

A critique of LEED-ND:

The value of the architectonic detail in sustainable neighbourhood development

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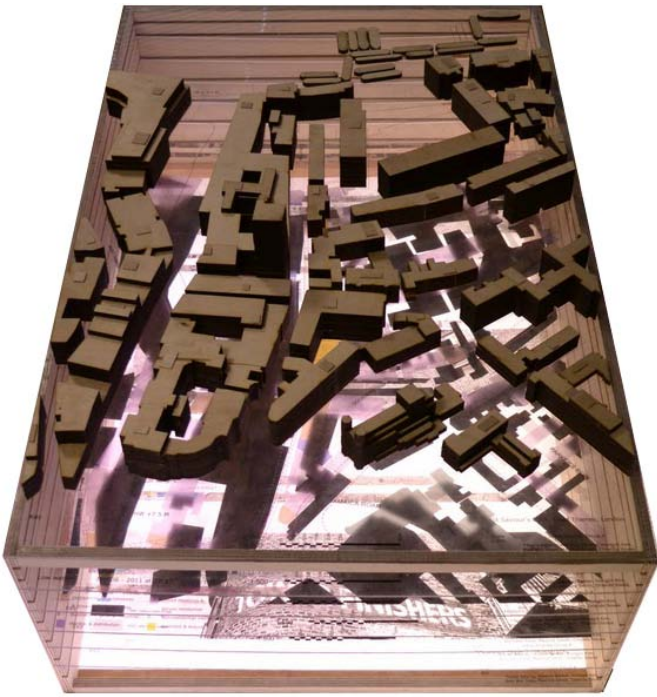
Initial Reflections

The urban fabric of St Saviours Dock, London

As you stand overlooking the Thames at low tide, you see below you a cluster of moored barges. These old barges, no longer used for shipping are now residential. They are arranged as a semi-permanent community, with a herb garden at the centre, and so have a more substantial, and more unusual presence than the typical houseboats moored along the rest of the Thames. When I saw one of the residents interviewed on television a few years ago, he described the peace and tranquillity they had in the heart of London.

I returned to the site at the highest tide of the year. The barges now had far greater presence. They had risen so their seemingly monolithic sides now blocked my view. Perhaps it was just because of the waves, but the various pontoons were now loudly creaking as if under strain from the high tide. It seemed as though I was looking slightly into a future of elevated water levels. That community was so exposed to our gaze yet seemed autonomous, so isolated from the rest of society. A woman was walking along the various pontoons toward the riverbank. She was imbued with the mystery of her community. I went to their gate in the hope of asking her about the boats, but she had vanished. Presently a man came down from the boats. Turned out he worked for the architect that owned the moorings, and very friendly he was too; however the community remained mysterious to me.

A large part of the site consists of old buildings in English and Flemish bonds. These robust structures have been reused several times; currently they are mainly used as offices and flats.

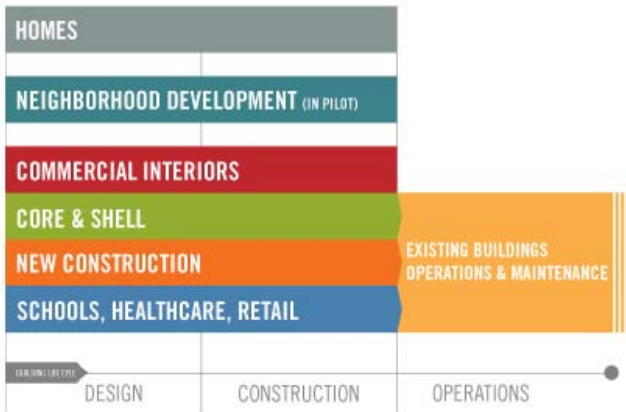


In order to test LEED against the British urban fabric of London five students and I made a series of studies which culminated in a report and this model, below which six drawings that analyse the site are printed on pull-out perspex.



The tourists on Tower Bridge seem oblivious to this view of the floating community...





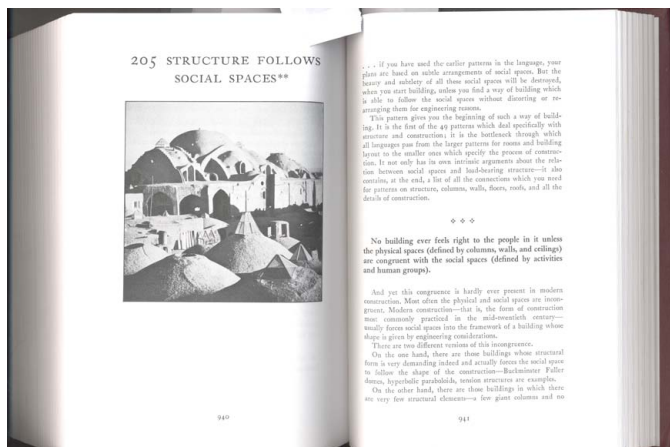
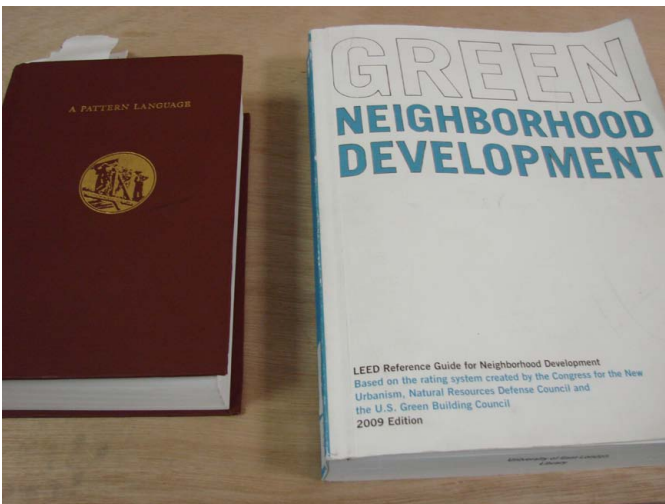
LEED-ND is one of a family of LEED products

LEED-ND and the work of Christopher Alexander

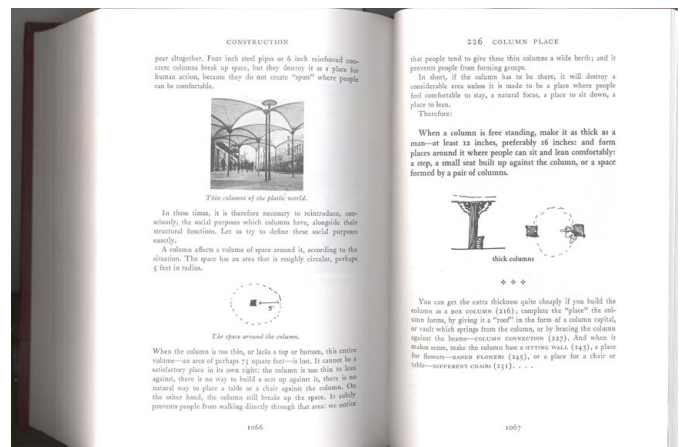
LEED Neighbourhood Development is a system that exists to classify the sustainable development of communities. LEED evokes *A Pattern Language* by Christopher Alexander. Both systems isolate a comprehensive array of conditions found throughout the built environment and offer views on best practice.

A Pattern Language is clearly written so that it can easily be understood by a layperson. The language and format of LEED make reasonably straightforward issues quite confusing, even for those with some experience of the subject. Furthermore the LEED system fragments our understanding of development, when properly resolving development inherently requires a holistic approach. *A Pattern Language* effectively links and cross-references each of its 255 patterns. A Pattern Language is inherently architectural as its fractal format covers every useful scale, from the scale of a community to the scale of the detail. In contrast, LEED-ND focuses largely on the macro scale – on national and urban issues. Although LEED-ND has the advantage of flexibility, it does not appear to be as yet calibrated to appreciate the individual qualities of certain places. Furthermore, LEED-ND appears to lack an appreciation of architectonic qualities in general.

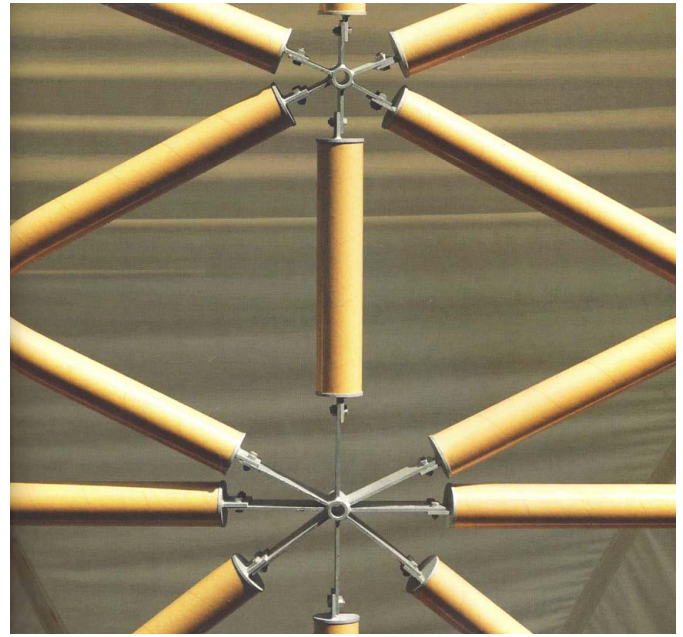
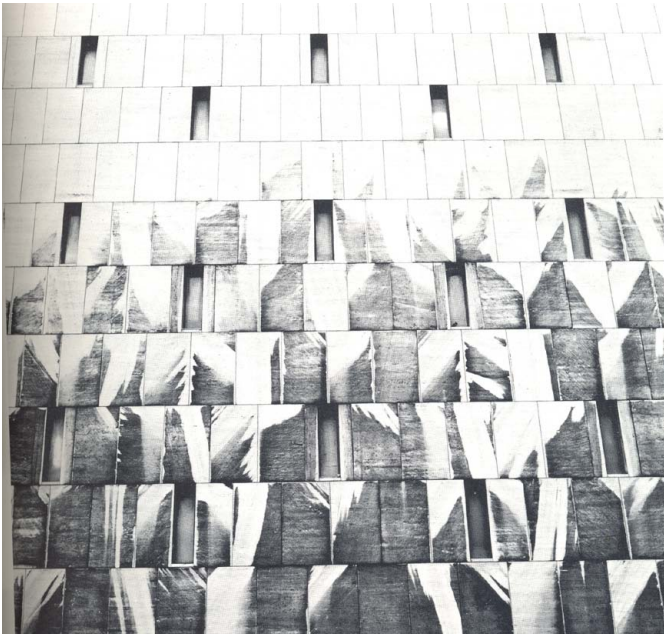
Christopher Alexander published *The Timeless Way of Building* as an accompaniment to *A Pattern Language*. *The Timeless Way of Building* discusses the significance of *A Pattern Language*. Here Alexander describes an instinctive process innate to people of all times in shaping healthy environments, or as Alexander puts it, 'patterns which are alive'. He relates this to the 'quality without a name', which he attempts to define with a great deal of prose. This is a discussion of literacy of a language of the built environment – Alexander suggests that contemporary society lacks the literacy it once had, perhaps a sign that humanity is struggling to deal with the rapid change of recent decades.¹



Two examples of the 255 patterns in *A Pattern Language*

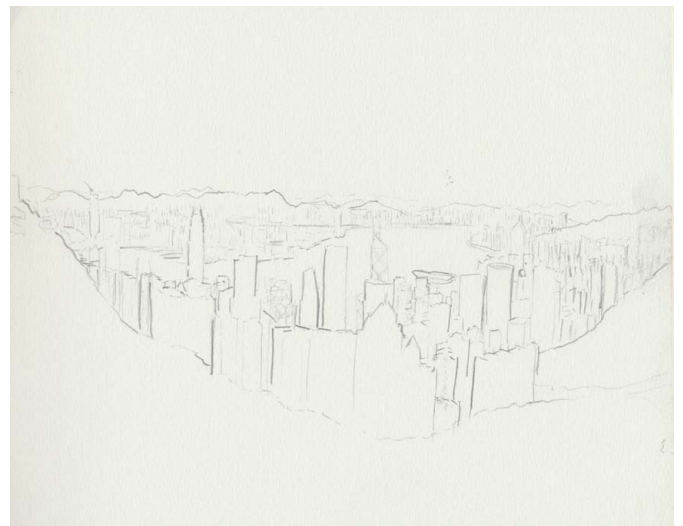


The value of the architectonic detail in sustainable neighbourhood development



Cardboard tube components
Shigeru Ban

In response to these initial reflections this study seeks to discuss the value of the architectonic detail in sustainable neighbourhood development. In this context the word tectonic normally denotes particular construction processes, but rather than being limited to technocracy, the term is normally associated with a consideration for the relationship construction methods have with users of the space. The overall effect or quality sensed by the user is therefore fundamental to the idea of the architectonic. Frampton summarises the views shared by Wright and Utzon: 'the poetics of built form derive in large measure from the totality of its tectonic presence.'² This begins to suggest the fractal nature of architectonic design. Here architectonic suggests the significance of construction components to the overall effect of the architecture in its entirety. Deplazes describes the ancient Greek word tekton (carpenter) as having 'later led to the word architekton, our master builder, the architect.'³

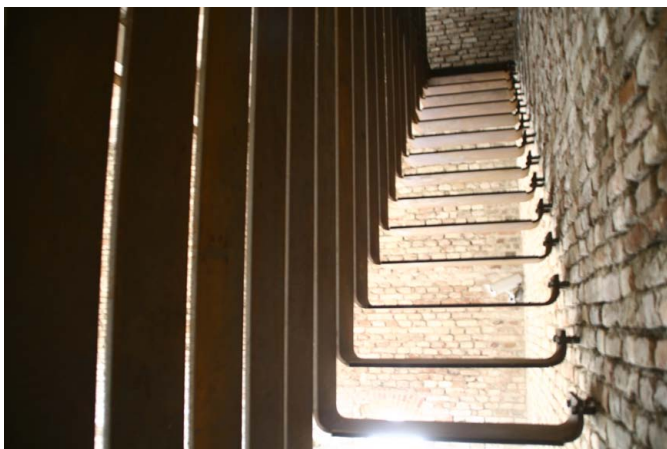


The glass towers of the Hong Kong skyline

A sustainable neighbourhood inherently requires the endurance of a community. Therefore when evaluating the role of the architectonic detail in sustainable neighbourhood development, the degree to which built form is able to maintain value over time is significant. In his book *On Weathering* Mohsen Mostafavi makes recommendations for how an awareness of weathering processes can allow details to be designed so that they maintain their value over time. He argues that, rather than vainly attempting to preserve the pure virgin condition of the detail, weathering processes can be used to develop a patina, an architectonic quality that can be celebrated by future users.⁴ There is a great deal of technical literature on how to build enduring, robust construction. Architect Shigeru Ban argues that the endurance of a component is not necessarily due to the physical resilience of the material. He points out that if concrete is damaged it is relatively difficult to repair. In



Brighton Jubilee Library



The distinct tectonic of Carlo Scarpa
Castelvecchio, Verona

contrast, the cardboard tubes Ban normally specifies can be manufactured and recycled anywhere in the world at low cost, if one is damaged it can be easily replaced.⁵

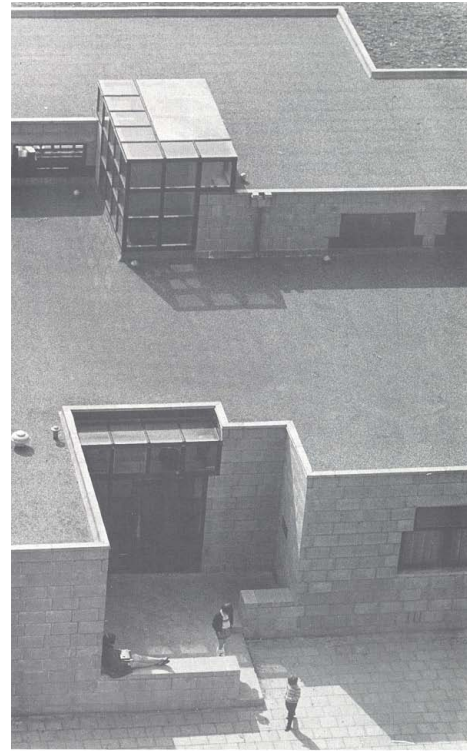
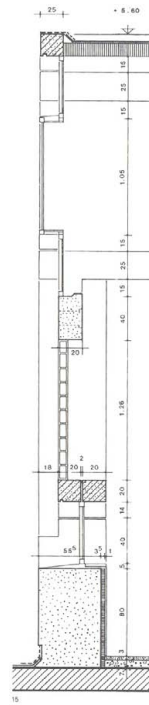
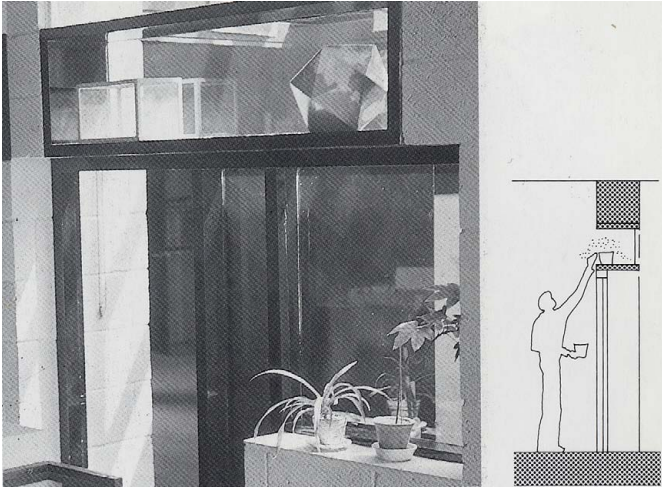
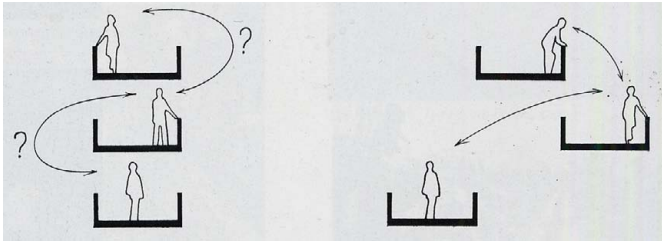
The Twentieth Century was an era of low-cost energy. With this it has become normal practice to construct buildings heavily reliant on artificial energy to maintain reasonable ventilation, thermal and acoustic levels. These are beginning to be considered investment timebombs (comparable to bad financial assets that can lead to financial crisis) under the assumption that energy prices will soon rise to the point where energy intensive buildings, such as deep-plan glass clad office towers lose their viability.⁶ Energy efficient design is currently far more widely considered than just a decade ago. Energy efficient construction is likely to be necessary to sustain neighbourhoods in the near future. Some projects engage with issues of energy efficiency, but sometimes at the expense of other architectural issues. One example is Brighton library, an exemplar in passive environmental control. However the passive heating using the south facing glazing mean that the books inside have direct sunlight upon them, when it has long been a basic design criterion for libraries that books be not exposed to direct sunrays. If the detail of such construction fulfils wider architectural and human needs and desires then it is more likely to sustain a neighbourhood.

Architect William McDonough and chemist Michael Braungart describe the energy efficient approach as 'guilt management', as little more than an attempt to be 'less bad'. In their book *Cradle to Cradle* they suggest a different approach, one of sustainable design as having actively positive influences, rather than simply trying to minimise negative effects. Their argument is compelling, however some of their suggestions are more idyllic than realistic. They appear to have begun instigating these ideas with products they have helped bring to market and built buildings. In any case, their argument makes it clear that for a project to be truly sustainable, it must satisfy human needs.⁷

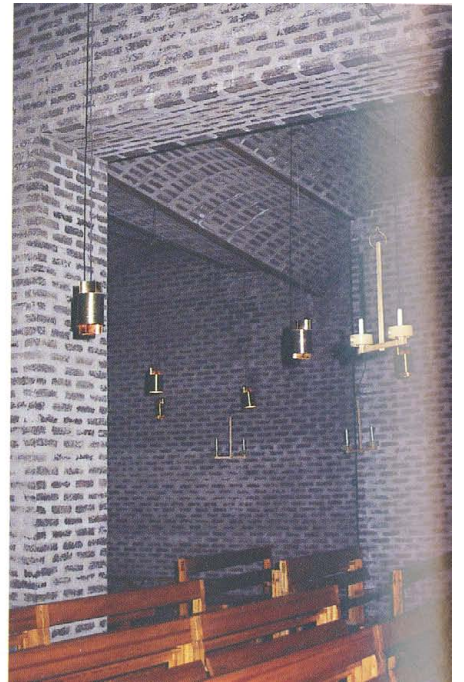
History provides a rich architectonic heritage. The trades responsible for this architectonic heritage have included laymen, masterbuilders, engineers and professional architects. In his *Studies in Tectonic Culture* Kenneth Frampton discusses tectonic culture through the work of various architects, especially Frank Lloyd-Wright, Carlo Scarpa, John Utzon, Alvar Aalto and Louis Kahn. Frampton singles out architect Herman Hertzberger for considering the tectonic to be meaningful through use.⁸ Clearly, if a neighbourhood is to endure, how the built fabric relates to use and change is significant. Hertzberger was deeply concerned with the social implications of architecture. Hertzberger describes the responsibility architects have to design beyond the requirements given by the client:

'Architects have been led to believe that the brief... is sacred rather than an administrative minimum... beneath this is another programme, to wit, that of your social and cultural responsibility as an architect.'⁹

This suggests that the architect is able to play a more active role than that suggested by Deyan Sudjic in his book *The Edifice Complex*. Here Sudjic describes the architect as



The microtectonics of Herman Hertzberger



St Marks, Stockholm and St Peters, Klippan

Sigurd Lewerentz



largely at the mercy of those with the power and money to build, and therefore the architect as having a limited power to determine the quality of the design.¹⁰ Sudjic's description is of a default client-architect relationship, but Hertzberger shows that there is a middle way architects can actively take between slavishly following the lowest common denominator and following their architectural fantasies.

In his book *The fall of Public Man* Richard Sennett laments the loss of the public sphere to the dominion of the individual.¹¹ Likewise, Hertzberger saw the definition and endurance of shared collective space as being of primary importance. Hertzberger and Alexander talk a great deal the significance of proportions and formal relations in the definition of collective space. They elaborate less on the tectonic potential to define collective space. Architect Sigurd Lewerentz shows one tectonic method for the definition of collective space with his St. Marks Church, Stockholm and St Peters Church, Klippan. Here collective space is defined by the intense use of brick, with almost every surface consisting of brick. Window frames are placed on the exterior so that from inside the openings appear to be purely made of brick. At St Peters the brick is treated as a sacred material as not a single brick is cut. This is an articulation of the stereotomy / filigree dialectic as defined by Semper, Violet le Duc and more recently by Frampton and Deplazes. Semper divided architecture into the four elements of weaving, pottery, tectonics and stereotomy. Semper showed that masonry could be considered to be within either the realm of weaving or stereotomy.¹² Deplazes elaborates this dialectic by illustrating how the development of modes of construction has meant that the distinction between stereotomic and filigree has become increasingly blurred by hybrid modes of construction.¹³ In the case of the Lewerentz churches, brick is used to denote stereotomy, as the materials are articulated to create the sense of the monolithic earthwork. Lewerentz uses one moment of tectonic structural steel at the centre of the Klippan church. This intensity of material can also be seen in the work of Sergison Bates where again, every surface consists of brick. That Lewerentz worked on these churches toward the end of his long life indicates the intensity of architectural development behind this architectonic work. To achieve this material resolution Lewerentz made many of his design decisions onsite during construction. Lewerentz was notable for deeply embroiling himself in matters of construction:

“It is said he could sit for a long time just looking at a common nail and asking himself how many ways it could be used – for ‘out of the simple question a surprising answer could come’. We read also of his instruction to a despairing metal-worker: ‘All I know is that you are not going to do it the way you normally do.’”¹⁴

Hertzberger and Alexander can be seen to be overtly left-wing in their preferences for the definition, management and ownership of collective space. Architect Piers Gough highlights the more individualistic characteristics of humanity. He advocates architecture expressing social conditions such as fragmentation due to the aspiration of groups and individuals to display their status.¹⁵ Nonetheless



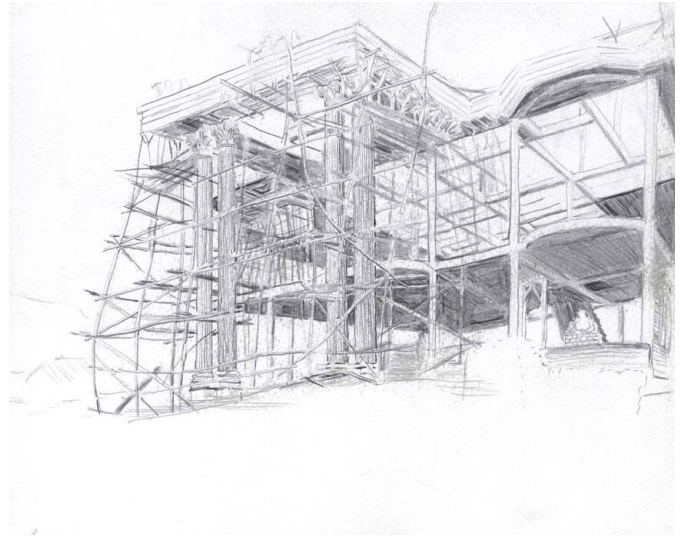
Here the relationship between infrastructure and neighbourhood seems to have a tectonic, place-making presence. Architect Alvaro Siza was disparaged by the local residents for leaving some of these spaces unfinished, as though it was though incompetence, whereas Siza argued that it was intentional.



Corresponding both to Hertzbergers' doctrine and a couple of Alexanders' patterns, the collective space at the centre has a high ceiling while the more private sub-collective / individual spaces to the sides have lower, more intimate dimensions.



Door handle, Alvar Aalto



I assumed at first that these classical columns were a vestige of colonial rule, but a local told me they had actually just been cast in a concrete factory. The locals seemed to see them as a symbol of high status.

Vientienne, Laos



Door handle, Arne Jacobsen



A response to the body in space, these viewing portals are placed at a child's eye level.

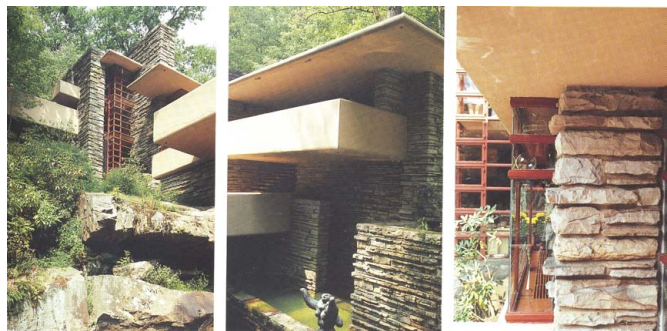
Munster Library, Germany

LEED-ND credits openings onto the street. However it does not properly recognise extensions of the street such as these entrance courtyards, despite the likelihood that they will be significant for neighbourhood development.



Here the architectonic cladding of the library works at the urban scale as it defines the remaking of a historical street.

Munster, Germany



Fallingwater
Frank Lloyd Wright

Gough appears to value the idea of community.¹⁶ Successful Neighbourhood development must recognise and accommodate the architectonic need for individual and private territory. This does not seem to be fully or sensitively understood in the LEED-ND prerequisite of ‘Open and Connected Community’. Here openness and connection are discussed as sacrosanct without consideration of the desire for privacy, security and safety. Hertzberger and Alexander do acknowledge the need of sub-collective, individual and private territory; in fact it is the relations between these and wider society that is central to their understanding of space. Lefebvre saw social relations as being fundamental to the notion of urban life. He describes how industrial, economic and urban growth has swelled at the expense of ‘urban society’: ‘Practical experience shows that there can be growth without social development (that is, quantitative growth without qualitative development).’¹⁷ It is these social relations that seem central to the idea of urban ecology. (Here expropriated by the social sciences, the word ecology in the natural sciences denotes energy and nutrient flows.) The word ecology comes from the Greek oecology, the root of which oecos, used to denote household or hearth. Hearth epitomises the nexus of domestic social space. Christian Norberg-Schulz situates the idea of dwelling within a wider social context:

“The word “dwelling” here means something more than having a roof over our head and a certain number of square meters at our disposal. First, it means to meet others for exchange of products, ideas and feelings, that is, to experience life as a multitude of possibilities. Second, it means to come to an agreement with others, that is, to accept a set of common values. Finally, it means to be oneself, in the sense of having a small chosen world of our own. We may call these modes collective, public and private dwelling. The word dwelling, however, also comprises the places man has created to set the modes into his work”¹⁸

The word hearth suggests an architectonic scale rather than the urban scale that LEED-ND engages with. The full significance of urban ecology therefore cannot be considered without recourse to the architectonic scale. Frampton celebrated the use of smaller architectonic elements as used by Hertzberger, which Frampton terms microtectonics.¹⁹ It was Hertzberger’s intention that these microtectonic elements augment social relations. These microtectonic elements were used by Hertzberger to articulate the threshold between the various territories of a community. The public - private threshold thus becomes an invitation to individuals and sub-collectives to present themselves to wider collectives. This evokes Semper’s view of the tectonic originating from textile arts primarily as a means to define and express the space of inhabitants rather than because of technical needs.²⁰ This view of construction suggests the making of place at the microtectonic level. The potential for the architectonic to help define a sense of place is significant for neighbourhood development. In particular, the idea of place implies the definition of space shared by a neighbourhood collective. Place can be indicated at the macro scale by architectural icons such as Tower Bridge of London, The Statue of Liberty or Empire State Building of New York... A belief in this kind of mass populism has led to ‘the Bilbao effect’, the attempt to suddenly create an



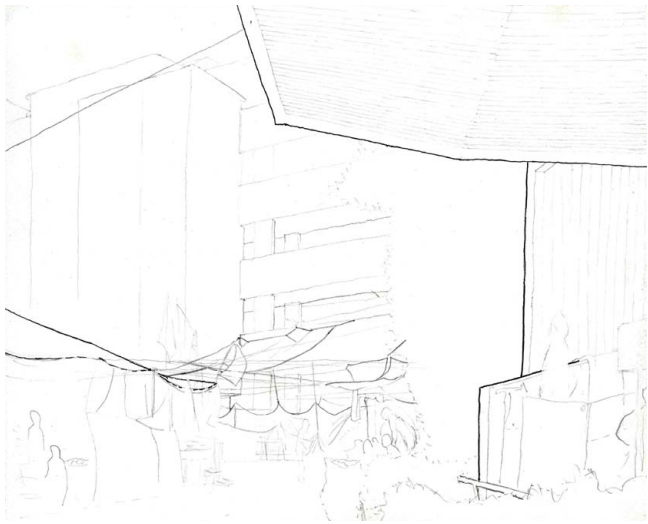
This carpark gains the status of place thanks to its articulate tectonic presence.



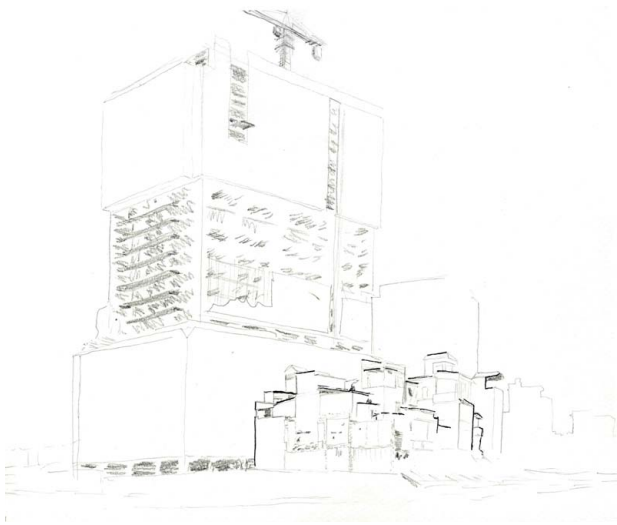
Herzog & de Mouren make what would have been a generic signal box into a definer of place by the subtle articulation of its cladding.



Herzog & de Meuron invest a great deal in physical modelling to develop the architectonic of each project.



An example of architecture being appropriated by a strong will, even when the architecture does not invite appropriation. Here the concrete government buildings in Bangkok are appropriated by a neighbourhood of protesters for several months. I returned two days later to extend and finish this drawing, but that proved impossible as the camp was in the midst of being dismantled: the revolution had just succeeded - the airport had also been occupied that week by protesters and the government had been brought to its knees.



A new concrete block suddenly rises up. The concrete's inertness is juxtaposed with the vestiges of the adjacent neighbourhood, which has organically developed through piecemeal appropriation.

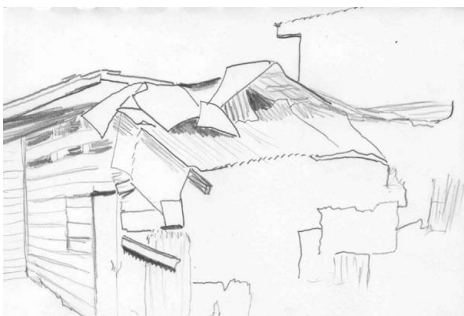
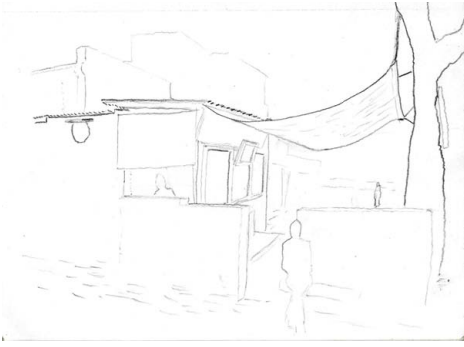
Hanoi, Vietnam

image that can live anywhere, even quite comfortably in travelguides and on postcards. Fallingwater by Frank Lloyd Wright is an attempt to engage with context, to follow Heidegger's idea of 'building the site' and so enhance a sense of place. Here architectonic means are essential to the sense of place and engagement with context. Wright's intervention at Fallingwater is fractal in its scale. The large concrete cantilevers, the masonry and window frames all evoke the natural geology of the site, whilst bearing the archetypes of human construction. Schulz describes place as requiring an 'imageable structure which offers rich possibilities of identification.' He denotes the creation of place as significant for community development:

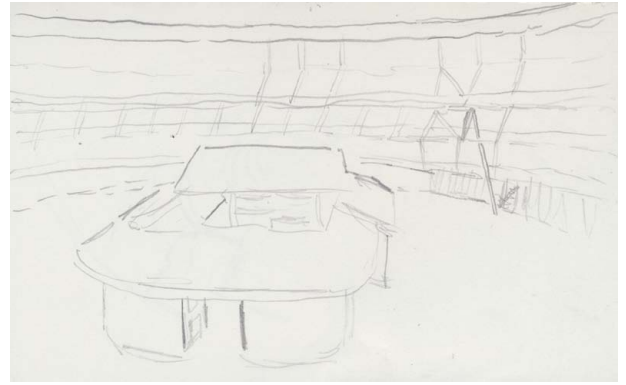
'Man does not become a citizen of the world if he does not belong to any place. The citizen of the world has to settle within the totality, and he understands that his place forms part of a larger whole, and at the same time as this larger whole represents a continuation of his existential space. The contribution of each individual to the totality consists in the articulation of the place to which he belongs.'

Schulz argues the need for such an imageable structure to have complex articulation that is subject to various interpretations. This interpretation through articulated place he defines as more akin to the work of art than of the 'chaotic form' that he describes as 'mere accidental projections of the ego'.²¹ This suggests the value of the articulate architectonic in making place and augmenting neighbourhood development. Hertzberger elaborated this idea of interpretation primarily as the potential a work of architecture has of being interpreted. He compared the 'competence' and 'interpretation' of space. Here competence denotes the potential a space has to be appropriated, while interpretation denotes the actual use of space. Correspondingly he drew an analogy between 'apparatus' - able to allow discrete function and 'instrument' - able to allow infinite variety of use and so support the development of inhabitants. Appropriation and ownership of space is central to the idea of an enduring neighbourhood. Appropriation can be through use or intervention, or a combination of both. Hertzberger considered his primary architectural concern to be the 'enduring components of architecture, interpretable and able to withstand time, and the space it leaves to be variously filled in by others in other times'. The Twentieth Century has seen an interest in flexible open-plan space, where a building is designed so that partitions can be moved to accommodate changing needs. Hertzberger argued against this, instead advocating a permanent architectonic, articulated to create polyvalence. Hertzberger gave many examples, both in his design and in that of others, of how polyvalent details invited and encouraged appropriation.²²

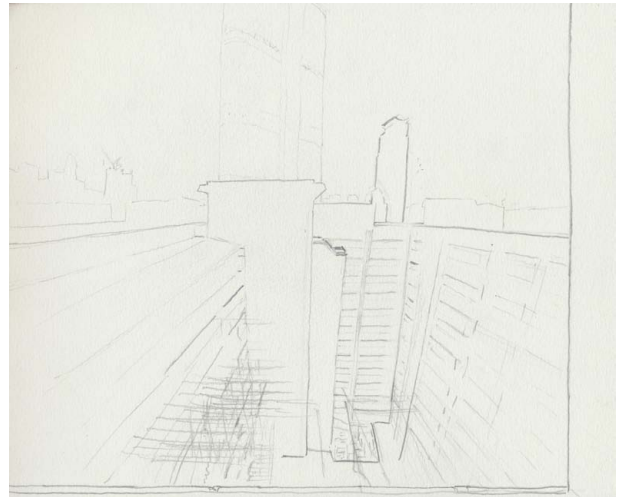
Stewart Brand makes the distinction between refined buildings that attract users into caring for them and modest buildings that can be modified without significant technical, political or economic restrictions. He terms these two tendencies of architecture as *high road* and *low road* respectively.²³ Articulate architectonic work seems more likely to lead to high road buildings. Semper saw architecture as central to the waxing and waning of culture: articulation or the degeneration into decadence.²⁴



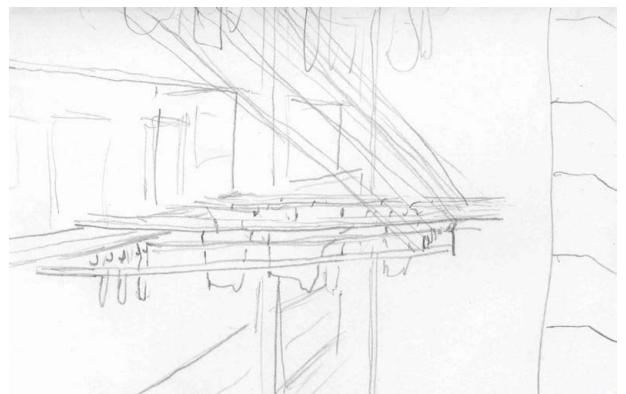
Examples of informally appropriated structures



The adaptability of the timber interior of the Hakka Tulou allows a variety of relationships to develop between individual and collective space...



...In contrast, the collective space of this concrete courtyard can only be appropriated in a minimal manner, the floor of the courtyard is uninhabited (despite the high real estate value)...



...essentially the only appropriation here is the drying of clothes.

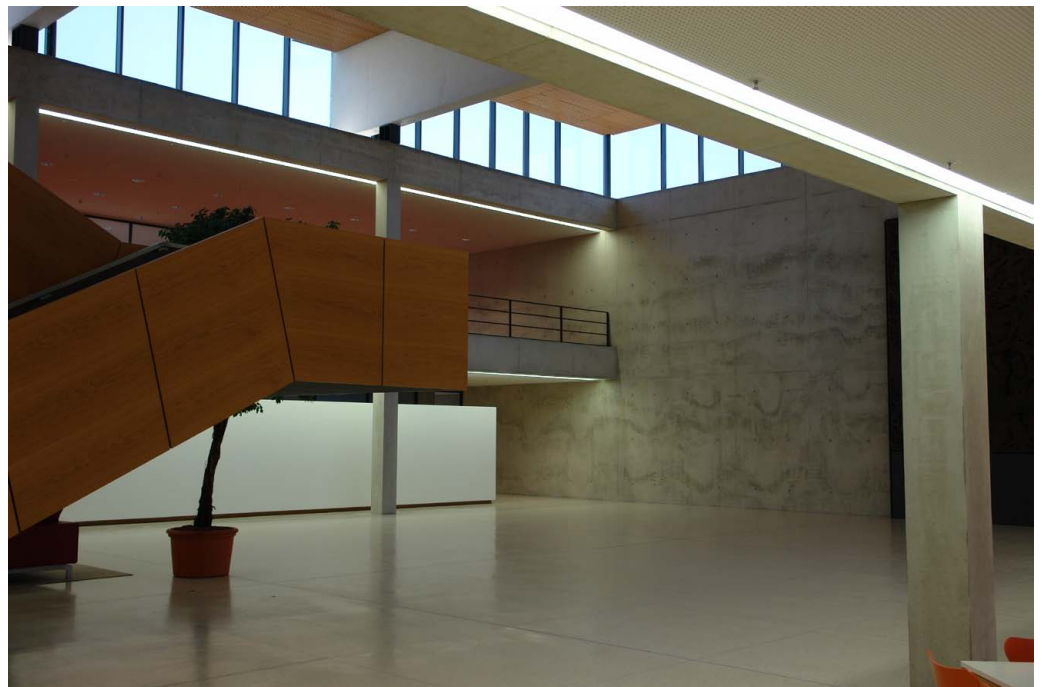
Mirador Mansions, Kowloon, China



Innovative tectonic reuse of material here provides a home for the poor. Cardboard or stacked carpet tiles provide infill, while reused car windscreens act as cladding.

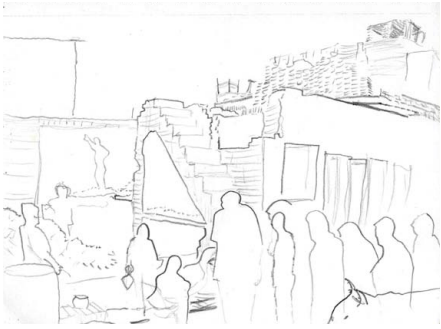
Rural Studio, Alabama, USA

This idea of culturally articulate architecture is a tradition that continues with the contemporary work of Herzog & de Meuron, who see their architectural work as deeply connected with other art and culture: ‘we approach architecture like painting or sculpture because we do not treat a floor or a wall or a ceiling as a self-evident given ... we have to start from scratch every time and ask ourselves how we want to place these components in the world.’ Indeed, unlike most architects, each building by Herzog & deMeuron bears a unique articulation of materials. Seemingly conversely, they do not see their buildings as objects. Instead, they argue that ‘the actual physical on-site experience is still the most vital factor, and that ties in with our deepest convictions and lies at the heart of everything we design.’²⁵ Architect Peter Zumthor instead states his belief that ‘the real core of all architectural work lies in the act of construction.’ In any case, both Zumthor and Herzog & deMeuron see both the architectonic and the architectural experience as interrelated and central to their work. The work of Merlau-Ponty and Heidegger on Phenomenology has become the bedrock for architectural discussion on architectonic space. Pallasmaa, Perez-Gomez and Stephen Holl denounce the reduction of architecture to the ocular. They assert that the potential of architectonic space can only be fully valued through the experience of the body and all of its senses.²⁶ Here the ergonomic quality of the architectural detail becomes significant. The work of Alvar Aalto and Arne Jacobsen contain eminent examples of the ergonomic and tactile qualities of architectural detail. Both worked on furniture as well as buildings, which must have allowed them to develop this distinct and intimate relation to the body. Perez-Gomez describe the increasing degree of exposure experienced after the birth of a person, and relates this directly to architectural space. Here space that has a sound balance between enclosure and exposure is considered ideal.²⁷ Zumthor describes his memories as containing ‘the deepest architectural experience



The precise and sensuous finish achieved on the concrete here means that the collective space is clearly and robustly defined, and hence taken care of...

Family factory, Munster
Chipperfield Architects



The social manifestation of changes to the neighbourhood: the community pray for the new building that is about to be built...

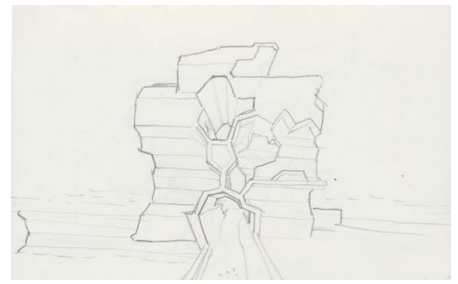
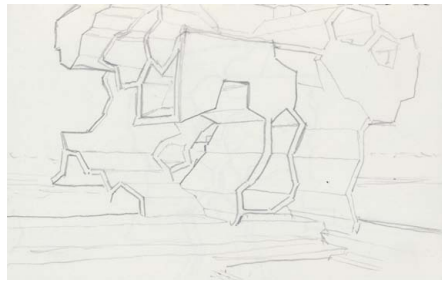


...a small shrine is placed in the foundation trench. The shrine consists of some objects, a lit candle, surrounded by loose bricks...

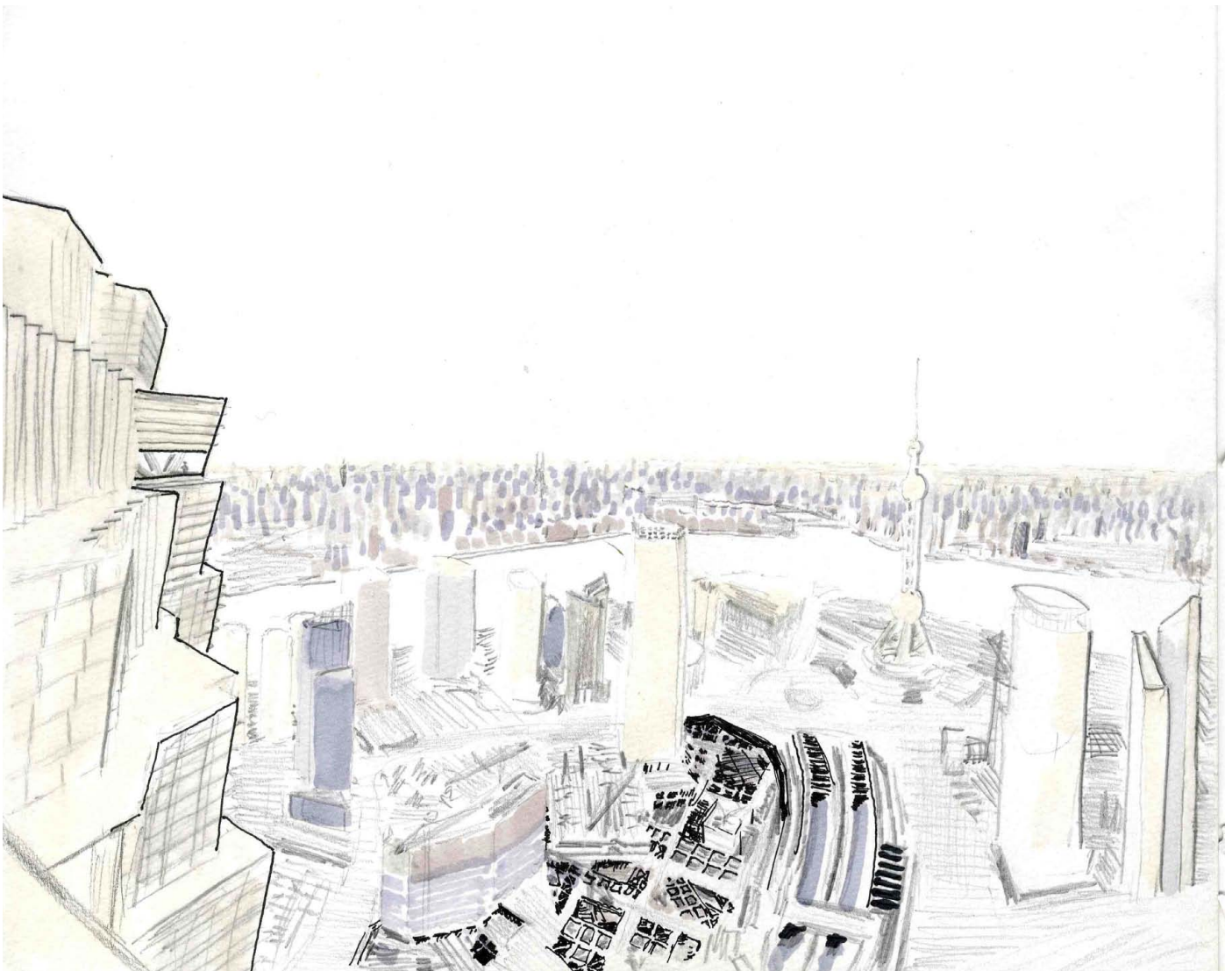


... once the prayer is over two of the congregation immediately start mixing concrete.

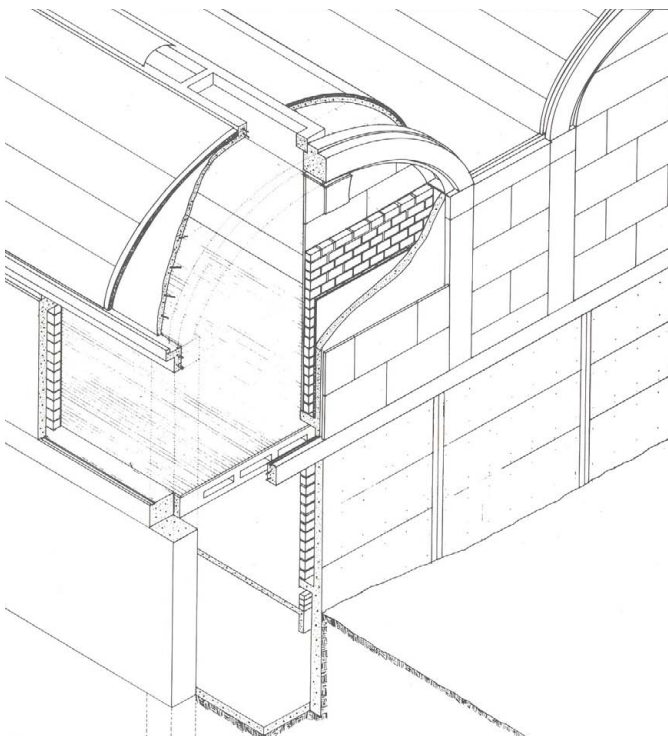
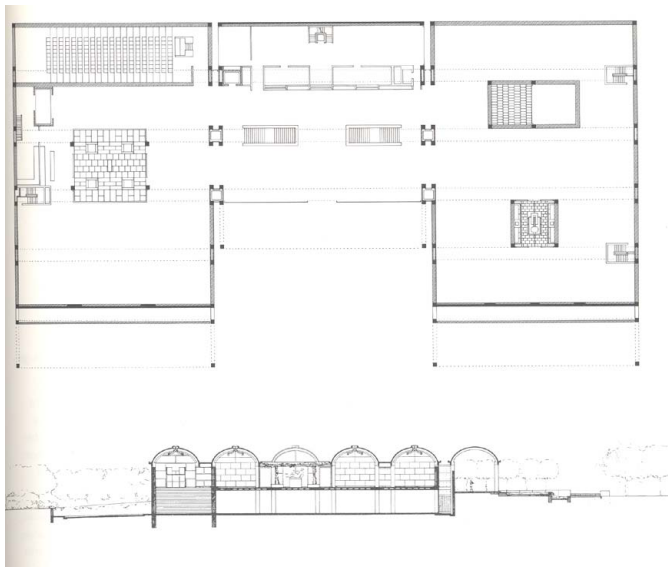
Ambela , India



Pavilion by Herzog & de Meuron, Jinhua Architecture Park, China

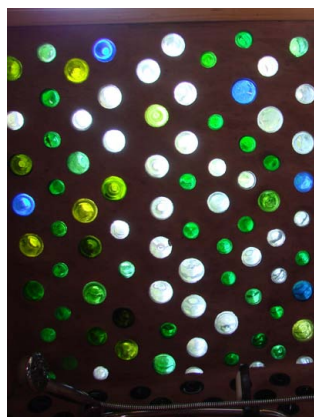


The skyline of Shanghai shows the vast repetition of today's built environment



Kimbell Art Museum

Louis Kahn



Infill of 'bottle walls' makes connecting other walls easy.

Earthship, Brighton, UK

that I know. They are the reservoirs of the architectural atmospheres and images that I explore in my work as an architect.' Through anthropological studies Aldo van Eyck was interested by that which was common to humans of all times and cultures. Zumthor evokes this with his description of the work of Joseph Beuys and Arte Povera: 'What impresses me is the precise and sensuous way they use materials. It seems anchored in an ancient, elemental knowledge about man's use of materials, and at the same time to expose the very essence of these materials, which is beyond all culturally conveyed meaning.' Conversely, Zumthor describes a relationship between universal qualities of material and its role in the creation of specific architectural experiences:

'I try to use materials like this in my work. I believe that they can assume a poetic quality in the context of an architectural object, although only if the architect is able to generate a meaningful situation for them, since materials in themselves are not poetic. The sense I try to instil into materials is beyond all rules of composition, and their tangibility, smell, and acoustic qualities are merely elements of the language that we are obliged to use. Sense emerges when I succeed in bringing out the specific meanings of certain materials in my buildings, meanings that can only be perceived in just this way in this one building. If we work towards this goal, we must constantly ask ourselves what the use of a particular material could mean in a specific architectural context. Good answers to these questions can throw light on both the way in which material is generally used and its own inherent sensuous qualities.'²⁸

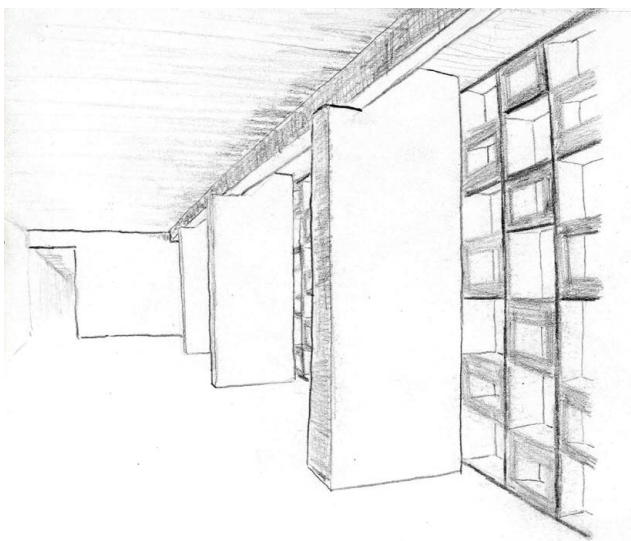
This approach suggests an articulated architectonic creating a specific architectural experience or atmosphere. The endurance of this kind of acute, specific tectonic might be augmented by heeding the principles of Hertzberger or Brand. Brand advocates constructing the primary elements of a building under the understanding that they might be added to, filled in or adapted later. *Low road* or *high road* adaptability can be achieved by such architectonic elements that have a permanent core. With Kahn's Kimbell Art Museum we see the element of each shell of the concrete roof being repeated. The walls however that complement the roof can be seen as less permanent as they are more adaptable. The potential of the differentiation of each module can be seen in Kahn's design with the end bay as far more open than the other enclosed bays. This illustrates the architectonic module as initially the primary element, being able to be differentiated through design or later appropriation. As such this initial architectonic element can be as sophisticated or refined as desired, yet still lead to low road appropriation. Architect Enric Miralles demonstrated how space could be differentiated with his changing facilities for the Barcelona Olympics. The changing spaces are formed by a series of modular concrete shells; the orientation of each is different, allowing differentiation of space to occur despite each module being the same. This evokes Moudon's view that the room as module is more versatile to change than the dwelling as module.²⁹ Frampton takes this line further still when he questions Utzon's idea of an 'additive architecture'. Utzon projected designs for an architecture of an array of modules to create differentiated space. Frampton believed that this approach



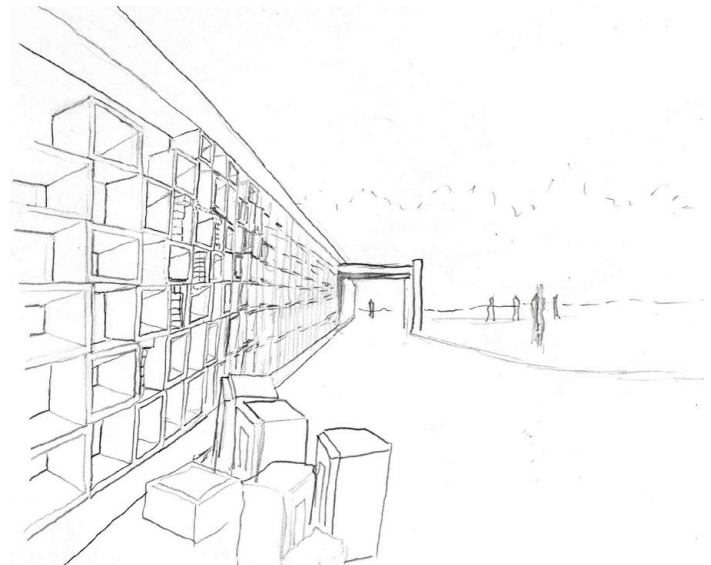
Olympic changing rooms

Enric Miralles

Utzon demonstrated an economy of means with the materials and fixings of this church in Copenhagen.

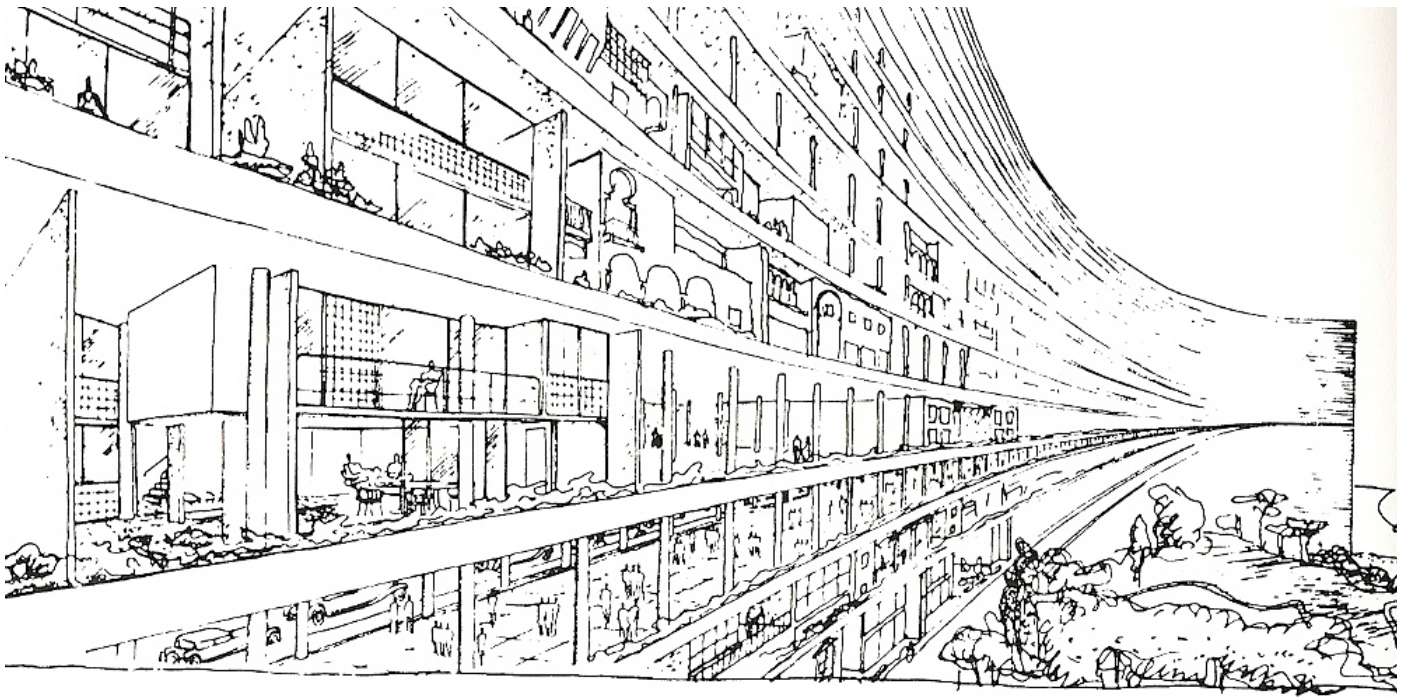


The structural elements - namely brick piers and in-situ concrete - make up the permanent elements of the facade...



... an infill screen consisting of precast concrete boxes and a wire mesh complete the facade. When I visited in 2008 some of these concrete boxes had been removed, and were sitting on the ground outside, which gave the impression that they were in the process of being replaced, but perhaps the truth was that the facade was simply being neglected.

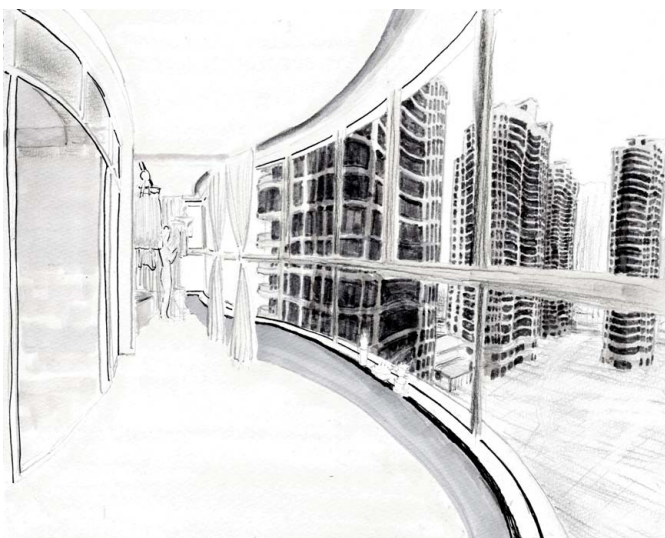
Art College by Le Corbusier, Chandigarh, India



Unbuilt project for Algiers

Le Corbusier

was likely to be problematic due to each module as being too self-complete.³⁰ This idea of the architectural module becomes significant when the architectonic is considered within a socio-economic context of an expanding world population. The built environment is now dominated by low-cost production characterized by “volume, standardization and repetition”.³¹ This suggests an architectonic that bears at its core the repetition of modules industrially produced as Le Duc advocated, with each module able to be differentiated in the manner Hertzberger, Brand or Alexander would advocate. Lefebvre describes housing policy, architectural technology, industrial organization and global planning as having produced a ‘rupture of the traditional morphology of cities, while the urbanization of society was taking place. Hence, a new contradiction adding to other unresolved contradictions of existing society, aggravating them and giving them another meaning’.³² Habraken related the morphology of cities to his concept of *fields*. Here *field* denotes the evolving socio-economic context within which architects work. He describes the influence of Palladio as being fundamental to the contemporary architectural profession.³³ Hertzberger attempted to mediate between the notion of the purity of architectural design and the vernacular field. Here Hertzberger drew inspiration from Le Corbusier’s drawings for an unbuilt project for Algiers. Hertzberger described the significance of these drawings as suggesting a megastructure built by architects with the infill dwelling being built by the users. Hertzberger’s Duren Housing was an attempt to implement this idea. Here the roof is considered the most permanent element, which corresponds to Grillo’s assertion that the roof is the most important architectural element.³⁴

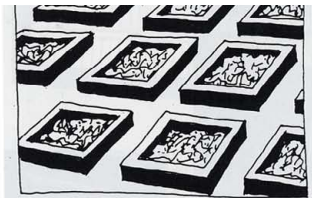


A dozen identical residential towers. Each apartment is bounded by spaces that can either be an internal glazed zone to protect the interior from the climatic flux, or they can be left open as balconies. There is no regular pattern, just the expression of the choices made when each apartment was bought.

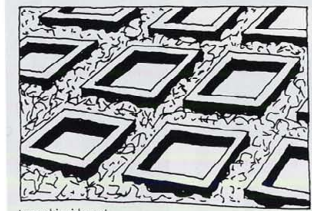
Ningbo, China



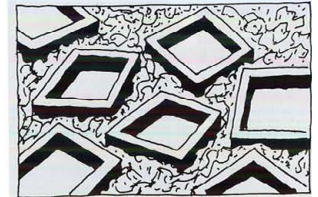
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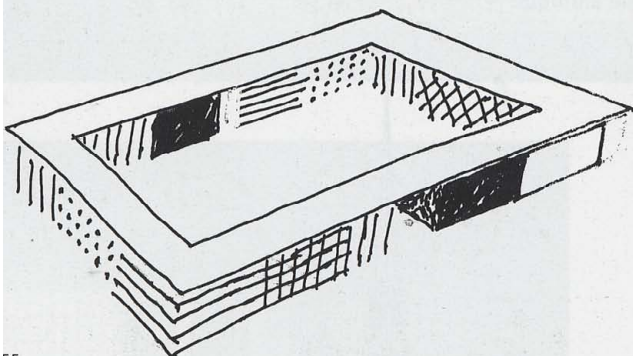
traditional



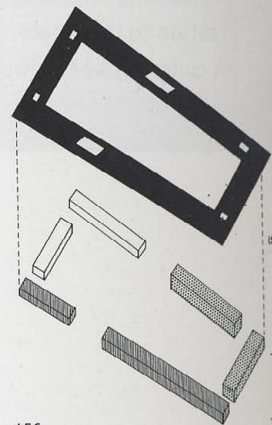
turned inside-out



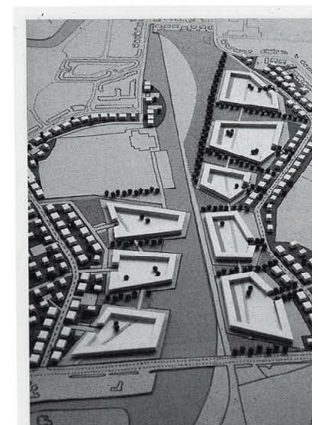
268 forgetting the streets



55



456



267 Veerse Poort, Middelburg 1995. Model

Duren Housing

Herman Hertzberger



Lucca amphitheatre



Arles amphitheatre

Hertzberger used these two amphitheatres to demonstrate how what seems to be the primary, permanent element can eventually become subordinated by what was previously infill. Here the amphitheatre was infilled with dwellings until the only remnant of the amphitheatre is the plan form.



The OMA proposal for the region west of La Defense, Paris.

This idea of the relative permanence of elements can be seen at a larger scale in the work of OMA. In their response to the 1991 competition to reconfigure the area west of the La Defense district of Paris, OMA drew attention to the mortality of the majority of buildings in the area. As such they proposed a new large scale grid. OMA distinguished their proposal from that of Le Corbusier's Plan Voisin by using their grid as a framework to guide development when each individual building were to need replacing.³⁵ In this case the macro grid is the more permanent element, while buildings, urban blocks and communities are seen as transitory. In juxtaposition to this approach are various national planning systems. For example, Architect Sunand Prasad describes the British planning system as limiting development, 'stopping' people doing things rather than actually *making* plans.³⁶ This reactionary norm amongst planning authorities bears the risk of stifling architectonic work with a culturally supported brand of pastiche. The macro scale of the OMA proposal might appear antithetical to the microtectonics of community appropriation. Indeed, Schumacher has shown that large-scale organisation can be detrimental to the well-being of communities. However, Schumacher seems to be primarily concerned with finding the right size or scale for things, rather than fanatically opposing the macro. He indicated that large-scale organisation can be devised so as to respond to the human scale.³⁷ Likewise, it is possible for macro urban design to have a symbiotic relationship with microtectonics. Despite Schumacher's suggestion that cities have no more than 500,000 inhabitants, the population and size of the world's urban centres continues to soar. When working at this scale, a system such as LEED may well prove useful, but any such system would be undermined if it did not relate to the microtectonic human scale.

To conclude, this study has seen how the architectonic comprises primarily of the dialectic between construction processes and the use of architecture. The qualities of architectonic construction have an inherent value and can be an end in their own right. When considering the architectonic within neighbourhood development, the social significance of the architectonic becomes apparent, particularly in how architectonic elements might be appropriated over time.

Recommendations for LEED ND: A reader in architectonic neighbourhood development

Given my initial comparison highlighting the architectonic scale of A Pattern Language that is lacking in the more urban and technical LEED-ND, I hereby make some recommendations for LEED-ND. I propose that a reader in architectonics be produced, as a companion to LEED-ND. This follows on from the second part of this report, which discussed the value of the architectonic in sustainable neighbourhood design.

I see my suggestion for an architectonic reader to LEED-ND to be in a similar vein to the studies of Andrea Deplazes. I was fortunate to meet Andrea Deplazes at ETH Zurich in 2008. He showed me how his students develop architectural design that is defined by the totality of architectonic construction, while attempting to avoid enslavement by technocracy. Likewise, in Deplazes' book *Constructing Architecture* technical drawings are placed alongside wider architectural reflections such as The Pathos of Masonry or the Metaphysics of exposed concrete or discussions of how these material modules combine to create architectural elements such as plinth, opening, roof etc.³⁸

Opposite is a summary of how an architectonic reader might relate to the elements of the existing LEED-ND. The new architectonic reader is divided into the following three sections:

Architectonic construction

Intent: To question the constructional means which create architectonic space. This acknowledges the fractal scales of the built environment, and attempts to reinforce an appreciation for the quality of the details that the urban scale is made up of.

Architectural experience

Intent: To question how the articulation of construction can shape experience and architectural quality, as intrinsic to architectonic design. This is to appreciate how different ways of articulating construction can create architectural quality that is profound in the broadest range of human sense and experience. Here the inherent value of architectonic qualities can begin to be considered.

Social / appropriation

Intent: To question the social significance of architectural qualities for neighbourhood development; to situate the architectonic within the changing social context of neighbourhood development. To understand that some elements will have a degree of permanence, while others will inevitably be demolished, modified or appropriated in different and unforeseen ways. This is central to neighbourhood development, and so should be actively accommodated, rather than attempting to create a static, idealised architecture.

		LEED Achitectonic	Architectonic construction	Stereotomic / filigree	Weathering of materials	Relationship between component and totality	Architectural quality & experience	Ocular	Haptic	Ergonomic	Spatial	Smell	Acoustic	Sense of place	Social / appropriation	Definition of collective space	Encouragement of ownership / appropriation / expression	Polyvalence	High road / low road	Historical expression	Permanent / transitory
LEED Technical																					
Smart Location and Linkage																					
Prereq 1	Smart Location																				
Prereq 2	Imperiled Species and Ecological Communities																				
Prereq 3	Wetland and Water Body Conservation																				
Prereq 4	Agricultural Land Conservation																				
Prereq 5	Floodplain Avoidance																				
Credit 1	Preferred Locations																				
Credit 2	Brownfield Redevelopment																				
Credit 3	Locations with Reduced Automobile Dependence																				
Credit 4	Bicycle Network and Storage																				
Credit 5	Housing and Jobs Proximity																				
Credit 6	Steep Slope Protection																				
Credit 7	Site Design for Habitat or Wetland and Water Body Conservation																				
Credit 8	Restoration of Habitat or Wetlands and Water Bodies																				
Credit 9	Long-Term Conservation Management of Habitat or Wetlands and Water Bodies																				
Neighborhood Pattern and Design																					
Prereq 1	Walkable Streets																				
Prereq 2	Compact Development																				
Prereq 3	Connected and Open Community																				
Credit 1	Walkable Streets																				
Credit 2	Compact Development																				
Credit 3	Mixed-Use Neighborhood Centers																				
Credit 4	Mixed-Income Diverse Communities																				
Credit 5	Reduced Parking Footprint																				
Credit 6	Street Network																				
Credit 7	Transit Facilities																				
Credit 8	Transportation Demand Management																				
Credit 9	Access to Civic and Public Spaces																				
Credit 10	Access to Recreation Facilities																				
Credit 11	Visitability and Universal Design																				
Credit 12	Community Outreach and Involvement																				
Credit 13	Local Food Production																				
Credit 14	Tree-Lined and Shaded Streets																				
Credit 15	Neighborhood Schools																				
Green Infrastructure and Buildings																					
Prereq 1	Certified Green Building																				
Prereq 2	Minimum Building Energy Efficiency																				
Prereq 3	Minimum Building Water Efficiency																				
Prereq 4	Construction Activity Pollution Prevention																				
Green Infrastructure and Buildings, Continued																					
Credit 1	Certified Green Buildings																				
Credit 2	Building Energy Efficiency																				
Credit 3	Building Water Efficiency																				
Credit 4	Water-Efficient Landscaping																				
Credit 5	Existing Building Use																				
Credit 6	Historic Resource Preservation and Adaptive Reuse																				
Credit 7	Minimized Site Disturbance in Design and Construction																				
Credit 8	Stormwater Management																				
Credit 9	Heat Island Reduction																				
Credit 10	Solar Orientation																				
Credit 11	On-Site Renewable Energy Sources																				
Credit 12	District Heating and Cooling																				
Credit 13	Infrastructure Energy Efficiency																				
Credit 14	Wastewater Management																				
Credit 15	Recycled Content in Infrastructure																				
Credit 16	Solid Waste Management Infrastructure																				
Credit 17	Light Pollution Reduction																				

(Endnotes)

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