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10th December 2010

[http://hdl.handle.net/2440/35845](http://hdl.handle.net/2440/35845)
Sam Ridgeway | The imagination of construction
Introduction

The current division between design and construction (mind and body) in both the architectural profession and the academy makes it unusual to hear the word imagination used in relation to construction. Creativity and imagination are more commonly associated with design, and construction with technical proficiency, extensive knowledge of building products and economic level-headedness. In schools and the profession, construction knowledge is generally applied in an instrumental fashion to designs conceived in the design studio or the director’s office. Materials and techniques of construction are considered to be neutral objects and systems from which buildings are assembled, and there is a tendency to rely heavily on product manufacturers to provide technical advice regarding standard detailing. In the case of large building projects, the builder is often asked to suggest materials and techniques that will achieve a result that resembles the drawings but offers substantial cost savings.

It is arguable, however, that the dissatisfaction with architecture and with architects that peaked during the late twentieth century has as much to do with construction as with design. Modernism’s obsession with the neutrality, universality and instrumentality of materials still haunts the profession and must in part be attributed to the way construction is taught in schools of architecture. Despite clear alternatives, construction teaching generally encourages the acquisition of technical skills demonstrated through drawing that must then be transferred or translated into the design studio. The drawing forth of an alternative pedagogy that revitalises the imagination of construction, however, requires us to address its current under-theorisation.

Over the past twenty-five years, Marco Frascari has played a major role in challenging the rational and instrumental view of architectural construction. Instead, he seeks to articulate an alternative understanding, grounded in the philosophy of technology that reveals materials and construction techniques to be culturally embedded and profoundly ontological. Perhaps the best-known example of this is his article ‘The Tell-the-Tale Detail’, a phenomenological exploration of the role of architectural details published in 1984. Influenced by his early professional and teaching experience with Carlo Scarpa, this was written in part as a means of introducing into the design studio at the University of Pennsylvania the idea that construction embodies the fundamental meanings of architecture. A subsequent article, ‘The Lume Materiale in the Architecture of Venice’, published in 1988, explores the spiritual dimension of construction by focusing on the Venetian phenomenon of Lume Materiale, literally ‘material light’.

These two articles have been crucial to my development, over the last ten years, of a less instrumental mode of construction teaching, and to re-thinking the relationship between construction and design both in the design studio and in practice. It is no longer possible for me to objectify the materials and techniques of building, but rather to see them only as extensions or revelations of our complex human nature. Embracing this view begins to distance construction and design from the realm of fashion and commodification and opens it to engage with issues of architectural technology in the widest sense of the term. This paper outlines the central role Frascari’s deliberations on lume materiale have played in both an introductory construction course for students of architecture and the design of a small house in suburban Adelaide. In both, the aim has been to emphasise the important architectural objective of embodying the intangible in the tangible.

Teaching lightness

My interest in reconceiving the dominant, instrumental mode of construction teaching began with research towards a Masters degree during the early 1990s that transformed my naïve desire to create an industrialised building system into a deeply sceptical, Heideggerian critique of such systems. My conclusion that they represented the possible annihilation of much that is good in
architecture led me to question an architectural education that still nurtured the possibility of such technological utopias. Despite the spectacular demise of Modernism and the subsequent loss of status afforded to the architectural profession, due in large part to the failings of its physical fabric, in our school—and I suspect in many others—construction was still being taught in an untheorised and instrumental fashion as a set of neutral materials and techniques that could be applied to designs conceived independently in the design studio.

The bifurcation of knowledge into matters of mind (design): creativity, innovation and imagination; and matters of body (construction): knowledge of building products, construction techniques and structures, was profound. This was reinforced by a major restructuring of the programme from one five-year professional degree into two, three-year undergraduate degrees, the first dealing with theory, the second with practice. This was later changed to a three plus two-year structure. ‘Body’ knowledge was largely untheorised, and lacked historical, cultural, social or philosophical context. There was an understanding that construction should be taught in a linear, technical and encyclopaedic fashion starting with so-called ‘simple’ building techniques, domestic timber-framing for example, and progress to more technically complicated buildings. The notion that construction could play a generative role in design, or that the material embodiment of design ideas held the key to their meaningful presence, was not on the agenda.

In the mid-1990s I was appointed to the School and given the task of teaching our first-year, introductory course in construction. My aim was to theorise this knowledge so that it would become part of the way students think about design rather than a separate and technical category of skills that must be then integrated into the design studio. In this way I hoped to move considerations of materiality from the periphery of architectural imagination (and pedagogy) to the core, and to provide a means of augmenting the traditional method of conceiving a building through attention to form and plan only. While the worthy goal of increasing students’ knowledge in this area is common, it is usually implemented in an instrumental fashion, resulting in more courses and more assessable construction content in studio projects.

My approach, by contrast, was to address the supposed neutrality of materials and building techniques. Somewhat paradoxically for a course focusing on the materials of architecture, this meant beginning with theoretical texts rather than with simple building techniques, something that some colleagues found quite alarming. Starting with texts, however, provides a very different entry point for instruction in construction, signalling that ‘basic’ knowledge is an understanding that construction embodies significant meaning. Texts provide an immediate antidote, for example, to the facile notion that discourse concerning architectural production can be reduced to what Dalibor Vesely has described as ‘the merit of technical efficiency versus that of aesthetics’. One of the most effective pieces of writing I have found to introduce an alternative understanding of architecture’s material nature to students is Marco Frascari’s article ‘The Lume Materiale in the Architecture of Venice’.

Published in 1988, ‘The Lume Materiale’ describes a phenomenological construing or interpretation of the materials of architecture, where, as Frascari writes: ‘stones change themselves in light through architecture and architecture exists because of light’. This ‘ontological storytelling of architectural events’ depicts a method of constructing buildings from ‘palpable material light’ (lume materiale), ‘something born in the materials of construction and imprisoned in the body of an edifice as the mind is imprisoned in the body’. ‘A tangible essence of architecture which can be used as a touchstone for the discovery of the true nature of the substances composing a constructed world.’ The poetic core of this article is developed from the truism that without light there is effectively no architecture and without architecture there is no light. ‘A mound of stones, a splendid Venetian home, a wonderful Byzantine dome, and the most extraordinary Greek temple are the same inert matter without light. Conversely, there is no light without the architectural material which makes up the constructed world.’ Frascari’s story about light as a building material centres on the Ca’ Dario, a Venetian Palace built by the diplomat Giovanni Dario between 1487 and ‘97.

In an inscription on the facade of his palace, Dario dedicates the building to ‘the genius of the city’ (Urbs Genio), so defining it as a celebration of the city rather than as personal aggrandisement. Frascari reveals the importance of place and culture in his story about building with light by quoting a Byzantine inscription taken from the Archbishops’ Chapel in Ravenna, ‘Light is either born here, or imprisoned, reigns here in freedom’. This enigmatic inscription can be interpreted to mean that all cultures build light into their architecture differently through the use of colour, shadow, overhangs, ornament, weatherings, detailing, composition of facades, use of light reflecting or absorbing materials, interior daylighting, sun penetration, and so on. When cultures mix, as they do in Venice, Ravenna and Adelaide, architecture begins to embody this diverse revelation of lume materiale. It does not matter whether it is local or imported, once built-in it ‘reigns … in freedom’. In relation to the Ca’ Dario, Frascari points out that it is a ‘hybrid – or “monstrous” – building … a combination of bold, Gothic elements, Tuscan traditions, Lombardic decorations, and Byzantine memories … Ca’ Dario is an expression of the multifaceted culture of Venice … an extraordinary hybrid that combines the architecture of the West and the East with the influences of Greece and Rome’. The article goes on to describe in detail several key features of the Ca’ Dario, including the circular stone and Venetian glass patens that ‘can imprison light’.
and the ‘maternal’ marble skin of the upper storey made of reused *gallio antico*, a yellow marble from Numidia. In relation to these details Frascari writes that, ‘*lume materiale* ... is a rich substance producing a tangible built poetry out of elemental knowledge’.

From the beginning, my construction course established itself as equally concerned with theory and with practice. The four journal articles that for the last several years have been the required reading for the course, of which *The Lume Materiale* is one, immediately establish that this is not theory in the current techno-rational sense of theory providing rules in advance of practical action. Rather, it is in the Ancient Greek sense of the pairing of *theoria* and *praxis*. As Adrian Snodgrass points out in his article, ‘On Theorising Architectural Education’, for the Greeks, *theoria* did ‘not precede or stand apart from *praxis* but participated in it’. Proposing an alternative to technical construction theory based on experimentation, calculation and quantification, and instead reconceiving theory in the mode of *theoria*, as construction knowledge that can participate in the design process, is the crucial and distinguishing aim of this course.

Bringing to the fore the phenomenological and ontological nature of making buildings allows practical knowledge to inform the design process that, as Donald Schön has shown, must at its best deal with ‘complexity, uncertainty, instability, uniqueness, and value conflicts’. At its worst, design may be technically competent but fail miserably at a cultural or environmental level. The current instrumental conception of construction theory conforms to the ‘criterion of “efficiency”, which is defined exclusively in terms of utilitarian, quantitative, and increasingly, monetary outcomes’. The inability or unwillingness of students to apply or integrate this technical knowledge into a design studio that may be operating in a very different theoretical mode can cause problems, and is the source of much discussion. Teaching more construction and insisting on more assessable construction content in design projects does not address the underlying cause of the problem. The moment the word integration is used in relation to construction knowledge and the design studio, it signals that there is a conceptual and structural separation between the two that is unlikely to be resolved by force!

‘*The Lume Materiale*’ offers a wonderfully elegant means of allowing construction knowledge to transcend the prevailing impasse created by instrumental thinking and to participate in design. The collective revelation that first-year construction students have when reading and presenting this article during tutorial sessions is that there is, for them, a quite new and exciting way of conceiving the material presence of a building in and of light. While they often find the writing difficult, this in itself makes the eventual understandings more lasting and more influential. Its poetic and multi-layered nature allows students to work at many different levels, from issues of interior day lighting, to matters...
of colour, reflectance and shadows, to the more complex notion of the cultural specificity of lume materiale. The uniquely architectural nature of the building knowledge this article reveals, the fact that ‘architecture is co-existent with light’ and that an ‘architectural presence exerts itself’ through light, seamlessly correlates theory and practice.

Students naturally translate theoretical notions into practical construction decisions; there is no boundary between construction knowledge and the design process. Further, students are unavoidably confronted with one of the most fundamental and continually evolving but often elusive tasks of our profession, that of embodying the intangible in built form. Frascari, for example, refers to the transformative process of spinning molten glass on a wheel to make the circular patterns that are embedded in the facade of the Ca’Dario as the casting ‘of a new tectonic figure’ that presents the colloidal nature of glass. These thick coloured glass elements participate actively in the ‘giant marble puzzle’ of the building’s facade, literally trapping light and making it a ‘material of construction’. The explicit nature of this example leads to further insights as to how other materials, details and elements, both on the facade of the Ca’Dario and on other buildings, ‘are defined by a piercing light, which engraves their lines and sublimates them to a symbol of repose, certitude and solemnity’.

The major project for the course requires students to perform the seemingly paradoxical task of designing a construction that exemplifies or reveals some aspect of the theoretical material they are working with. In particular, this means an exploration of light, weathering, detailing or techne. Because all the articles are presented and discussed in tutorial groups there is often a significant crossover between the theoretical interests revealed through each model. The project is to design the construction of a 6 x 6 x 6 metre cube building and to make a model of this at the scale of 1:20[1]. This is inspired by and loosely adapted from the Cooper Union cube exercises under John Hejduk and is assessed according to how it resolves and reveals programmatic, theoretical and construction knowledge. Importantly, for the beginning student, the strict size requirement of the model removes complicated formal and planning deliberations, allowing them to focus primarily on construction. Form recedes as a background against which materiality can show up. A similarity does exist with the original exercise, and that is that the form and size of the building, smaller by 40%, tends to prescribe its possible uses. Too small for a house, its simple volume is usually quickly conceived by students as a retreat, library, music room and so on.

As a challenge to students to think about the relation of place and building, the constructions are...
site-specific, the design and modelling of which is the first exercise of the course. Importantly, ‘The Lume Materiale’ offers a profoundly phenomenological interpretation of Venice as the cultural, urban, luminous and ontological place of the Ca’Dario. Frascari explains that in both painting and construction, ‘the Venetians rejected the search for a rationalization of site in favor of a phenomenology of site’. A positivist interpretation of the use of the yellow Numidium marble on the building’s facade, probably pillaged from sites around Venice, for example, would be that it was due to issues of site access, limited space, distance from the quarry and cost. A phenomenological interpretation might be that it was the consequence of the Venetian understanding of the ‘maternal’ nature of weathered materials in the construction of a marble ‘cosmesis’ to cover bare brick walls. Frascari’s text is a good example of how this student project tries to distinguish itself from the notion of ‘homogenous space as the place of modernity’ referred to by Pérez-Gómez in his introduction to the reissue of the Education of an Architect. This construction course attempts to begin the education of students into ‘someone who knows where he or she stands, becoming responsible for a personal making in view of the dilemmas of contemporary culture, understanding why one makes (and what one accepts as an ethical task), and not only how’.1

Constructing lightness

It is in the context of devising and teaching this course that I began conceiving the design of a house for my wife and me to live in, situated on a small suburban site in Adelaide. Listening to student presentations of ‘The Lume Materiale’ in tutorial sessions over several years, helping tease out issues and bring the discussion back to local architectural examples, I developed a deeper understanding and appreciation of this interpretation of light. The starting point that makes this building possible is an attempt to understand the site in terms other than the purely rational, in particular to interpret and reveal the local light conditions. In practice, it is extremely difficult to step outside a rational interpretation of site. Much of our training leads us to read sites in terms of what can be measured and calculated: orientation, dimensions, solar access in terms of sun angles, prevailing winds, the direction of the best views, vehicle and pedestrian access points, slope of the land and so on. Sites are also economically rationalised and the buildings designed for them conceived as commodities, the dollar value of which is known in advance of their construction. It is almost impossible not to be drawn into this cycle of commodification by producing a design that reassures the client and the lending institution that they will get their money back when the building is sold. As architects, however, it is worthwhile contemplating how to introduce a non-instrumental reading of site phenomena into our design process that distinguishes what we do from other design professionals. This may help divert attention away from a shallow obsession with economic value only, and more successfully deal with issues of dwelling in a specific place.

From the beginning I was drawn to the site partly because of its wonderful light, especially the golden, late-afternoon light that streams from the west and is particularly striking because of the site’s elevation and its proximity to the nearby Adelaide hills. While a detailed discussion of place is beyond the scope of this paper, it is worth noting that the building, in particular its western stone wall, was constructed to embody and reveal the particular local light conditions as a background against which the practices of habitation are played out. Of course, it is difficult to counter the claim that it is merely pushing itself and the phenomena of the site forward in the modern sense as spectacle. It is true that it reveals the movement of the sun throughout the day and the passage of the seasonal light conditions more explicitly than a traditional house: in Heideggerian terms, however, this disclosive characteristic is ‘primordial’ in nature. In other words, it ‘discloses the embodied understanding that we already have of things in the world’. As Frascari writes in ‘The Lume Materiale’: ‘[t]his palpable material light, however, is free to express itself, and rules the construing of architectural events posited by the material resolution of elements and the detailing of construction’.2

As I lived nearby, I visited the site often and began to conceive the building in terms of both technical practicalities and in response to the light conditions. The initial design concept was simply to develop two, two-storey masonry facades, one to the west and one to the east, that would contain and protect a more delicate, timber-framed and timber-clad body from the weather. The timber body is quite open to the north and therefore penetrated deeply by the winter sun. There is also a high degree of cross ventilation in the north-south direction. The masonry was both a response to the suburban context of the building and also, especially in the western facade, a means of developing a paradoxical lightness. That is to create a ‘light construction’ using heavy materials thus highlighting the true, joyful nature of lightness. This is in contrast to the current inexorable move towards lightweight buildings. To quote Frascari:

‘[t]he prevailing commonplace – a theoretical doxa – is that constructions are increasingly becoming lighter. However, it is just an illusion of lightness since buildings present heavy and distressing inenarrable tales. Consequently a gentle image of architecture, an idealized tale of joyfully, lightly-conceived architectural bodies and images, is no longer the paradoxical motor of successful and delightful structures.’

I always imagined that the western facade facing the street and the western light would be made of stone. Of course all materials are revealed and transformed in light, but to me there is a special affinity between stone and light. Stone is a natural material, literally pieces of the planet that have been quarried and shaped to reveal an inner substance. Standing up a wall of stone to the light and the sun is a primal act of dwelling as much as a fulfilment of the need to clad a suburban house. Initially this wall was to be
The crinkled stone facade reveals local light and the daily movement of the sun.
large blocks of purple sandstone from Macclesfield in the Adelaide Hills, but while I loved this material, despite its extreme softness, I was concerned that it did not contain enough light. I turned therefore to a honey-coloured sandstone from Basket Range in the Adelaide Hills that had traditionally been used in houses around the city for many years. The concept was still simply to cut large blocks of stone, to try to get as much colour variation as possible, and to randomly lay the blocks so that the eye would be drawn to the detail of the wall as much as to its entirety. I soon discovered that even such a simple idea about colour variation was problematic because the stone supply industry is geared to providing as uniform (neutral) a product as possible.

When the time came to finally resolve the stone detailing of the western elevation, a concern I had about the scale of the blocks being too large for the building and the street encouraged me to rethink this elevation. I realised that I could enhance the light effects on the wall without creating a direct reference to classical or traditional buildings [2]. I wanted the building to face the future and make a stand against the inane sprawl of poor quality, high-energy, reproduction buildings that are appearing all over suburban Adelaide. I made a quick cardboard model and was really excited that there was a way of achieving this detail by using a variation of an existing stone-cutting technique [3].

In relation to the reuse of stone elements in the Ca’ Dario that had been pillaged from abandoned sites around Venice, Frascari suggests that they were transformed ‘by technical operations proper to stone work, producing tectonic figures of wonder and ingenious variety in contrast to the purely functional aspects of the built artefact’. Of course, fifteenth-century Venice is a rather different story to twenty-first century Adelaide, but nevertheless I felt that somehow this idea had translated itself across time and was capable of creating something that was very forward looking and site specific but still powerfully connected to the past. I am not sure what tools and techniques were used to cut and shape the stone for the Ca’ Dario but nowadays stone is cut primarily using water-lubricated, diamond-tipped oscillating and circular saws, and it is relatively easy to cut one face of a block on an angle either by adjusting the saw blade or by sitting each block in an angled jig and then running it through the saw. Despite this, because it stepped outside the current practice of the cutting yard that specialised in producing reproduction facades for new houses, it caused many problems and delays.

In conclusion I am reminded of Carlo Scarpa’s statement, quoted by Frascari in ‘The Tell-the-Tale Detail’, that, ‘in architecture, there is no such thing as a good idea. There is only expression.’ ‘I had many sleepless nights wondering what the ‘expression’ of this wall would be and how it would be received by the neighbourhood. I was worried that it was ‘a good idea’ only and that its ‘paradoxical lightness would in fact be inenarrable’. These fears started to recede when I travelled to the stone-cutting yard to look at the samples and saw that the idea and the expression were sound. This was confirmed when the first five courses of blocks were laid. Most people understand immediately that it has something to do with light; others see it as ripples on water; one asked if it was to become a waterfall. Several have thought the facade was made of timber: having been through the dramas and difficulties of making it out of stone initially this astonished me, but on reflection I welcomed the interpretation as part of a rich process of signification [4].

In this paper I have concentrated only on a story about light. Simply put, this building is my attempt to stand against the prevailing technological view of everything, to step aside from the off-the-shelf mentality where we are supposed to create something original and creative from building products designed by product designers, not architects. It is my attempt to respond to the fact that we dwell in a specific location within a moving universe. It tries to say something about the simplistic notion that lightweight buildings are light buildings. But most of all it is just an attempt to make a joyful, serene building that faces the future while acknowledging a rich architectural past.

Notes
5. Ibid. p. 138.
6. Ibid. p. 140.
7. Ibid. p. 141.

The imagination of construction | Sam Ridgeway

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**Biography**
Sam Ridgway is an architect and lecturer in construction and design in the School of Architecture, Landscape Architecture and Urban Design at the University of Adelaide, South Australia. His research examines the current conceptual and structural split between construction and design (body and mind) in both schools of architecture and the profession.

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An international architecture conference to be held at the Welsh School of Architecture in Cardiff, Wales, UK

Variously controlled, assured and managed, ‘quality’ has become ubiquitous in Western societies. In consequence, the word’s familiar usage has grown slippery. Formerly grounded in ethical values or skilled craftsmanship, ‘quality’ is now commonly associated with the management of administrative or technical processes. Whereas the appreciation of quality was founded in the exercise of individual judgement and taste – of connoisseurship – organisations now seek to ground its assessment in supposedly objective systems of evaluation. Practitioners are under pressure to quantify quality, but it remains questionable whether it is possible or even desirable to do so. This important and highly topical issue will lie at the heart of these proceedings. The conference will consider how – in cultural practices, in making and designing, in emerging technologies and in education – ‘quality’ is defined and appreciated, managed and produced.

We welcome abstracts on diverse topics. Themes could include the following:

Quantifiers/
Why has it been considered important to attempt the quantification of ‘quality’ in architecture and other spheres? Who has prompted this, and why? Is it desirable?

Connoisseurs/
What qualifies someone as a connoisseur? How do they acquire and use their expertise? How important are the politics of connoisseurship? Might quantification of ‘quality’ eventually oust the expert?

Makers/
Does ‘quality’ belong primarily to the handmade? How and why has authenticity been ascribed to skilled making? Does skill equate with expertise? What, if any, is the role of the maker in an age of digital production and reproduction?

Designers/
If design mediates between thinking and making, how might it relate to determinations of ‘quality’? Are designations of ‘quality’ in design primarily ascribed to built objects? Or are they rather a function of the designer’s perceived expertise?

Idealists/
Claims of ‘quality’ tend to imply judgements about what is ‘good’ and thus relate to the claimant’s ethical sense. To what extent is ‘quality’ a matter of ethics, and are claims of ‘quality’ effectively statements of an ethical or moral position?

Geniuses/
‘Quality’ has been, and is sometimes still, perceived as derived from spiritual inspiration, indicating the degree to which the realm of the gods can be recreated on earth. Are such ideas relevant in the twenty-first century?

The following keynote speakers have confirmed their attendance, and others have been invited:

Catherine Belsey, Cardiff School of Critical and Cultural Theory
Chantal Brotherton-Ratcliffe, Sotheby’s Institute of Art, London and New York
Adam Caruso, Caruso St John Architects, London
Beatriz Colomina, Princeton University, New Jersey
David Leatherbarrow, University of Pennsylvania, Philadelphia
Sunand Prasad, Penoyre and Prasad Architects, London and CABE, London
Marc Treib, University of California, Berkeley

A drinks reception will be held on the night of Wednesday 4 July and the conference dinner will be held on Thursday 5 July. These will be included in the conference fee of £295 sterling. A reduced fee of £250 applies if payment is received by 31 March 2007.

Abstracts of 300 words are invited on any topic relating to notions of ‘quality’ in architecture or related fields. These should be submitted for refereeing by 01 November 2006, either electronically or by post to the address below. Abstracts will be double-blind refereed. Applicants will be notified of their acceptance or rejection by 30 November 2006. Additional information can be found on the conference website, which may be accessed at: www.cardiff.ac.uk/archi/quality

A selection of papers will be included in a special issue of the Cambridge University Press journal arq (Architectural Research Quarterly), scheduled for publication by the end of 2007. We are also in discussion with Routledge over a book containing selected papers from the conference.