disappeared from the British construction industry, surviving only in the heritage and conservation sector. In the case of the South Bank Arts complex, the skill and experience of an earlier tradition of craftsmanship was called on to forge a masterly exercise in sculptural concrete. It is precisely this disjunction between the progressive, dynamic architecture conceived by the architects and its realization through the careful, precise and slow work of skilled tradesmen that has resulted in a scheme that is, although unprotected by legislation, widely recognized as an important part of London's architectural heritage.

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- 1 Recorded as part of a Leverhulme Trust funded project, *Constructing Post-War Britain: Building Workers Stories 1950–70*, undertaken at the University of Westminster between 2010 and 2013 by Christine Wall, Linda Clarke, Charlie McGuire and Olivia Munoz-Rojas.
- 2 J. H. Forshaw and P. Abercrombie, *County of London Plan* (London: Macmillan, 1943), 130.
- 3 Forshaw and Abercrombie, *County of London Plan*, 135.
- 4 A. Powers, *Britain: Modern Architectures in History* (London: Reaktion, 2007), 98–101.
- 5 T. E. Kidder-Smith, *The New Architecture of Europe* (Harmondsworth: Penguin, 1962), 94; N. Bullock, *Building the Post-War World: Modern Architecture and Reconstruction in Britain* (London: Routledge, 2002), 118.
- 6 S. Sadler, *Archigram: Architecture Without Architecture* (Cambridge, MA: MIT Press, 2005), 31.
- 7 L. Clarke, C. McGuire and C. Wall, “The Development of Building Labour in Britain in the Twentieth Century: Is It Distinct From Elsewhere in Europe?” in *Human Resource Management in Construction: Critical Perspectives*, ed. A. Dainty and M. Loosemore (London: Taylor and Francis, 2012), 58.
- 8 R. E. Jeanes, *Building Operatives Work Vols. 1 and 2, Ministry of Technology, Building Research Station* (London: HMSO, 1966).

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9 DuncanPomeroy and Graham Taylor, “Milestones in the History of Concrete Technology: the History of Training at the C&CA,” *ICT (Institute of Concrete Technology) Yearbook* 2007–8 (2008): 13.

10 C. Wall, *An Architecture of Parts: Transformations in the Building Process in Britain 1940–70* (London: Routledge, 2013), 49.

11 Clarke, “The Development of Building Labour in Britain in the Twentieth Century,” 60.

12 Wall, *An Architecture of Parts*, 56–59.

13 Ministry of Works, *Survey of Problems Before the Construction Industries* [The Emmerson Report] (London: HMSO, 1962).

14 This and all following quotes by men who worked on the South Bank scheme are taken from transcripts of oral histories recorded as part of the Leverhulme Trust funded project. Further quotes are from C. Wall et al., *The Art of Concrete: Building the South Bank Arts Complex* (London: University of Westminster, 2012), a pamphlet produced as one of the outputs of the project.

15 “Complex Structure for South Bank Art Centre,” *Construction News*, March 18 (1965).

16 “Complex Structure for South Bank Art Centre,” 1965.

17 This figure was produced in response to the threat of compulsory hard hats, which could not be worn on top of turbans, under proposed new Health and Safety legislation. In the event, the government conceded to pressure from the Sikh lobby by inserting an amendment to the Employment Bill during the Committee stage in the House of Lords and Section 11 of the Employment Act (1989) which recognised Sikh exemption. See

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Gurharpal Singh's account in British Multi-Culturalism and Sikhs, *Sikh Formations: Religion, Culture and Theory* 1:2 (2005): 157–173.

18 Wall, *The Art of Concrete*, 15.

19 The South Bank has provoked and inspired much criticism, and journalism, since it opened in 1968. Charles Jencks mentioned the Daily Mail readers in his appraisal of the South Bank scheme for *Architectural Review* in July 1968, and Peter Moro while praising the design in his extended critique for the *Architects Journal* in 1967. Recently, in 2013, Timothy Hyde has written on the 'ugliness' of the South Bank in his article "Piles, Puddles, and Other Architectural Irritants," *Log* 27 (2013): 67–79, concluding that while experiencing it may not be comforting the buildings are certainly not antagonistic.

20 E. Bloch, *Heritage of Our Times*, trans. Neville and Stephen Plaice (London: Polity Press, 1991), 97.

21 Bloch, *Heritage of Our Times*, 107.

22 R. Williams, *Marxism and Literature* (Oxford: Oxford University Press, 1977), 134.

23 Bloch, *Heritage of Our Times*, 116.

24 Powers, *Britain: Modern Architectures in History*, 171.

25 A. Forty, *Concrete and Culture: A Material History* (London: Reaktion, 2012), 234.

26 "Complex Structure for South Bank Art Centre," 1965.

27 G. Briscoe, A. Dainty and S. Millett, "The Impact of the Tax System on Self-Employment in the British Construction Industry," *International Journal of Manpower* 21:8 (2000): 596–613.

28 “Historic England List Entry Summary [2012](#),” accessed January 8, 2016,
<https://historicengland.org.uk/listing/the-list/list-entry/1410383>.