MAPPING CONTROVERSIES IN ARCHITECTURE
For Christian
Mapping Controversies in Architecture

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Acknowledgements

The idea for this book emerged in 2008 when I started teaching the Mapping Controversies course at the University of Manchester as a part of the Humanities lectures at the Manchester School of Architecture. I would like first to thank all of the Architecture students who took part in the course.

Liam Heaphy was my teaching and research assistant for four years and took part in all the teaching and research experiments that accompanied the making of this book. He invested a lot of time and energy and believed in the project.

The findings in Chapter 6 were made possible thanks to the EU-funded project MACOSPOL www.macospol.org. Colleagues from this project provided valuable feedback at different stages of the development of the research: Bruno Latour, Tommaso Venturini, Cordula Krop, Valérie November, François Mélard, Richard Rogers, Massimiano Bucchi, Gerald Beck. Some visualizations in Chapter 6 were produced in collaboration with Danny Richards and Nick Dunn from the Manchester School of Architecture, and Christian Derix and Lucy Helme from Aedas R&D, London. A small grant from methods@manchester allowed for further development of the mapping.

The book has benefited from the support and feedback from colleagues from the Manchester Architecture Research Centre (MARC) at the University of Manchester: Isabelle Doucet, Michael Hebbert, Leandro Minuchin, Ralf Brand, Maria Kaika, Simon Guy and Andrew Karvonen.

Special thanks go to Angela Connelly for her careful proofreading of the manuscript, and for her useful comments.

Last, but not least, my family supported me throughout the completion of this work. Along with my thanks I owe them an apology for the long weekends spent without me. This book is for my son, Christian.
A WALK IN CARDIFF BAY

If you find yourself strolling in Roald Dahl Plass in Cardiff, the capital city of Wales, you may wonder who designed the building next to the famous Welsh Parliament (Figure P.1). Like myself, you may recall that it had a cloud of fame that connected it to the name of Zaha Hadid. You stare at it, but something tells you that this is not a Hadid building. A Google search on your smartphone quickly brings back media reports and other digital traces. You discover that this building is very controversial for it was Zaha Hadid who won the international competition to design a new opera house for Cardiff in September 1994. However, the architect attributed with the eventual structure, known as the Millennium Centre, is someone else: the Welsh architect Jonathan Adams of Percy Thomas Partnership (renamed Capita Percy Thomas in 2004).

What kind of inquiry on architecture can start from a simple sparkle of curiosity, followed by a quick Google search and, eventually, by a thorough library investigation? An inquiry, that gradually engages in a retrospective analysis of the recent debates surrounding a building’s design. If you follow your curiosity to find out more about the building that puzzles you, the internet allows you to assemble documents and to dig up in the image galleries of the recent past to see how this building might have looked if designed by Hadid, instead of Jonathan Adams. You begin to consider that if designed by Itsuko Hasegawa, Mario Botta, Rem Koolhaas, Rafael Moneo, Pietro Marcozzi Architect, Rusli Associates, Werner Seligmann and Associates, and Greg Lynn Form – or any one of the 278 architects who took part in the international competition – this building would have lived a different life and would have left different traces on the web.

Although Cardiff already enjoyed one major concert venue in the city centre and possessed a number of well-patronized arts venues, it was believed that a new home was needed for the internationally-acclaimed Welsh National Opera. This could also be suitable as a popular entertainment centre for musicals, pantomime and other events. A design competition was announced and later on judged by the recently established Opera House Trust.
Zaha Hadid's architectural design, a scheme involving glazed horizontal shards above a topography of ramps and terraces, which she described as 'jewels in a crystal necklace', immediately attracted criticism (Figure P.2). Nicholas Crickhowell (1997) provides us with an account of the controversy. As Secretary of State for Wales (1979–1987) and vociferous campaigner on the need for a permanent home for the Welsh National Opera, his account is far from being objective or politically neutral. Crickhowell recalled that during the competition exhibition in October 1994, public reactions had been mixed with similar amounts of support expressed for the designs by Norman Foster and Manfredi Nicoletti. An anti-Hadid camp was formed within the small elite who were involved in the development of the project. One senior member of the Cardiff Bay Development Corporation tried to undermine the design and to exclude Hadid from the competition. Nevertheless, Zaha Hadid's design was selected by the Opera House Trust.

The following months witnessed frantic negotiations between her practice, the Opera House Trust, local politicians and the Millennium Commission (the government agency that distributed national lottery funds) over the design details. Crickhowell (1997) indicated that the media were hostile to the project. They believed that a national rugby stadium, also planned at the same time, was more representative of Welsh culture and would be more popular than an opera house catering for a minority and elite interest. The debate became polarized around the issue of which of the two venues would be most likely to receive funding from the Millennium Commission. Press reports portrayed the tussle as a search for an architectural project that could best symbolize Wales on the world stage.
When the Millennium Commission announced its funding decision in 1995, Hadid’s opera house project was overlooked. Without the 50 per cent contribution, the project was unable to proceed. The Millennium Commissioners claimed that their decision related to the projected high costs of Hadid’s design. Yet, Crickhowell suggests that there were three reasons for the failure: political infighting within Cardiff against Hadid and her design; the concerns of the political elite in London to protect the interests of the Royal Opera House located there; and the popular campaign for the rugby stadium. Both of these latter projects received financial backing from the Millennium Commission.

When analyzing the ‘saga’ of the Cardiff Opera House, social scientists explain its failure by pointing to these three issues: elitism, avant-guard design, and politics. Firstly, they distinguish the functional aspects of the building as paramount in narratives of national identity. In this sense, the question of whether public money should be invested in a rugby stadium or an opera house became a class issue. The opera house was aligned with the narrow interest base of the cultural elite in Wales, while ‘the rugby stadium was hailed as a symbol of all of Wales’ (McNeill and Tewdwr-Jones 2003). Secondly, the aesthetic quality of the building, and Hadid’s unusual design that relied on typically exclusive paradigms of urban design – monument and space – was mocked by the popular press who suggested that if such a ‘monstrosity’ was built, Cardiff and Wales would be ridiculed internationally. Thirdly, the location of the project was strongly contested. Local politicians were blamed for failing to fully exploit the city’s capital status. All of these explanations show that this building’s form and architectural character carried the potential of
representing the cultural and political values of the Welsh nation. The suggestion is that architecture is able to work, shape and amend nationalistic tensions, beliefs; and even to strengthen class differentiations.

You may start questioning, just as I do, all these explanations of the failed project. You re-read, just as I do, newspaper clippings, hoping to find answers to the many questions that pop up as you read about the controversy. If Hadid’s design did not see daylight (the question that burns us from the beginning!) was it really because of its radical glass structure? What was so radical about this design? Why did the Opera House Trust decided to reassess its jury’s choice, re-examining Hadid’s winning entry next to those of Foster and other glass architecture structures? Why was glass the main material discussed? What varieties of glass entered the story and which were excluded? What were the design precedents and other projects involved? Who spoke in favour of the design and for what reasons? What was the nature of the disagreements? What was the nature of the design concerns? Was the project journey so thorny because of the lack of support from South Glamorgan Country Council and Cardiff City Council?

Hadid had to negotiate with bureaucrats, the local media, rival architects (Manfredi Nicoletti, Norman Foster), and ministers from the then Conservative administration: Michael Heseltine, John Redwood, and Virginia Bottomley. Now you know, just as I do, how many people were there before you. Now you know, just as I do, why you stared at this building for so long. You struggled to capture its distinctive architectural profile unable to visually ‘dissect’ it with sequential photographs. You juggled with the languages at your disposal to make sense of the Welsh poetic script on its façade (Figure P.3). All of the time, you were still bothered by the controversial shadow of Hadid’s proposal…

Starting from a sparkle of curiosity, a quick search allows us to form an opinion that differs from official explanations. We are able to assemble an entire dossier of press clippings and images; of ‘if…’ statements, and ‘is…’ statements; and of protagonists’ statements and assumptions. What is it that we are doing? Are we only gaining knowledge about the technical aspects of the design schemes and the material properties of the building? Or, are we instead covering the human dimensions: the symbolic and subjective interpretations? Are we dealing with form concerns or with functionality? Our data does not only inform us about the technical and aesthetic aspects of the project. Instead, we acquire information that relates the technologies of this building to the local actors, Welsh history, politics, culture and regeneration ambitions.

A typical analysis of such controversy in the mass media relies on one main assumption about architecture: its autonomy. Design proposals are rejected or celebrated because we believe that they exist independently. Hence, we trust that a daring design on its own is capable of triggering a Bilbao effect…However, for the majority of the people who read the media reports on new designs what alienates them from architecture is that it is often presented with high ambitions. It is portrayed as remote from daily life, the local culture and the political passions of the people who will use this building. It is because of this apparent and cautiously defended ‘autonomy of architecture’ (Till 2010), that architecture critics remain
interested in either the efficacy of technology or else in the grand leaps in culture that a building can trigger.

In the literature, technology and society are disentangled. On one library shelf we will find the glossy books on architectural technology, where the skin, the performance, the material properties and the functionality of the building proposed by Hadid and the other opponents in the competition will be discussed. We have to search on another shelf for the books that consider the project and its potential for regenerating the Cardiff Bay area; its distinct capacity to symbolize Wales and to embody local values. Thus, while exploring why Hadid’s proposal failed, the architectural literature further widens an insurmountable divide between the material and objective versus the social and subjective. This bifurcation between technologies and humanities is also maintained in the architectural schools today.

Yet, as we have seen in the short overview of the Cardiff Opera House controversy above, the glass structure and vanguard design of the ‘jewels in a crystal necklace’ is entangled with local politics, economics and cultural issues. Analyzing the controversy as it unfolded clearly showed it to be difficult to separate technological aspects from the political and budget questions; form from function; and efficacy from symbols.
ENDNOTES

1 I use the term ‘actor’ to designate the autonomous entities that play an important role in the making of architecture. They can include individuals (an architect, an engineer, a contractor, etc.), collectives (the public, the nation, etc.), visual representations (a plan, a drawing, a scale model, budget figures, etc.) or non-figurative representations (the Welsh nation, the Welsh spirit, the procurement system, etc.). On the term ‘actor’ see Latour, 1993.
Introduction

By employing modern epistemologies ‘we have found ourselves with pitiful contingencies on one side and necessary Laws on the other – without, of course being able to conceptualise their relations’ (Latour 1993). This divides the world into two sets: one of causes and the other of effects; one of architecture (understood as form, size, location, disposition and materiality) and the other of society (that causes buildings to vary, flourish or perish). This epistemology views architecture as an engineering technology and an objective frame on one side yet, on the other, comprehends it through many subjective perceptions, experiences and symbolic interpretations. How can we circumvent the boundaries between the abstraction called ‘technology’ and the abstraction called ‘symbolism’, between ‘subject’ and ‘object’, between ‘nature’ and ‘culture’? How can we stop drawing boundaries between architectural technologies and architectural humanities, between materiality and meaning? How can we prevent this divide from continuing to blind architectural theory? How can we avoid the common simplifications of architectural theory that replace the specific (the architectural practice, the design, the processes, the objects) with the general (social factors, class divisions, gender, politics and ethnicity)? This book will address such a challenging series of ‘how’ questions.

RETHINKING BIFURCATIONS

If you wish to follow the mainstreams of architectural theory, one possible interpretation of the Cardiff Opera House controversy would have engaged in a semantic analysis to reveal the hidden symbolic meaning behind the building (Chapter 1). Architectural theory lends itself to semiotics: buildings are interpreted in terms of language of signs; they are analyzed in terms of symbolic meanings (Jencks 1980, 2004, Kaika 2010). Architectural artefacts and buildings are static objects, made of brute and technical matter. They are available ‘out there’, a field apart from powerful perceiving subjects who can actively inspect, interpret and explain their meaning.

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This modernist opposition between subject and object seems to have paralyzed architectural theory. It leads to an impasse in which the theory of representation is trapped in the metaphysics of essence that causes buildings to be defined by rigid classifications, applied after the architectural event. I argue for a non-representational way of tackling buildings (Chapter 1). Here, we open buildings to the experience, to the course of events that make and consume architecture. Buildings become interpretable objects. They make themselves detectable through a continuous elaboration of procedures that put architectural meaning to the test through trials, debates and controversies. This way of looking at buildings as they move illustrates the irrelevance of the old distinction between intrinsic materiality on one hand, and aesthetic or 'symbolic' meaning, on the other; between buildings as static freeze frames, and buildings as moving projects.

If you still wish to stay with the mainstream of architectural theory, another possible interpretation of the Cardiff Bay building would be to use external factors (social, economic, political) as a source of explaining its success or failure (Chapter 2). Commonly, architectural theory either takes society (its factors and influences) as a source of explaining architecture. Else, architecture is a mechanism for exercising control and shaping the social. In the first case, buildings mirror societal change and reflect economic factors, broader macrocosmic organization and cultural frameworks. In the second case, buildings are instruments that are imbued with the power to transform society and to affect social practices. In both instances, what is kept is the bifurcation between the big constructs of 'architecture' and 'society'.

Drawing inspiration from the social sciences, architectural theorists assumed that their major task was to identify and characterize the possible relationships between technology, science, and art on the one hand, and the society, on the other. They presumed that they are all stabilized, defined and determined entities. Architectural theorists were inspired to engage in 'social studies of architecture' and later on, in the challenging but thorny avenues of the critical theory. Yet, to depart from the divide between architecture and society, we also need to depart from an understanding of the society as a separate domain or context in which architecture can be framed. ‘Society’ designates neither a ‘mono-spherical container’ (as, for instance, Durkheim asserted) nor a ‘non-spatial communication process’ (as systems theory claims). We need an alternative understanding in which, ‘social’ is an adjective that points to a mode of connecting a nexus of entities and ordering the reality (Whitehead 1978, Latour 2005). It can only be gained if we follow the processes and the associations of all the actors involved in design in the making: a controversy, a project.

This understanding of the social is inspired by the field of Science and Technology Studies (STS), not of sociology; sociology is restrictive as it is incapable of grappling the phenomena of architecture in the making. ‘Science studies?’ you may wonder. ‘Would that mean epistemology?’ ‘Doesn’t epistemology refer to the effort to extract architecture from all possible connections with the rest – economy, politics, and society?’ No, it is precisely this aloofness from the rest that I would like to question in a series of empirical inquiries that do not strive to isolate architecture from all possible connections with the world, but rather seize it as a ‘thick’ mesh of entanglements, as a cosmology.
It would be logical to assume that the reason we take inspiration from STS is because architecture is a science or technology only. No. This was the mistake that STS scholars initially made in the 1990s. To explain the city, the architectural objects or urban change, STS scholars adopted a social constructivist perspective that treated them as scientific objects. When they used STS tools to tackle design and urban planning, they simply assumed that a building was a modernist object and that the city was a technological artefact (Aibar and Bijker 1997, Hommels 2005). Yet, to transport STS into new fields we do not simply identify the scientific and technological aspects of urban and architectural phenomena, or follow how scientific and technological networks tangle with the urban ones. What we borrow is the method of inquiry that has allowed STS studies to successfully get out of the artificial dichotomies of nature/culture, subject/object and technologies/humanities. That is, the method of Actor-Network-Theory (ANT) that relies on painstaking ethnography.

We borrow this method to explore phenomena that are an exception for sociological theory, although tackled by some anthropologists: the non-stabilized states of technical/social, natural/social, aesthetic/social, etc. Before we hustle explaining the design of the Cardiff Opera House in terms of the static categories of class, elitism, politics, avant-garde aesthetics, we can slow down our enquiry into the controversy. We forget the divides, and we follow, document and map the controversy as it unfolded. By so doing, we mobilize both humanities and technologies. We follow the actors, their statements, their own interpretations of the world, and the networks that they trace. We can track these heterogeneous entities by following their gradient of stabilization and we can account for the instable state of the social, the technical, the natural and the aesthetic. If we can follow, account and visually map the controversy dynamics, we can describe what happens in these extreme situations of volatility that are so rarely investigated. Situations, in which the networks have neither the complete status of an object nor of a subject. New and different forms of objectivity and subjectivity emerge. Nothing is static. The redistributions are to be made (Chapter 3). The story of process, of design in the making is, by the same token, a story of the making of the social.

MAPPING PROCESSES

The topic of controversies is not new in Architecture. Yet, the slow enquiry into design processes allows us to question some myths in architectural theory: how is it still possible that we can attribute buildings to a single architect’s name? Can we say that Jørn Utzon designed the Sydney Opera House? We cannot explain a work of architecture by referring to the sphere of politics or society only; nor is it to be attributed to a single personality only. Architecture appears to be an impersonal process over the course of which a building is composed; it is made of the many different pieces brought by the different actors connected or not with the one that signs as an ‘author’ (Chapter 4). Design progresses by many detours, each of...
them modifying the initial design vision and aim of the project; it is composite and collective. Questioning whether it is ‘the individual architect’ or ‘society as whole’ that should be blamed or praised for the success or failure of a particular project is wrong. This question is to be replaced by a programme of inquiry – Mapping Controversies – a slow and painstaking inquiry that would allow tracing the meanders of the collective action of architecture.

The methodological and conceptual roots of the Mapping Controversies approach stem from the discipline of STS. The importance of studying controversies has been recognized by STS scholars since the 1970s. It has become an important methodological tool that gains insight into key processes, which usually remain invisible within the sciences. The methodological assumption underpinning the study of scientific controversies is that one learns something about the underlying dynamics of science and technology and their relations with wider society. Following a controversy as it unfolds allows the normally hidden social dimensions of science to unravel and makes them more explicit (Pinch and Leuenberger 2006, Callon et al. 2004). Thus, controversies are seen as integral to many features of scientific and technological practice and dissemination. Latour and Woolgar (1979) indicated how controversies could be analyzed in terms of whether certain modalities are added to or subtracted from scientific statements, making them more or less fact-like.

Actor Network Theory (ANT) went further in the 1980s by arguing that the actions of non-human actors as the outcome of a controversy cannot be explained by reference to the social realm alone, an argument that Michel Callon (1986) put forward in his now famous study of a new method of harvesting scallops. Drawing on a rich tradition of semiotics, mapping scientific controversies offered a method of enquiry that questions the traditional epistemology of social sciences (Latour 2005, 2007, McLean and Hassard 2004, McLean and Hassard 2007). According to the ANT approach (Venturini 2010), controversies involve all kind of actors. In controversy studies, the analyst should not constrain the observation to any single theory or methodology; she should observe the phenomenon from as many viewpoints as possible and listen to actors’ voices more than the researcher’s own assumptions. The purpose of the cartography is not to teach actors what they are incapable of understanding but to learn from them how to observe their collective existences.

Using this method, we will follow recent and past architectural controversies that will lead us to different parts of the world. The danger is that when we talk about different cities (Cardiff, Sydney, Paris, London), different social contexts and different urban cultures, we tend to describe local treatments of the universal. Too often we assume that cities have common features such as infrastructure, markets, transport networks, city authorities. Culture is taken as a variable that is relative and situated. Here, I will step aside from these traditional preconceptions and will avoid simplistic culturalistic comparisons. Mapping the debates that buildings trigger avoids falling into the trap of culturalism. We will trace the debates that surround the recent parliament in Cardiff (Chapter 1), we will revisit other well-known controversies such as the debate surrounding the Sydney Opera House (Chapter 4); or the recently re-opened case of the Eiffel Tower in Paris (Chapter 5).
We can even track the rhythm of a controversy that unfolds as I write: the 2012 London Olympics Stadium design (Chapter 6). In all of these cases, we do not need to embrace culturalistic discourses of urban differences. Instead, we account for what is specific to these buildings. That is, we treat them as pertinent ethnographic objects and the urban as describable and accountable. Culture will assume an ontological quality (Houdart 2007), not merely an attribute.

Initially developed as a research method, Mapping Controversies has been translated into architectural education (Chapter 5). The comparison is drawn between the reflective enquiry (recalling a particular example from Donald Schön) and the Mapping Controversies self-exemplifying mode of enquiry. By following a group of students on their way to map the controversy surrounding Heathrow airport, parallels are drawn with Schön’s approach (1983, 1987). Doing so, I illustrate how this type of social science enquiry, concerning the complexity of design as opposed to the mere technical mapping of reality, is useful to designers. I argue for the importance of realistic approaches in design education.

Mapping Controversies in Architecture grasps architecture as simultaneously technical and social. The originality of the Mapping Controversies approach lies in its capacity to deeply modify what is meant by ‘process’. It allows us to transform the understanding of a building (planning, drawing, designing, fabricating, inhabiting) as successive phases involving successive trades. Instead of portraying how a building ‘occupies’ a niche inside a society, or ‘corresponds’ to certain economic or cultural needs, or ‘reflects’ national symbols and zeitgeist, we follow the ‘process philosophy’ pioneered by Alfred N. Whitehead (1978). The method allows us to grasp the capacity of buildings and design projects to elaborate their times and spaces, and even societies of interested parties, around themselves. Following controversies unfolding in time and space, does for buildings and design projects what Henri Bergson (1911) has done for the philosophy of process.

The mapping refers to the ‘art of describing’ architectural objects, processes and practices. The accounts included here trace the complexity of phenomena without replacing the specific with general. Mapping Controversies provides us with inventive narrative techniques to gain access to the particular and grasp the unique. We can offer an adequate description on the basis of the series of situations accounted, according to the actors’ dynamics and the spaces and times they generate. To describe, we need to use all of the possible equipment and media: pen, diary, tape recorder, film, statistics, digital tools and new software. Equipped with these, our accounts ‘deploy’ architectural objects as networks instead of either merely describing them ethnographically or unveiling the hidden meanings behind them. Action is not merely related to a particular agent or explained by enduring historical structures and urban systems. To ‘deploy’ means to meticulously account for the performances of the entire collectives of humans and non-humans. The recent developments in computational design (Chapter 6) can greatly enrich the descriptive techniques of social sciences.

Mapping Controversies produces infra-reflexive descriptions of architectural objects, practices and processes. We can generate accounts that will deliberately circumvent any meta-reflexivity (Latour 1988). Accounts that keep the freshness
of architectural experiences and the roughness of the controversies actors’ language far from the reach of the prevailing meta-reflexive critical frameworks of interpretation. Accounts, that will visually and narratively trace different architectural processes without referring to entities outside of them. Accounts that are self-exemplifying and that can amplify the diversity of the urban and the architectural, instead of reducing them to sets of homogenous abstractions, to types or closed categories.

In a domain that has a consumer’s view of philosophy of design, it is immensely important to have a theory with greater intimacy and a more productive posture. I hope that this book will offer architects an entry into a work of theory. It is as far from the celebratory reminiscences of so many books on architecture, as it is from the superficial ways in which ‘theory’ is used to add philosophical decors to technological feats.
PART I

RETHINKING BIFURCATIONS
Chapter 1
The Impasse of Representation

BACK TO CARDIFF BAY

As you continue to explore Cardiff Bay, you catch sight of yet another striking building. This is home of the Welsh Assembly (the Senedd). You enjoy, just as I do, climbing the external slate stairs of this giant ‘ship’ (Figure 1.1). After getting through the security checks, you avidly explore the space. You take great delight, just as I do, from standing upon the public platform around the wooden ‘mushroom’ (Figure 1.2).
You spend some time looking down to the parliament chamber through the glass (Figure 1.3). You try out the fancy leather chairs and contemplate the scenery of Cardiff Bay. You are aware that the space is full of surveillance cameras and you wonder about the spatial challenges that this ‘mushroom’ must have posed. You remember a fame of controversies: this you recall well.

You know, just as I do, that Cardiff is the capital city of Wales. It received this designation in 1955 in formal recognition of Wales’ distinct national identity. You will probably remember that in 1997 the Welsh voted for a devolved Assembly to enact legislation for Wales. Designing a building for the new Welsh government became an important political task. You can see the Senedd – the building of the National Assembly for Wales, which hosts ‘the democratically elected body that represents the interests of Wales and its people, makes laws for Wales and holds the Welsh Government to account’ (Welsh National Assembly 2011). Yet, you do not know the rest: how was it made and why this design and not another? You go over the Senedd story, just as I do, but at a much slower pace than before in order to fully recollect its unfolding.
Excerpts from a Controversy Diary

Lord James Callaghan, former Labour Prime Minister and Cardiff MP, was quick to formulate his opinion to the press in 1998. Callaghan, who would become one of the lay judges on the panel assessing the design competition, thought that the National Assembly should be a ‘prestigious building’ of the highest quality (committee papers of the competition panel, held at the National Library of Wales, 1998). For him, its symbolic meaning is of key importance since the building will become ‘Wales’ first democratic building’. Angela Giddens, one of his fellow
judges and a Cardiff-based designer, commented that: ‘Whoever the architect is there has got to be an overall understanding of Wales’ (Fanning 1998a). As you start following the Senedd story from these beginnings, just as I do, you find out that what both the MPs and the Welsh public were looking for is a ‘symbol of Wales’ and a powerful ‘distinctive building’. You find out that symbolism is the primary concern, and you expect that the panel are not bothered by mundane questions such as: ‘what shapes are to be used’ and ‘what material constraints can pop up?’ How can the judging panel think of mundane techniques and working routines? Why worry about the trivial objects of creativity and construction virtuosity when a ‘timeless’ building for the National Assembly, ‘a building of the 21st century’ should emerge from the architect’s drawing board? What architectural techniques are to be invented in order to design ‘a representation of Wales, using Welsh materials and local art to reinforce its Welshness’? (Fanning 1998b). Only the great symbols of Welsh nationhood that the building can speak about were discussed.

Yet, along with the ambitious symbol-generating agenda set for the designers of the Senedd, the panel assessing the competition entries is also concerned with how the £11.5 million building will work and how the chosen design will affect its functional efficiency. Symbolism and functionality, you know it, just as I do, are the two irreconcilable objectives in the design literature. To learn about technicality and efficiency you go and search on one side of the library; the one I always see from a distance (I am trained as a sociologist!). To learn about symbolism, Welshness, and politics you wander in the library space to find the other shelf, the one that I know so well, the shelf with humanities books.

The shortlist of design proposals is revealed in October 1998 and made available for public consultations. Richard Rogers Partnership (RRP) provides the winning scheme. Only one year later the first difficulties appear. These are both conceptual and financial. Questions are raised about the capital and running costs of housing the assembly at the waterfront in Cardiff Bay. Exploratory meetings are held between RRP and the Assembly Members. The design requirements continue to be modified. The size of the public gallery causes concern. RRP are asked to enlarge it in order to accommodate more visitors. Access to the building needs to be improved for people with disabilities. Richard Rogers is also asked to bear in mind the urge of the assembly members to use local materials and the work of Wales-based artists. The mundane construction concerns pile up. The symbols are forgotten.

While Rogers is developing his design scheme to respond to these growing concerns, there remains a significant opposition. The Welsh Assembly debates a motion to abandon the Rogers building and direct money towards the cost of a children’s hospital. The existing City Hall is frequently mentioned in the media as an alternative to an expensive new building in Cardiff Bay. The primary concern becomes the cost of the project. First Secretary of Wales, Alun Michael, assures his fellow Assembly Members that the cost of the new building will not exceed £12.5 million. Almost simultaneously, estimates produced by civil servants: ‘reveal that the cost would rise to at least £16 million and the overall capital cost to beyond £20 million’ (Fanning 1999). The ambitious symbol-making programme and search for an architecture

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that expresses the Welsh essence are all put on hold while budget and programme concerns proliferate. These now become the main concern in our controversy.

In 1999, Welsh Assembly officials hold discussions with a subsidiary company of the Associated British Ports (ABP) to enquire about the possibility of buying more land in Cardiff Bay. The present site is not considered big enough to contain the proposed RRP scheme. This need stems from the Assembly’s insistence for a larger public gallery and improved facilities. Yet, the politicians use it in their fights: ‘opposition politicians have roundly condemned what they describe as the ‘incompetence’ of Labour administration in having to seek additional land at such late stage in the project’ (The Architects’ Journal, 28 October 1999). At the same time, James Leeson from RRP intimates that: ‘we haven’t really moved on much from the original concept’ (ibid.). In June 2000, the Assembly agreed by 42 votes to 9 to press ahead with RRP’s design.

Yet, by July 2001, Rogers is accusing ministers of disguising the real costs. Edwina Hart, the Minister for Finance, Local Government and Communities, tells the Welsh Assembly that despite ‘assurances’ from RRP and the contractors, Turner and Townsend, she ‘very much regretted’ that it would not be possible to bring the building under the construction budget of £13.8 million or the overall capital budget of £25.6 million. It would be closer to £24 million and £40 million respectively. She states that Rogers’ had failed to provide any concrete evidence to support his claims (The Architects’ Journal 19 July 2001). Rogers angrily replies that his firm cannot be blamed for the rising costs that resulted from client decisions because the increasing estimates are due to the extra requests that the client made.

As the disagreement between the architect and the politicians unfolds, other actors enter the story. The new president of the Royal Society of Architects in Wales (RSAW), Skip Belton, declares that: ‘we are incredibly concerned that this important building for Wales is completed.’ RSAW expressed anxiety over the damage that failure may have on Wales’ reputation for turning down world-class architecture. Referring to Zaha Hadid’s doomed opera house, the architectural community is concerned that the Senedd might meet the same fate. They endorse the proposed design saying that: ‘we have a strong feeling that the building as originally designed should be constructed’ (The Architects’ Journal 19 July 2001). RIBA president, Paul Hyett, and Jon Rouse, chief executive of CABE, are asked to intervene and voice their support for the RRP design.

This issue concerning the budget appears to be complex. It does not merely revolve around who is telling the truth. Attention is drawn to the specifics: who calculates the budget; how is it calculated; against what criteria is it assessed; and according to which programme? Rogers, yet again, explains that costs mount because of changing demands that RRP have willingly accommodated into the design. He contextualizes the projected £40 million cost by likening the scheme to ‘a big house’. Rogers says that: ‘if…the alarmist £40 million price tag is to be believed, this figure falls far short of many Millennium projects’ (The Architects’ Journal, 26 July 2001).

Rogers maintains that this budget is not exceptionally expensive compared to similar projects because of the inherent logic according to which construction
proceeds. For instance the Scottish Parliament building was estimated at 55 million in 1998 and by November 2001 had risen to 240 million. It eventually came in at 414.4 million in February 2007. However, he remains puzzled as to the method of calculation that allowed politicians to reach a much more inflated figure. His practice is denied access to finance meetings and that is why he believes the process to be ‘completely impenetrable’. He criticizes the procurement system and the decision-making processes, as well as the ‘lines of communication as being too long and disjointed’ (ibid.). The local politicians are blamed for lacking political will to see a major project through to completion. The controversy results in a deadlock.

Actors, including academics such as Richard Weston from Cardiff University’s Welsh School of Architecture, enter the story to help RRP and the politicians find a cordial solution. Jon Rouse calls for an investigation by the National Audit Office saying that: ‘it’s clear we haven’t had the full story and the sooner we have an investigation the better for all of us. There are some serious accusations flying around and there is a need for an independent evaluation’ (The Architects’ Journal, 26 July 2001).

This assessment is conducted in 2001 to which numerous building professionals are invited as experts. When the original £12 million rises to £27 million, Richard Rogers Partnership is dropped from the process amidst accusations of spiralling costs. The process is open to other tenders and RRP wins back the job after other teams in the running pulled out. Stride Treglown withdrew because of the excessive financial risk involved in undertaking a project that did not follow the principles of ‘Rethinking Construction’ (Rethinking Construction (2001) Rethinking the Construction Client, London: Rethinking Construction, http://www.publicarchitecture.co.uk/knowledge-base/publications/Rethinking_the_Construction_Client.pdf. Date accessed: 12 April 2011). Thus, in February 2003, the consortium (composed of RRP, BDSP, Arup and the construction company Taylor Woodrow) is reappointed. The team’s spokesman, said that the team was delighted with the reselection: ‘we were not worried that the previous problems would damage our chances of reappointment. The fact is we have a fantastically strong design team. The next few months will be about ensuring we have excellent communication with the assembly and its advisors’ (Blackler 2003).

The £27 million estimate that had loomed so large only eighteen months previously was about to exceed £47 million by the time RRP was reappointed in 2003. A war between politics and architecture was now openly fought. This time it was not conducted publicly by building professionals in arbitration hearings. Instead, politicians communicated with architects through lawyers after the Welsh Assembly instigated a £6.9 million negligence claim against RRP because of the spiralling price (Betts 2003). Despite the fact that an independent adjudication found in favour of RRP, who are awarded £448,000 in backdated fees, the Assembly continues to pursue Richard Rogers.

In June 2003, the budget reaches £55 million. First Minister, Rhodri Morgan, defends the increase on the grounds that the building will be larger and better (Building Design 27 June 2003). Politicians change their hostile position. For the
first time during five years of controversies concerning the budget, design and technical features are discussed in the press. Reports describe the improved quality of the elevations facing the Millennium Centre; a second bridge will link the Senedd to the administrative offices at Crickhowell House next door; the entrance will be improved so as to accommodate facilities for disabled people, the public spaces will be larger to include a café, a parent-and-child suite and extra public lifts.

Since building construction restarted in August 2003, costs continue to creep up. ‘Professional fees’ are undisclosed but include those paid to RRP for at least 30 contract variations. The amendments relate to detailed design work to accommodate an updated IT infrastructure and extra money to enhance security in the wake of 9/11. By 2004, Conservative Assembly Member’s are incensed to find out that the estimates reach £70m. Nick Bourne, leader of the Welsh Conservatives, gives a statement to Building Design saying that: ‘[We] have been proved right – the costs of the building would keep on rising at a time when there are countless other more worthy projects crying out for money’ (Betts 2004).

The relationships between RRP and the Welsh government get even more complicated. John Shortridge makes a statement to the Welsh Assembly’s audit committee: ‘the original estimate submitted by RRP for the design competition was too low and that if the true cost had been known at the time, its entry would have been rejected from the competition as non-compliant’ (Betts 2003). Rogers’ writes to the Audit Committee to demand an apology. The contents of his letter, which are made public in April 2003, declare Shortridge’s claims to be ‘wholly unacceptable’ and ‘wholly inaccurate’. He insists that Shortridge ‘retract[s] the statement with an apology’. Shortridge refuses to apologize.

The controversy slows down and is forgotten. When the building opens its doors in 2006 the symbolic interpretations come back. The critics praise the Senedd as a ‘physical and symbolic embodiment of Welsh nationhood and modern democratic government’ (Slessor 2006).

Following the unfolding complexities of the Senedd controversy in its most intensive period 1998–2003, we see that it is not simply a fight between opposing political parties. Nor can we purely base it around the spiralling budget. Politics and money tangle in complex ways: often on building sites. Yet, reducing this controversy to a set of political differences or budgetary questions will not help us to understand the making of the Welsh Assembly. The logic of design progresses by deviations that are interlinked to the changing demands of clients or other factors that impinge on design. These detours relate to the shifting requests of the client: ‘we want a larger viewing platform’ and ‘we need more facilities for disabled people.’ Changing the programme has budget implications. One way of explaining the cost of the Welsh Assembly is to point to the fact that requests for enlarged sites require land to be purchased at a later stage of the project. A bigger budget is needed also to take the inflation into account. On the other side of the battlefield, the very methods of calculating construction budgets are discussed. Changing programmatic and technological aspects of the building-to-be alters the way that the budget calculations are made and the design concept is adjusted accordingly.
Our enquiry occurs in the hubbub of the web-world. It starts from the ‘plot’ – the building as it is now – and rewinds the film by collecting and analysing all the press clippings and images available from the web space. Our follow up of the controversy registers meaningful statements that are explicitly said by the actors: not hidden between the lines and not waiting to be unveiled. The meaning is in the protagonists’ statements that we witness; not lurking in sophisticated readings of the subtext. Following the developing controversy is the only way to grasp the full-blown process of the making of the Welsh Assembly building and it liberates us from limiting ourselves to unravelling certain pattern of events only, be they political, economic or technical.

**THE LIMITS OF SYMBOLISM**

**Wales Re-Presented?**

Both the quick search on the unrealized opera house of Zaha Hadid (presented in the prologue) and the longer enquiry into the making of the Welsh Assembly building show us that the essential impetus for their designs was driven by the ambition to represent Wales and express Welsh values. In the humanities literature, these buildings are predominantly analyzed in terms of their potential to symbolize. Both projects benefited from the redevelopment of Cardiff Bay. Prompted by Westminster, the Cardiff Bay Development Corporation was established in 1987 with the ambitious task of regenerating the waterfront area to the south of Cardiff city centre. The port’s decline was symptomatic of the major retraction in manufacturing which hit South Wales particularly badly. It needed investment in cultural, service, retail, tourism and housing developments. The humanities critics go as far as concluding that these projects aimed at ‘re-branding the nation’ (McNeill and Tewdwr-Jones 2003). The Cardiff Opera House project was emblematic and supported the argument that ‘major public building projects ignite a debate over the place of the nation in the world (McNeill and Tewdwr-Jones 2003: 739). Architecture is therefore seen as important for expressing national identity as well as ‘spatial’ European identity (Delanty and Jones 2002). The other common line of interpretation follows funding. Unlike corporate buildings, where the main issue may be solely aesthetic or related to land use, public buildings absorb tax revenues and trigger debates over the appropriateness of their design. In our longer enquiry into the making of the building that saw daylight – the Welsh Assembly – we find that both the technologies and humanities interpretations are distinctively present.

On the technology shelves, we discover fascinating accounts of the formation of the concrete structure and slate cladding. We can even learn about the issues posed by the geology of the site. We may follow the relationship between the contractor and the consultancy firm Arup who provided complex solutions that covered structural, civil, transport, geotechnical and wind engineering. We discover that the curved roof, clad in untreated cedar, was sculpted using a computer software program called *Rhinoceros* (*Rhino*). If we dig even further, the technology literature will inform us that the roof’s profile was refined with regard
to its structural performance, repetition, buildability, and visual impact. Moving into the particulars, we learn that the roof becomes capable of absorbing any differential vertical movements and that it is stabilized laterally by pairs of inclined pre-stressed rods. We find out that the glass façade results from an experiment with many different types before they decided to use low-iron glass because of its transparency compared to the green hue of float glass. We note the method of choosing materials that could respond to stringent performance requirements regarding natural ventilation, interfacing to the roof structure and, most importantly, blast resistance that resulted in slate for the stairs, natural stone in the interior spaces, and granite for the road pavement.

A world apart from that story is the humanities one. There may only be a library shelf separating the two, but here we forget about copper cladding, roof movements and low-iron glass in order to engage, once again, with the symbol-making and representational agenda of architecture. The building is described as ‘inspirational and an icon for Wales. (…) its concept – as a powerful yet simple design embracing literally the desire for open and transparent government’ (Correnza et al. 2006: 3). The ‘agency’ of the building is exercised through its transparent architecture, realized principally through the ubiquitous use of glass. The Senedd’s public gallery has a seating area arranged in a circular fashion (Figure 1.3) that mirrors the assembly chamber below. Members of the public can view the cabinet meeting rooms, press rooms, lobbies and the debating chamber itself. They also have access to audio and translation equipment and can hear the voices of Assembly Members through gaps in the glass that separate them from the chamber below. Sociologists have analyzed it as an ‘inverted panopticum’ where those in power become surveyed by the democratic mass (Housley and Wahl-Jorgensen 2008). Openness leads to the production of a ‘democratic gaze’ and likened to the tourist gaze: visitors become consumers of political life and ‘consumers of political symbols, who can scrutinize the actions of their elected representatives, but cannot participate or intervene in their deliberations’ (Housley and Wahl-Jorgensen 2008: 732). Examining the exploration of space and reactions to the new building, social scientists conclude that it acts more like an architectural spectacle than a political institution. This rhetoric praises the building capacity to draw Welsh visitors to participate in politics as well as its openness to the scrutiny and gaze of the public. It rests on the fact that glass is transparent; the word ‘transparent’ has political connotations with accessibility; accessibility has the potential to stimulate participation; participation is the democratic sine qua non. By acting as a symbol and object of the democratic gaze, such buildings can change political cultures. This discourse is reminiscent to the one witnessed in Germany over the rebuilding of the Reichstag in Berlin in the 1990s.

Experts in parliamentary affairs follow the emerging political institution that the building was designed for (Laffin and Thomas 2000). They discussed its ‘unique constitutional design’. Amazingly, they used terms familiar to us from our story of the architectural controversy: they examined the ‘design process’ and the debates that took place among the participants about ‘the shape of the Assembly.’ Yet, issues of transparency and openness are surprisingly missing from the
commentaries of parliamentary experts. They appear after the design concept is realized and the building is opened. Reflecting on this design process, Arup’s engineers say that: ‘over the ensuing months and years the accommodation, functions, and detail were increasingly defined, but the symbolism and initial concept remained pivotal and unchanging keystones of the design. (…) It is hoped that the design team’s response has delivered the vision desired by the Assembly of openness’ (Correnza et al. 2002: xx–3).

Drawing unfavourable comparisons with Enric Miralles and RMJM’s Scottish Parliament Building in Edinburgh, architecture critic Charles Jencks condemned the Assembly as a ‘glorified shed space’ (The Architects’ Journal 2005: 10). Its counterpart in Scotland was praised for its iconography and references to ‘the origins of democracy’ with the public space mirroring the parliament’s internal function as a democratic forum. Jencks argued that the Welsh Assembly failed to achieve such potent imagery. Again, and again, and again, symbolism and meaning are opposed to functionality and efficiency.

We can clearly see that the technology narrative rests on the assumption that architecture is understood by considering the technical elements, performance and virtuosity. In contrast, humanities scholars assume that the human element (the visitors’ views of political architecture, their reactions and behaviours) is fundamental to understanding architecture. The material is opposed to meaning; technology to symbols; nature to culture; and subjectivity to objectivity. Does keeping the bifurcation alive lead us to a better understanding of the Welsh Assembly building?

Before definitively answering this (although I expect that you will know my answer), let us revisit the German controversies surrounding the building of the Reichstag in Berlin in the 1990s. We will find a similar storyline which connected the transparency of glass to transparent government, which in turn suggests a superior version of democratic politics. The Reichstag building, associated with the reunification of East and West Germany is viewed as a representation of the political chance to open a new page in its history (Wefing 1995). It is analyzed as a blatant image of the unity and vigour that would symbolize the innovative and technologically advanced German state. Political scientists interpreted the iconographic aspects of the transparent dome of as a powerful symbol of the new parliamentarian culture (Barnstone 2005, Wise 1998, Ladd 1997). This dome also reflects the transitional identity in contrast with the strong authoritarian state of the past.

It is the transparency of glass that links German Members of Parliament (MdBs) throughout the built structure in two ways: through connected spaces and mutual visibility (Foster 2000). Connections between the electorate and MdB’s are facilitated by the dome’s transparent glass surface. Yet, glass has many more properties than its transparency: why is it always reduced to its quality of allowing the transmission of light through the material? Metaphorically, this easily implies visibility and access. Yet, glass, we know, is a solid material that is highly brittle. When subjected to stress, it can shatter with a sharp snapping sound. It is fragile and breakable. Could we not apply this property to young and untested parliamentary
institutions? Even reinforced glass that is very difficult to break cannot easily escape the connotation of fragility. Which property of glass should represent democracy?

Our question should not be ‘what is political architecture?’ or ‘what does the glass dome mean?’ or even ‘how can we make sense of the use of glass in parliamentarian architecture?’ More precisely we should be asking: ‘what kind of democracy can be facilitated by glass?’; ‘how does democracy work?’; ‘who sets it in motion?’; ‘what is the range of properties that glass can have in political buildings?’; ‘how can the political be made with glass?’; ‘with what kinds of glass?’; ‘in what cases?’; ‘how and where? where and how?’; ‘what are the modalities of glass action?’ and ‘in what circumstances can political architecture work?’

Returning to Cardiff Bay, architectural critics were inspired to look at the unrealized Opera House and the Senedd through the lens of the representational theories. They assumed that they knew everything about the buildings and about what they represent. On the other hand, political scientists questioned the nature and unity of what is to be represented and pointed to the difficulties of expressing a unified sense of the Welsh nation. Laffin and Thomas argued that ‘mutual suspicion between these disparate identities has become a traditional and persistent theme of Welsh politics’ (Laffin and Thomas 2000: 558).

Just as Wales contains a plurality of identities, slate also has multiple materialities. These stories lie on either side of the fault line between the technical and the symbolic. On the one hand, slate is a compact, fine-grained, metamorphic rock formed by the effects of heat and pressure on shale. On the other, Welsh slate is intimately linked with the industrial history of Wales and central to narratives of political, social and cultural advancement (Jones 1982). The material is ubiquitous and used in roofing, fences and boundary walls across Wales. Therefore, since in these interpretations slate is tied to memory, landscape and identity using it for the Assembly building will continue the Welsh landscape and shape its identity as a national symbol. However, that the material will lend credence to the symbolic force of the Assembly rests upon the simplistic assumption that the material is found only in one condition. Although slate is frequently grey in colour, it can occur in a variety of colours. The traditional colour produced in the Cwt-y-Bugail Quarry is dark blue. The better known Penrhyn colours are lighter (also known as Bangor Blue). It may also be purple, green or cyan. Matter is much more variable, unpredictable and surprising than expected. It is neither neutral nor passively lending itself to projections of symbols. As noted by Dai Smith, there are three Wales: Welsh, English and American and ‘they are moving in different directions, and if all three survive, they are not likely to reunite’ (Smith 1993: 4). Thus, when we say Wales, we need to question which Wales; when we say slate, we need to clarify which shade of slate. There are no variable social identities projected on the passive screen of the invariable and monochrome slate. To the plurality of the symbolic we should add the multiplicity of the material.

To answer these questions, one would have to embark on a long essay about the very essence of the Welsh Nation and how to represent it with the Welsh slate. Asking ‘what does this building mean?’; ‘what does the use of glass or slate symbolize?’ and ‘what is Welsh architecture?’ guides us towards tackling essences:
the Big Ideas. However, as Gilles Deleuze (2002) notes, the question ‘what is this?’ assumes a simplicity of the essence. To reply would reduce us to answers that detail the characteristics of what something may be and contrasting this with what it is not. An alternative way to think of this is to assume that insignificant and banal details could contain the significant and the essential varying only in different properties and events. The questions to ask are rather: ‘which Wales?’; ‘which slate?’; ‘how many Welsh characters are to be discovered?’; ‘how many varieties of slate are to be found?’; ‘where and how?’; ‘how different slate can be?’; ‘how does the slate building work?’; ‘what sets it in motion?’; ‘in what cases?’; ‘what are the modalities of action of slate?’; ‘what is Wales composed of?’; ‘how does the Welsh nation work?’; ‘what are its modalities of being?’ Whenever we move the focus from the search for essences – material or national – the representational questions lead to a deadlock. There is no application to history, no symbolism, no literary game.

The Impasse of Representation

When a building is tackled through a subtle procedure of sign interpretation, we engage in a search for reciprocal relationships between signified and sign. A building appears to have an independent constant form that is separated from a distinct meaning. Asserting that a building symbolizes freedom, democratic transparency and the Welsh nation, we presume it to have a stable form. We assume that there is only one type of slate and one type of glass that reify subjective meanings and convey messages.

Buildings are much more complex than this symbolizing regime implies. Follow the controversies over the Welsh Assembly or the Reichstag and follow the tribulations of the Cardiff Opera House. Then ask yourself the questions: ‘who is the architect and who are all these actors who gather around the building in the process of its design and construction?’; ‘how many actors were involved before it was built (or not)?’; ‘how different were their voices, disagreements, and transformative actions?’; ‘how did this building see daylight?’ and ‘how was it made to work?’ You will find out, just as I have, that architecture is made up of intensive forces: actors’ disagreements, concerns and the extensive maps of their displacements. A building is not a static entity composed of symbols, but a flow of trajectories. Architecture is made up of the dramas of design and construction. It is composed of forces and events; of different materials and textures; of the discordant voices of its makers; of qualities and substances; of passers-by’ noises; and of accidents. A building is not a form but a map of all of these flowing trajectories. It is not a stable materiality, but a fabric changing according to different speeds. It is not a milieu of activities, but a navigational platform.

Mapping design controversies provides a method to sidestep the symbol-making agenda. We do not need to struggle to interpret a building, to read its texture and strive to find out what all of it means and symbolizes (Jencks 1980, 2004). Instead, there is a flight of events that makes a building possible; not a bunch of symbols that would reflect its stable surface. The challenging task for you, the architect-researcher, is to unravel the numerous internal events and conflicting conduits a building is made of.
If you find yourself meandering in Cardiff Bay, once again contemplating the Senedd and wondering, ‘what does this building mean?’ and ‘what does the architect want to say?’, you will have picked the wrong questions! Instead, let the building take you around its circuits, lend yourself to the different intensities of its rhythms and immerse yourself in its different flows. Walk slowly and then increase the pace of your stride. Try to discover, experiment and touch all of the material surfaces. You will see that nothing is really inert or passive. The architect does not want to say anything! Approval and denial are not expressed. Neither do the colours and materials speak. Wood does not mean harmony with nature. Concrete does not mean stability and eternity. Glass does not indicate accountability. Slate does not signify Wales.

Rewind the film and go back to the flow of events of the Senedd making. You will witness only speeds: slow and fast, fast and slow. As you follow the actors, the happenings, the concerns, the launching of design processes, the interruptions and the resetting, you do not question what buildings mean any longer. You do not need to unveil the symbols immediately or look for the hidden ghost of Welsh culture behind the slate, the political transparency behind the glass, the durability behind steel. The only questions you need to ask are: ‘how does this building work?’ and ‘how was this building made to work?’

Keep, as I do, a notebook to help you answer these questions and look at the Welsh Assembly with fresh eyes. You will see that what makes it work is the variations and juxtapositions of materials; the different displacements; the redistribution of thresholds and closures; runaways and impasses; the dark grey colour bonds of the floor tracing a system of connection; the network of light brown wooden modules of the ‘mushroom’ structure that form and distribute the connections; the disjunctions of colour contrasts and speeds; the reversible game of transformations, of reactions, inversions and inductions. You find it all as you wander that building. When you open your ‘controversy diary’, you will learn about the events, the actors and the networks traced by their moves. This enquiry injects that life back into a building, which usually disappears when it is built. It enacts life, circulates it and introduces a vital force. You will find it all when you ‘wander’ as the controversy film rewinds.

You may ask ‘what nourished the symbol-making agenda of architectural theory?’ The reply is that despite new drawing and representational techniques, despite sophisticated software, we still represent buildings as static objects (Latour and Yaneva 2008). The beauty of perspective drawing is a powerful attraction and is responsible for this strange idea that a building is a static structure. Perspective space was invented in the Renaissance (and made more mobile but not radically different by computer assisted design). ‘Euclidean’ space makes you believe that you are drawing a realistic description of static objects. Moreover, the confusion stems from the fact that, under this schema, the physical object is mistaken with the aesthetic object that is the one perceived. Whenever we think of a building as an aesthetic object, it becomes a flat and a static image (Leach 1999). We will find ourselves in the regime of architecture studies as Bildwissenschaft (Bredekamp 2003). The Senedd building will be a block of glass, slate and wood. Nothing more. It is stationary and, as far as time permits, permanent. You draw it, you look at it from
a distance and you take a picture of it. You spend hours inspecting freeze-framed images just as you would do gazing endlessly at a gull in Cardiff Bay, gliding high in the sky without ever being able to translate that movement onto your paper. So, you theorize based upon your observation of a static built form. This method can only understand a building from the autopsy of the original and questions it through the lens of photographic-founded knowledge. You replace the building with its images: photography reproduces the breath of artistic originality and becomes the basis of interpretation of architectural meanings. You therefore think of architecture as being only spatial.

No matter how large, overwhelming and strange the Welsh Assembly building on the first view, it makes an instantaneous impression. Yet, it is impossible to grasp this building at once. One image cannot capture it and freeze its breadth and depth. Even grasping the smallest detail cannot be a matter of aesthetic perception for it has temporal qualities. Analysing it as an immutable entity would provide the perfect *reductio ad absurdum* that separates time and space in architecture. It is believed that if anything exists in the mode of ‘space-occupancy’, it must be the building. Buildings are never immobile, still, stationary and put in space. As soon as you interact with it a complete qualitative impression emanates. A building can be understood only in a cumulative series of repetitive interactions that introduce its most enriching and defining features. There is a *continuous building up* of the architectural object.

As soon as you begin to follow, analyze and map the controversies that make a building possible, it will appear not as a static object, but as a moving project. You will trail the constant changes of actors’ moves, dynamics and shifting relations between politicians and architects, changing ways of calculating budgets and material transformations. Following this versatile process of its contested design and construction makes possible to document the *continuous* flow that a building always is. You can grasp it as movement, as flight, as a series of transformations. To reach a rounded comprehension of a building, we need to add the ‘fourth dimension’: the dimension of time. Time is the cradle for the complex movements of buildings.

Representation in the sense of expression covers all the qualities and values of any possible aesthetic experience; it reproduces forms for the sake of their reproduction. When we state that the Welsh Assembly building **represents** Wales or Cardiff’s regeneration, we freeze the building. We engage in a game of finding out what all of its materials reflect, how they express their characteristic effect upon the observer, or reflect the values of collective life (memories, hopes, and fears, sacred and political values). As soon as we ask the question ‘what kind of building is this?’ we are in the regime of definition and confined to the metaphysics of essence. The definition discloses its inward reality: that is, all of those elements that cause the building to be what it is are fixed and pigeonholed as ‘Welsh’ or ‘high-tech’ or ‘politically transparent’. But if we open the building to the experience of its makers and users, we open it to the course of events. We can tackle it as a movement by differentiating the various modes of experience as it impinges onto diverse materials and employs different media. We experience it with distinct nuances.
quality of the building is found in the process of interacting with it; in the process of following its making and the debates it triggers. It is there and sufficiently there. There is no need to duplicate in language. There is no need to fix categories, styles and essentialist labels. We are now in the regime of non-representation (Thrift 2007). All we need to ask is: ‘what does this building do?’

To avoid both the fallacy of definition and the fallacy of rigid classifications that are made as an end for themselves, you keep the diary of the controversy. You account for the events that made the building work. You ethnographically report on what has happened in-, around-, and related to-, this building over the course of design and construction. Of course, you could think of this building in terms of a particular style, but you experience it as a different environment. You could think of it as a Welsh symbol, but you experience it as any work of political architecture. You could think of its materiality, but you experience speed and intensity. Cataloguing architecture relies on static views of buildings that do not throw any light on the nature of buildings classified as styles, periods, movements, and symbolic meanings. Buildings can only be understood through meticulous studies of their specific ways of working, the worlds they generate and the worlds that set them to work. Following and mapping the controversies that buildings trigger, you will know, just as I do, is the method that captures the continuous flow of events that a building always is.
Chapter 2
On the Boundary Between Architecture/Society

The architectural historian, David Watkin, was amongst the first to note an ‘increasingly determined attempt to relate buildings to the society in which they were produced’ (Watkin 1980: 183). For decades, scholars have tried to discern the exact relationship between architecture and society. Hitherto, architectural history was presented as the unfolding of stylistic developments, iconography and perception in which the virtuosity of the individual architect was lauded. Dissatisfied with these restrictive interpretations that considered buildings only as aesthetic or technical objects (Pevsner 1976), theorists argued that the key to understanding the built environment lay with the due comprehension of the society and culture in which they exist.

What followed were attempts to show that architecture embodied societal concerns. Others were keen to remind us that buildings can generate social and cultural forms of life. Explorations of specific shapes, fabrics and material arrangements could show how the built environment either reflects or produces social life. The two distinct avenues can be diagrammatically summed up as (1) Architecture Reflects Society (Society → Architecture) and (2) Architecture Generates Society (Architecture → Society). Yet, as soon as social studies of buildings begin tackling architecture’s relationship with the outside world, they repeat the same divisive fallacy between content/context, architecture/society described in the previous chapter. Allow me to explain exactly how this impasse is maintained.

ARCHITECTURE REFLECTS SOCIETY (‘SOCIETY → ARCHITECTURE’)

Through the 1970s and 1980s, a number of studies emerged following a social constructivist agenda. They set some challenging questions: ‘what can we understand about a society by examining its buildings and physical environment?’ and ‘what can we understand about buildings and environments by examining the society in which they exist?’ Using case studies of different building types,
buildings (and the built environment) were treated as social and cultural products. Questions that had previously received insufficient attention were addressed: ‘why do buildings emerge with a particular shape, location and appearance?’; ‘what meanings do these forms have for their inhabitants?’; ‘what social or economic changes give rise to particular type of building and ‘what explains a building’s function?’ To answer them, social constructivists took it for granted that ‘society produces its buildings, and the buildings, although not producing society help to maintain many of its social forms’ (King 1980: 1).

The suggestion is that architecture and society are related in a mirror-fashion (King 1980). ‘Society’ is a separate domain of reality that can be used as a specific type of causality to account for aspects of architecture. The domain of architecture is given a solidity, durability and consistency that it cannot hold by itself. Social constructivists placed architecture as a historical subject within various contexts. This allowed them to outline its economic, social, and political dimensions and to show that it is always directly tied to economic and social conditions given both its scale of production and public use (Tafuri 1979, Ockman 1985). Below, I discuss the main preconceptions of ‘social production of the built environment’ and its specific way of exploring the divide between Architecture/Society.

A Building is a Microcosm

Let us take an example from Pierre Bourdieu and examine carefully, as he did, the architecture of the Berber house of Kabyle (Bourdieu 1971).

Bourdieu was an expert on Algerian society and a connoisseur of the mythico-ritual system and societal habits of the Kabyle people. Drawing on detailed descriptions of the plan and constitutive parts of the Berber house, he invited the reader to enter in it and decipher its world:

The interior of the Kabyle house is rectangular in shape and is divided into two parts at a point one third of the way along its length by a small latticework wall half as high as the house. Of the two parts, the larger is approximately 50 centimetres higher than the other and is covered over by a layer of black clay and cow dung, which the women polish with a stone; this part is reserved for human use. The smaller part is paved with flagstones and is occupied by the animals. A door with two wings provides entrance to both rooms. Upon the dividing wall are kept, at one end, the small clay jars or esparto-grass baskets in which provisions awaiting immediate consumption, such as figs, flour and leguminous plants, are conserved, at the other end, near the door, the water-jars. Above the stable there is a loft where, next to all kinds of tools and implements, quantities of straw and hay to be used as animal-fodder are piled up; it is here that the women and children usually sleep, particularly in winter (Bourdieu 1971: 151–152).

Against the gable wall, known as the ‘wall of the upper part’ or kanun, there is a brick-work construction in which the fireplace is found; the cooking is done around it. Opposite the door stands the weaving loom (tasga) in front of the wall. The wall where the door is located is called the ‘wall of darkness’ or of sleep. A bench, wide enough for a mat to be spread over it, is set against this wall and is used to shelter
calves or sheep underneath. Clothes, mats and blankets are hung against the ‘wall of darkness’ during the day. Bourdieu concludes that this arrangement shows that: ‘the wall of the kajtun is opposed to the stable as the top is to the bottom and the wall of the weaving loom is opposed to the wall of the door as the light is to the darkness’ (Bourdieu 1971: 152).

Bourdieu warns us that a strictly technical explanation of these oppositions would give an inadequate understanding of the Berber house. Instead, he attempts to decipher the signs inscribed in the structure and its hidden meanings and practices. He suggests that the oppositions are the centre of a whole cluster of other parallel oppositions: the necessity of which is never completely due to technical imperatives or functional requirements. The lower part of the house, dark and nocturnal, houses objects that are moist, green or raw and is the natural place of beings and activities: sleep, the sexual act, giving birth and death. This contrasts with the upper part of the house that is noble and well-lit. It is the place of human beings and, in particular, of guests; it is the place of fire and objects created by fire. The loom, the symbol of all protection, is located here and it is where two specifically cultural activities are carried out: cooking and weaving. Bourdieu goes on to argue that the lower part of the house is as opposed to the high part as nature is to culture and the feminine to the masculine. This spatial organization reproduces the sexual division of labour. Women are entrusted with responsibility for objects that belong to the dark part, while men deal with objects from the light-filled upper part. Other oppositions follow. The dividing wall splits the world of the house in two between ‘the house of the human beings’ and ‘the house of the animals’. Bourdieu notes the whole range of possible binary oppositions: fields – market; private life – public life; openness – secrecy; light – dark; life – death; male – female; outside – inside; humans – animals; heaven – earth; fire – water; cooked – raw; high – low; day – night; fertilizing – fertile; culture – nature. In fact, he concludes that:

*the same oppositions exist between the house as a whole and the rest of the universe. Considered in its relationship with the external world, which is a specifically masculine world of public life and agricultural work, the house, which is the universe of women and the world of intimacy and privacy, is haraiii, that is to say, at once sacred and illicit for every man (…) (Bourdieu 1971: 157–158).*

Following this interpretative analytical framework, Bourdieu rejects the purely technical aspects of the house and engages in a search for homologous oppositions. Yet, what he calls a ‘technical explanation’ of the house design is actually quite limited. He describes that ‘the wall of the weaving-loom, placed opposite the door, which is itself turned towards the east, receives the most light and the stable is, in fact, situated at a lower level than the rest; the reason for this latter is that the house is most often built perpendicularly’ (Bourdieu 1971: 152). Bourdieu refers only to the disposition of the wall and the direction of light. There is no mention of materials, ways of constructing, building technologies or the properties of matter. There is a striking refusal to consider the technical and material aspects as sharing one world with the symbolic ones. His search for parallels and concern to establish the oppositions between the house and the world outside it makes the
gap between functional requirements and the mythico-ritual system of meaning even bigger. The house, we learn as the oppositions unfold, is a microcosm that *reflects* the macrocosm of Kabyle society. Architecture is a world apart from the universe of the Kabyle. Matter is neutral and passive, while the revelation of hidden symbolic meanings miraculously allows us to make sense of the Berber house design.

For Bourdieu, the house does not simply *reflect* the macrocosm of the Kabyle society but also reproduces the oppositions that are found in society in its internal world. He says that: ‘the opposition which is set up between the external world and the house only takes on its full meaning therefore if one of the terms of this relation, that is to say, the house, is itself seen as being divided according to the same principles which oppose it to the other term’ (Bourdieu 1971: 159). Thus, the house is endowed with a double significance: not only opposed to the public world as nature is to culture, it is, in another respect, culture.

By exploring architecture’s *hidden* meanings and revealing the forces *behind* architecture, Bourdieu’s critical approach assumes the existence of a ‘social and mythico-symbolic context’ in which architectural activities take place. The ‘social’ is a separate domain of reality that explains architecture. However, the design of the house is not a simple reflection of the external macrocosm. Bourdieu goes on to say that:

*As a microcosm organized according to the same oppositions which govern all the universe, the house maintains a relation with the rest of the universe which is that of a homology: but from another point of view, the world of the house taken as a whole is in a relation with the rest of the world which is one of opposition, and the principles of which are none other than those which govern the organization of the internal space of the house as much as they do the rest of the world and, more generally, all the areas of existence* (Bourdieu 1971: 160. Emphasis added).

In this game of homology and opposition, the gap between architecture (content) and the world *outside* architecture (context) is maintained and magnified. The relationship between them can be represented with arrows that go in different directions and point to a complex way of positioning architecture: ‘the house is an empire within an empire, but one which always remains subordinate because, even though it presents all the properties and all the relations which define the archetypal world, it remains a reversed world, an inverted reflection’ (Bourdieu 1971: 169).

Bourdieu presents a highly detailed account of the house structure and the mythico-symbolic reality of the Kabyle society. Yet, whatever degree of detail is achieved; the explanations are so weak! As soon as the internal world of the house and external Kabyle world are separated and held at a distance, both ‘architecture’ and ‘society’ become mutually unexplainable. The analysis is best presented in a double-sided table: on the left stands ‘architecture’ and on the right we have ‘society’ (Table 1). They are linked with nothing but arrows going both ways to trace directions and inversions. As soon as we look for the ‘influence’ that society has played upon architecture and the evolution of the built form, we are not surprised to find it. Looking at this table, you may wonder how we can explain something
without trying to understand how it was made? How can explanation be gained by simply inserting architecture within larger frameworks?

Describing the contents of the house with reference to social, mythical, and symbolic context does not help us to understand its architecture. It only moves the arrow from one side of the table to the other; from internal to external; from microcosmic to macrocosmic; and from one guaranteed entity to the other. Eventually it comes back to make inversions of the worlds that are represented.

In fact, Bourdieu's seminal analysis performs an act of reducing architecture to the social. The house is an ideal abstract matrix; material and technical ‘flesh’ is missing. Different kinds of social activities are embodied in its architectural forms. To explain architecture by social influences and macrocosmic organizations limits Bourdieu to analyses of one type of factors. To follow this method leaves us reluctant to surprises. We sift the content of architecture with the filter of its ‘social and symbolic environment’. We tackle only its ‘symbolic and cultural’ dimension. Yet, the house has many other dimensions! Architecture’s content is richer than the one of societies, social groups and factors. Why reduce it?

The critical approach of Bourdieu assumes that as soon as we unveil the structure of the house to reveal its logic, we are immediately afforded access to the gender differentiations, labour divisions and mythico-ritual systems. In short: Algerian society. One simple rhetorical move attaches symbolic meanings to architecture’s distinct technical fabric. Spiritual atmosphere is added to what is otherwise neutral and passive matter. Without this, architecture is only nature. Culture and nature; society and architecture; they are presented as two separate worlds. One implicitly and ideally contains the other. One stands behind the other. The possible stands behind the real: the symbolic stands behind the objective.

A Building as Embodiment of Global Forces

Anthony King chose another dwelling type, the bungalow, as an emblematic case to explore the relation of the built environment to society. As a separate single-story, single-household dwelling that emerged in India it soon spread across the globe. King set out to query the cultural history of the bungalow and the conditions that produced it. He analyzes the social and political symbolism of buildings and architecture by taking into account the influence of economy and culture on this dwelling form and, in turn, its effect on economy and culture. As well as aiming to assess its meaning and significance he wanted to understand how the term ‘bungalow’ and the phenomenon came to exist on a global scale. To do so, he employs an interpretative framework that considers them as the products of society and culture, in the spirit of the political economy of urbanization.

While King takes climatic reasons into account, he attaches greater weight to the significance of societal factors. ‘The nature of Anglo-Indian society and the activities of its members,’ he observes, ‘were instrumental in the evolution of the bungalow and its distinctive location, appearance and form’ (King 1980: 49). He argues that India’s long period under British colonial rule was translated into the built environment; of which the bungalow was the most representative element.
was also part of the larger process by which goods and labour were incorporated into metropolitan economy.

Wherever the bungalow was found, it contrasted with India's native and regionally differentiated types of house. As it spread across the country, it was ‘equally a social and cultural phenomenon: the colonial settlers formed a particular social organization and their dwellings, lay-outs and settlements, including the incorporation of indigenous peoples, were a product of this organisation’ (King 1980: 258). So, the bungalow became symbolic of colonial housing and urban development. In an attempt to overcome one-sided interpretations of the bungalow as a physical and spatial form, King argues that it was ‘an attitude of mind, institutionalised in Public Works Departments and lasting long after colonial rule’ (King 1980: 59).

As the building type travelled around the world, it also changed meaning and symbolic power. When introduced into Britain in 1869, the bungalow was ‘a product of prevailing ideas about property, but also about health, behaviour and the division of a society, increasingly divided, both socially and spatially, according to class’ (King 1980: 65). Its transportation to the seaside provided good example of the way in which the forces behind industrial capitalism acted: new environments and modified building types were generated because of a need for new investments and profit. The bungalow phenomenon represented the consumption of surplus wealth in the second home, the expansion of leisure resorts and outer suburbanization. Britain was, at a time, undergoing the processes of urbanization and suburbanization that were associated with the massive accumulation of capital as a result of industrialization and colonialism (1870–1914).

King convincingly shows that the plain and horizontal forms of the British seaside bungalow can be explained by a drive towards consumption and specialization. As a holiday home for the middle class, it was a social product of the material excesses of the time and reinforced class distinctions. By the early decades of the 20th century, developers of the outer suburbs adopted the bungalow as a permanent dwelling type. Here, it became invested with new symbolic meanings in which the physical solitude of the form represented the highest echelons of the ‘flight from the city’. At a time when social conventions were in flux, the bungalow came to embody Bohemianism and the ‘simplification of life’ (King 1980: 91). Its followers rejected city life to live in communion with nature. The bungalow became the symbol of ‘counter-urbanization’. More developments of this low-rise housing peppered the countryside and reinforced social divisions between town and country. The bungalow metamorphosed from holiday home to permanent house by the transference of the ideology which first brought it about: the idea that one could live close to nature in a ‘simple but artistic home’.

King examines the emergence of the bungalow in different cultures. In America, it cannot be understood without following the emergence of the suburb as a social and spatial phenomenon. The 1920s bungalow heralded the beginnings of the consumer-oriented American home, with its problematic tendency towards residential segregation. It soon became the distinctively national type: the first truly suburban vernacular. A number of forces were significant in producing this state:
an unregulated free market in land transactions, the capital surplus created by
industrialization and its selective appropriation by a wealthy bourgeoisie. Railways,
trolley buses and automobiles made suburban expansion possible by investment.
In American culture, the bungalow was seen as an expression of the genuine
protest by an artist-intellectual class, with no great means or second home, against
capitalist materialism. Yet, in Africa, the bungalow was the setting for the ‘modern’
nuclear family, characteristic of the elite and middle-class.

These examples lead King to conclude that the different bungalow styles
resulted from a variety of forces that acted upon and shaped the built environment:
geographic (climate, topography), social and cultural (kinship forms, values,
world views) or economic and political. Although found in many variations, the
bungalow ‘was one of the, if not the, first common house-types (particularly in
terms of function as suburban and temporary, vacation house dwelling) to break
national boundaries and become part of an international, through capitalist urban
culture’ (King 1980: 259). The history of the bungalow symbolizes the reaction
to urbanism in different societies. However, unsatisfied with purely ‘cultural’
explanations, King draws attention to equally important issues of supply-and-
demand, land ownership, the right to private property and the principles behind
the organization of the state. At every developmental stage of the bungalow as
a type, King examines both economic and social factors. He never considers the
bungalow to be mere shelter or physical object, but always a symbol. Hence, the
bungalow is an expression of the tenants’ status or the social cohesion of the group
or a symbol of independence and social prestige.

King concludes that the bungalow represents social changes. It is demonstrative
of the social production of building forms that explains the built environment
with reference to ‘culture’ or ‘political economy’. King also considers the way that
buildings are perceived. Social meaning is attached to the built environment and
subsequently affects social practice. Curiously, analysis of the various methods of
construction related to the bungalow type, the building technologies developed,
its materials and functionality are missing. Yet, we have no doubt that they also
varied along with the symbolic interpretations of the building type. If regional
variations in social and historical forces have shaped the bungalow, why are other
factors neglected? Why is geographical variation primarily treated as symbol
variation? There seems to be an assumption that the built environment can only
be understood by analyzing the social and, especially, the economic base and its
relationship to much larger changes in society.

What is Wrong with ‘Society → Architecture’?

Social studies of architecture credit form and appearance as due to the diffracted
presence of ‘society’. Social, religious and political life is played out on the
‘projection screen’ of the built environment. Design and planning is better
understood if ‘social dimensions’ and ‘social conditions’ are added. Building
shapes, types and styles are embedded in the social context of their time. They are
representative of the political climate of an époque and its intricate power and
economic interests. ‘Social influences and limitations’ are brought in to explain difficulties in architectural processes and shifts in architectural forms.

There are some deficiencies in this approach. First, there is an assumption that providing explanation is inherently good. Second, they look for whom or what was responsible for buildings, always seeking to establish causes and effects. Third, this approach does not seriously tackle materials, construction patterns and building techniques. The divide between building materiality and technology, and social symbolism is conserved.

Bourdieu explains the Berber house by referring to the mythico-symbolic structure of the Kabyle society. King’s main intention is to explain the bungalow as it emerged in India and then spread as a global building type. As with the bungalow, other notable social studies of buildings have tried to place building types within a spectrum of economics, politics and social practices. This is believed to be capable of explaining the success or failure of architectural projects; why a particular style emerges or vanishes at a particular moment of time or to shed light on urban dynamics and city developments. Stefan Muthesius explains the English terraced house with reference to the legal estate patterns, and the dwelling habits and culture of the British (Muthesius 1982). Andrew Scull explains the emergence of the asylum building by the particular societal arrangements of 19th-century England (Scull 1980: 37–61). Adrian Forty draws on historical and sociological studies of the emergence of the medical profession to explain the changing form of hospitals and the increasing social position and power of doctors (Forty 1980: 61–94). The main drive of these studies is always to explain architecture. Explanation relies on causation. Therefore, explanations of architecture need to establish some sort of relationship between two lists. The table below reproduces this. The right-hand side (B) comprises an inventory of the elements to be explained. The left-hand side (A) consists of a repertoire of elements that may provide the explanation for B.

Table 1

<table>
<thead>
<tr>
<th>A – Society</th>
<th>B – Architecture (buildings)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social needs</td>
<td>Forms</td>
</tr>
<tr>
<td>Economic, social, political, religious and cultural factors</td>
<td>Style</td>
</tr>
<tr>
<td>Society’s ideas, forms of economics, social organization, distribution of resources and authority, beliefs, values</td>
<td>Size</td>
</tr>
<tr>
<td></td>
<td>Appearance</td>
</tr>
<tr>
<td></td>
<td>Location</td>
</tr>
</tbody>
</table>

List of elements to provide explanation | List of elements to be explained

Classification into two categories allows us to see what architecture is and what society is. In this table, architecture is autonomous and easily distilled into one list. Of course! Yet, there is no persuasive reason to keep each list entirely distinct other than the unwarranted assertion that we explain events by reference to their causes. Why should a list of social elements, which can be related in one-to-many connection, provide the explanation of some built environment elements and
building feats? Why do studies of architecture assume that it can be explained by outside factors? Why are these explanations believed to be necessary? How do we know when an explanation is good? When does it become weak?

The danger of trying to explain architecture with the social sciences is that social theory is used to add philosophical window-dressing to technical feats. To do so, it strongly reproduces the division between architecture as technology, form and efficiency and architecture as social symbols. This distinction is far too neat. Homogenous lists are artificial constructs. To compose them and maintain that social elements (class, gender divisions, symbols, myths, beliefs) are separate from non-social ones (grids, walls, separations, doors, barriers, openings, closures), is a fanciful creation.

What I find to be particularly problematic with these lists is the implicit role given to the social sciences: they are expected to provide the solutions. It is assumed by these theorists that the social should be explanans and occupy the position of a cause. Architecture is the ad explananda which is reduced to the role of effect. Yet, science studies have shown that the social sciences are part of the problem (Callon et al. 1986). Hence, social sciences will not lead us to a better understanding of built environment. We need to reject the argument of cause and effect. We should question the assumption that casts social factors as the cause, while architecture is reduced to playing the effect. Have we ever really asked ourselves why it is buildings that always need to be explained? Why do we ask who is responsible, who is innocent or who and what is to be accused? Why do we always seek for cause and effects? Why do we search for explanation? Should we explain architecture at all? If we can’t find satisfactory answers to these questions then the regime of causation will need to be reconsidered.

By attempting to explain buildings (their shapes and variations), architectural theorists reduce elements from B to one element from A. Yet, no explanation has ever consisted of anything more than a disproportionate amount of heterogeneous, historical and contingent elements. There is an inherent contradiction in trying to explain the development of building forms and architectural styles with the resources of the social sciences; architecture uses a reservoir of notions, which do not always translate easily into the social. Moreover, as Bruno Latour (1988) argues the social sciences are part and parcel of the activities that we want to study; they are part of our problem, not the solution. Put simply, all of the elements from list A equally require explanation; they cannot be brought in the story as fixed explanans. And, if social factors and influences need to be explained then ‘society’ does not have the stable reservoir of meanings to explain architecture. If what is left to be explained is – ‘everything’ – then explanation cannot be a realistic nor a desirable goal any longer.

ARCHITECTURE GENERATES SOCIETY (‘ARCHITECTURE → SOCIETY’)

Some scholars have inversed the explanatory scheme of cause and effect to regard architecture not only as a reflection of society, but equally capable of affecting
people’s behaviour and shaping societies (Foucault 1979, Evans 1982, Markus 1993). The physical shape of buildings, their sightlines, material arrangements and dispositions are interpreted as important for facilitating the establishment of particular social relations and practices.

The Prison as an Instrument of Society

Robin Evans examined the emergence of a new architecture of reform in the English prison between 1750 and 1850. He argued that it was only in the late 1700s that architecture was believed to be a serviceable weapon capable of aiding a war of attrition against vice; an instrumental relationship between architecture and morality emerged. This departs from the familiar theory that buildings could represent virtue in their visible form.

Evans explored two elements of prison architecture. Firstly, the façade served as a medium for transmitting the meaning of the building, a place of punishment, to the wider public. Secondly, the interior arrangement was designed to give a specific shape to the institutional life of the prison. Using these means allowed Evans to question whether or not there was a relationship between the form of the building and the events that take place within it; one that establishes the prison as distinct from other buildings. Consequently, he suggested that the different prison structures generated different type of social life.

It is easy enough to see that architecture fixed the shape of experience in the 19th century prison. But surely this is what architecture does in any case; perhaps more gently, in more familiar scenery, with more commonplace elements (Evans 1982: 9).

For Evans, the prisons were far more than places of punishment. They provided sites for the development of an architecture that would, for the first time, take full advantage of its latent powers. Architecture was made capable of shaping society (-ies) and giving pattern of social activities! Here, social studies of architecture are inversed: it is not enough to explain architecture with social factors but there is an acknowledgement that architecture gives shape to social experience.

Exploring the degree of correlation between the design and spatial arrangements of prison buildings and the nature of prison life in 17th- and 18th-century England, Evans argued that only at that time, it became possible for architecture to condition the shape of experience and to make possible particular types of punishment to be executed in the prison buildings and with their help. Drawing upon Evans’ work, I sketch out some of these types of prison below.

Monastic prison was based upon the principle of solitary imprisonment through the architecture of cells. A work room trained prisoners in useful labour but inmates only came together only for religious observance of matins, lauds and vespers. With this particular arrangement, the monastic prison served as an apparatus for establishing solitude; it was efficient in exercising punishment through isolation.

The penitential prison was also an ecclesiastical tool to exercise punishment. The strict solitude that guided practices in the monastic prison was replaced with
the rule of remorse. This was believed to transform the moral state of offenders. This type of architecture restrained criminals by discipline, not punishment. This discipline rested upon new foundations: silence, solitary confinement, exposure to religious ritual and, behind them all, architecture.

Theories on moral correction were not the only issue in prison design. Between 1775 and 1795, concern over disease prompted buildings that were planned in such a way that they could not harbour putrid air. Hygiene and airiness could be achieved through adequate ventilation. For security reasons, these modified prisons were stark, solid and unfenestrated towards the street. Towards the interior, they opened out into arcades with an open courtyard and made provision for running water and drains. Although the demands of health and open planning were not always compatible with the demands of security and seclusion, the reformed prison allowed architecture to become an instrument in preventing the propagation of fever and promoting physical health.

The reformed prison also relied on demarcation and division. Prisoners were isolated during the night in cells. Sections of cells were divided according to social distinctions such as wealth and status. Even more distinct separations were made upon moral grounds: compartments were used to isolate males from females and felons from debtors. Each group was restricted to movement within its own quarter. These cells and divisions endowed prison buildings with the power to prevent the more insidious propagation of vice, and to promote moral health and assert moral authority.

The utilitarian philosopher, Jeremy Bentham, developed his own version of the prison. Known as the ‘Penitentiary Panopticon,’ it also relied on the isolation of the prisoners in solitary cells and, later, in compartments for three or four. Prisoners were rigorously disciplined through work. But one feature set the Benthamite panopticon apart from its predecessors: the inspection principle. Incorporated fully into the mature scheme of 1791, the prison governor was located in a central tower and spent his time watching both prisoners and their guards. The daily routine of the prison guard involved the regular inspection of inmates. Guards were provided with a portable writing desk and stool to record any irregularities and infractions. They traversed inspection passageways that were designed to render them invisible to the prisoners. Prisoners were sequestered from one another but were under surveillance from the invisible guards. Even the transactions between guards and prisoners were observed from the governor’s citadel. There were three levels of authority in the hierarchy inscribed in the prison structure. Firstly, knowledge was concentrated; secondly, through knowledge, power was placed exclusively in the hands of the governor; thirdly, this arrangement ensured that the power of the pantopticon not only extended to punishment and reform but to divide and control human behaviour. Concealment, oversight and eavesdropping made the ‘omnipresence of the governor’ possible and hence, the ‘omnipresence of power’; thus, the Panopticon defined the power structure within it. Surveillance became the source of morality. This is an example of how architecture was used to generate and stabilize a social order.
The discussion above shows that the large variety of prisons in 17th- and 18th-century England did not simply reflect society. The prison building generates different forms of imprisonment and social practices. Its interior arrangement gives a specific shape to institutional life. Whatever its aesthetic merits, architecture was the sole medium capable of transmitting the character of the building to the prisoners inside and to the public outside. Buildings were thought to be endowed with a specific authority that could be redistributed throughout their inert and seemingly passive bodies to become flexible mechanisms for exercising power and controlling human behaviour. Prison architecture could shift vice to virtue and transform evil consciences. Prisons kept people apart and had a special ‘agency’ to divide, isolate and prevent communication without engaging in any attempt to reconnect their users. This is an architecture comprised of apertures, barriers, interceptions and distances; not of space, volume and surface. Architecture had a grand aim, argues Evans (1982), ‘to maintain society as a whole’.

What is Wrong with ‘Architecture → Society’?

The ‘Architecture → Society’ studies do not use society to explain architecture. Instead, our example of the prison shows that moral aggregates, imprisonment and punishment (the social) can be explained by the specific spatial and structural arrangements provided by architecture. The question of how people and their social relationships are affected by the built environments comes into view (Rapoport 1977). The main concern is to explore what architecture does. A new role is attributed to architecture: as a ‘pattern giver to society’ rather than just the traditional limits ascribed to it either as an art or as a prosaic utility’ (Evans 1982: 9). That is, a different interpretation from the familiar theory that buildings could represent society in visible forms.

However, these studies remain locked in a search for who and what is responsible in bringing about a certain state of affairs or the size, appearance, location and forms. They strive to establish causes and effects. The only change is to reverse the direction of the arrows that connect the two sides of the line, which separates architecture and society. Architecture is now the element that we know (the cause), and society is the effect that it can generate. Even though the explanans and the ad explanaans have switched places, the two abstractions called ‘society’ and ‘built environment’ remain.

Recent studies on building types have pursued a stronger agenda in which architecture shapes society and social practices. Both parliamentary buildings and scientific institutions are shown to influence social practices (Heurtin 1999, Galison and Thompson 1999). Architecture is given greater conceptual weight to produce, transform and transmit knowledge. In these Foucauldian studies, architecture remains in ‘an instrumental relationship with society: buildings are mechanisms for exercising power through invisible control or punishment; they express, give room for, sustain, deny or produce social connections and facilitate social practices. This understanding rests upon the assumption that power can be invested in places as well as people. That authority can be redistributed throughout the inert body of a
building to increase its scope; buildings become important devices as ‘architecture’ and ‘society’ switch the sides of cause and effect.

There is an important correlation between the social and physical shape of buildings: physical shapes are tools for establishing social realities. Yet, despite focusing upon the physical form of prisons, these studies sidestep an in-depth examination of buildings’ materiality and technical performance. There is no discussion of construction, technologies or other crucial design matters; materiality is treated as passive, inert, neutral. Meaning is at a cosmic distance from materiality. The physical shapes of buildings are constructed around an abstract matrix similar to the conceptual grid of symbolic and cultural projections that underpinned Bourdieu’s study of the plan of the Berber house. In their attempts to credit buildings with the capacity to generate social practices, these studies still ignore the multiple dimensions of materiality, the pitfalls of design and construction, the technological challenges of building processes. The divide between technology and social performance remains impregnable.

Both of these strands of architectural theory (Society → Architecture and Architecture → Society) take one of our two categories and use it to explain the other. In the first case, buildings are the submissive mirroring surfaces of societal changes. In the second, they are vigorous instruments in the hands of societies. Yet, both approaches, by either neutralizing or instrumentalizing the built environment, fail to reveal its specificity and actual dynamics. Both traditions think it needless to account for buildings materiality and their multidimensional, active, and unpredictable nature. They denounce the uncertainty of design and construction processes, as well as the building methods and techniques that make architectural objects possible as being trivial realities. They remain both incapable of conceptualizing the gestures of making, the traces of time transformation, the meanders of design processes and debates. Both traditions assume that architecture stands on one side of the sacred barrier separating it from society. The divide is difficult to cross.
Modernists divide between content and context and between reality and rationality. These divides are not only alive in architectural theory but vividly maintained by all the versions that the social sciences developed around them; particularly critical theory. Critical architectural theory has provided us with numerous examples of the oppositions society/architecture, nature/culture, reality/rationality (Borden and Rendell 2000, Leach 1997, 2006, Beaumont and Dart 2010). They do not seem to disturb critical thinkers. Or, at least, they rarely do. Jeremy Till is the exception and his Architecture Depends (2010) is pioneering in this respect. Till also notes that the divides are problematic: ‘In this modern age, architecture is evaluated against strictly “objective” criteria derived from the natural sciences (function, proportion, rationalism, technique) or else against strictly cultural criteria as a pure creation arising _ab initio_ (aesthetics, the metaphor of foundations and its deconstructive undermining)’ (Till 2010: 56).

Despite this, architecture is still explained today using the symbolic lens of the macro universe it can reflect and within its mythico-ritual system. Architecture is thought to be affected by the social, political and economic framework of society. It seems that 34 years after the analysis of the Berber house by Bourdieu, the bungalow by King and prisons by Evans, architectural theory and criticism have not moved an inch from playing this game of interpretations, of mirror reflections and inversions, of symbol finding and comparisons, oppositions or revelations. With an ambitious task that aimed to provide a space of imaginative abstraction outside of the immediate remits and dictates of architectural practice, the critical theory assumed that ‘architecture is an activity that is capable of being understood only in wider comprehensions of cultural production’ (Borden and Rendell 2000: 5).

A building’s meaning can be grasped only when we unveil the hidden social determinants behind architecture. We are expected to engage in a critical reading of architectural objects and processes. If we express this in the language of our table from Chapter 2, we need to establish correspondence and correlations between the list under A and the list under B. A critical analysis consists of making visible the
ingredients of list A behind the ones in list B. This transforms the technical feats of architecture into signs. Yet, these revelations and the search for signs lead critical theory to reproduce the divides.

The very existence of two separate lists that place architecture on one side and society on the other is problematic. The divide that holds society and architecture paralyzed is unacceptable and intolerable because it hinders our understanding of the world. Whenever architectural theory takes inspiration from sociology, it inevitably leads to sociological reductionism. The vision ‘architecture reflects society’ is a myth: our myth. A myth maintained in architectural theory for so long and still repeated in refrain. This phantasmagorical understanding leads to an absurd reduction whose dangers we remain afraid of understanding; whose challenges we need to face. There is a need to entirely reshuffle the notion of a ‘social’ explanation; it must no longer be seen as the replacement of several elements in the infinite repertoire of features of the built environment by one or two factors taken from the list of the social objects. Architecture should be understood not as buildings and artefacts but as processes performed on a texture of uncertainties (Till and Schneider 2007). It is no longer something to be explained by hidden social causes, just as material determinism will not suffice. Having established that the bifurcation Architecture/Society is to be reshuffled, the following questions naturally arise: how can we conceptualize architecture differently? How can we make accounts of architectural objects and practices without falling into the trap of the abstract divides nature/culture, society/architecture? What is the alternative to critical architecture?

CRITICAL ARCHITECTURE: TODAY?

Drawing inspiration from historians and sociologists of architecture, critical theories share the belief that there is a context where architectural events and built forms could be situated. For sociologists, the context is composed of social forces that can explain the events; for historians, the context is made of events solidly arranged in chronological lines and frameworks. They both believe in the difference between context and content.

Hilde Heynen (2007) notes that there are two different understandings of the notion of criticality in architecture: one errs towards the socially motivated and the other is more aesthetically motivated. It is also a distinction found in two notions of critical architecture. Firstly, the ‘American’ one, defended by K. Michael Hays and Peter Eisenman, is closer to a modernist and elitist outlook. By contrast, the ‘European’ understanding, supported by Heynen, ‘is closer to an avant-guard ideal of overthrowing the separation between art and the everyday’ (Heynen 2007: 51).

Developed initially by the Frankfurt School (Max Horkeimer, Theodore Adorno and Herbert Marcuse), the socially motivated European version of critical theory does not accept social reality as it is but questions its legitimation and justification. The ambition of these critical theorists is to explain architecture with reference
to society. What is more, they aim not only to explain but to do so in a way that changes social realities and develops design alternatives to achieve a humane, just and emancipated society.

By *displacing* the conventional objects of study and challenging them by referring to ideas from *outside* architecture, critical theory became dominant in architectural discourse during the 1980s. With its self-reflexive approaches and ambitions to change the world, it also followed later developments in poststructuralism, feminism, deconstructivist and postcolonial theories. Arguing against one-sided interpretation of buildings as aesthetic or technical objects, critical theory was wedded to an assumption that a ‘social context’ existed where architectural and urban activities took place and which could explain their meaning and relevance. They imported concepts from the critical sociology of Pierre Bourdieu, the deconstructivist approach of Jacques Derrida or the archaeology of Michel Foucault. They believed that the main goal of architectural theory consisted in *unveiling* the hidden mechanisms, constraints or representations, principles and forces *behind* architectural objects, projects, and urban developments. They suggested that existing conceptions of architecture needed to be replaced by theoretical concepts *outside* of it in order to challenge conventional interpretations. They considered their readings to be ‘broader and more inclusive’ that generally addressed social, economic and political factors.

For critical architectural theorists, dealing with the external factors specific to architectural production and, more generally, cultural production ‘maximizes the opportunity to learn all that architecture is and might be capable of’ (Borden and Rendell 2000: 15). They presumed that could critically reflect upon their social condition through their mimetic relation with programme, site, materials, historical and social context (Heynen 1999).

‘Critical’ derived from the critical theory, which, for K. Michael Hays, meant ‘the constant imagination, search for, and construction of alternatives’ (Hays 1984). In desiring to change the world, he argued, architectural design should be resistant and oppositional; the activity of architectural criticism should be openly critical as well. Critique is not a synonym of criticizing (that is, expressing disapproval of something); it is a social form of criticism that involves careful examination and judgement of architectural production. It has a specific purpose, which is to provide a commentary (a social and historical context, a judgement, an explanation, a discriminating point of view, a response, or even a point of departure) on a cultural work – art, literature or architecture’ (Rendell et al. 2007: 4). ‘Critical’ means to be attentive to the socio-historical, cultural and economics conditions of the production of architecture and architectural knowledge; it denotes a specific reflection on the limits, conditions and possibility of knowledge.

Although dominant for decades, critical architecture was recently challenged from a north American perspective; architectural theorists engaged in a vivid defence of the ‘critical project’ against the so-called ‘projective one’. Their rationale was that architectural design would always be needed as a tool for solving the problems of an oppressive and unjust world; consequently they argued that critique was still needed.
Too busy protecting their intellectual territories, nobody has disturbed the status quo to critically question our very understanding of society! Too concerned with the impact of architecture on societal change, no one has yet checked the critical project’s ‘expiration date’ against the speed with which ideas about society have developed. Societies have dynamically changed in the past decades; but so have the social sciences! The very notion of society has been rethought many times: after Marx and then after the Frankfurt School. The term ‘society’ has been reshuffled outside the ‘capsule’ of the ‘critical project’ by authors such as John Dewey, A.N. Whitehead, Gabriel Tarde, Gilles Deleuze, Bruno Latour and Peter Sloterdijk. Alternative social enquiries were devised (Latour 1979, 2005) and, when applied to architectural theory, proved their heuristic potential (Callon 1996, Sloterdijk 2005, Picon 2010, Houdart and Minato 2009, Carpo 2004, Yaneva 2009a, 2009b). They have succeeded using new methodologies not merely borrowing theoretical decors and they have enriched the fragrances of contemporary architectural theory.

My aim here is not to find fault with critical architecture; although I am conscious that refusing to engage in a critical analysis of architectural controversies may be read as my disapproval of the critical method. I only wish to leave it aside, just as I do with a product that has passed its sell-by date and lost its freshness. Not only has it lost the power to affect me, its extra chemicals are an irritant. Directly engaging in an appraisal of critical architecture will only accelerate allergic reactions that I do not wish to aggravate. I start from the puzzle: critical architecture spent decades arguing for the transformative power of architecture without showing a willingness to respond to new trends in the field they were mostly borrowing from: the social sciences. Why? Critical architecture pleaded for explanations that improved social reality without questioning for a moment either the need for explanation or the very meaning of the social. Why? They took it for granted that social reality is something that we all know about; it is ‘out there’, ready to explain architecture and to submissively lend itself to the transformative agency of architecture. They held the concept of society to be fixed and only questioned architecture and its relationship to it. They were confident that they knew what society is made of, what social conditions stand for and how to act upon the social in a concerned and transformative manner. They reckoned that it was sufficient to assess discourses and facts (not practices and processes) from the point of view of their relation to social reality. They took architecture and society as static entities.

I absolve myself of the need to be critical, i.e. here I sidestep an analysis of the social and historical conditions that made architectural theory receptive to that particular version of social research only – the critical one. I simply argue that architectural theory should update what it borrows from the social sciences just as it has done in the field of digital architecture (Picon 2010). My modest ambition here is to show that there is a different way of doing social sciences-inspired research in architecture: one that is pragmatist, realist and irreductivist. One that relies on a radically different understanding of the social. One that also makes possible a different way of teaching architecture.
THE PRAGMATIST ALTERNATIVE: NOW!

Pragmatism assumes that architecture cannot be reduced to *anything*. It is real on its own; it has actors, bodies, machines, technologies and groupings all belonging to it. While critical architecture allows for reduction and it constructs the world on the basis of givens, the pragmatist alternative is irreductive. It ‘does not admit the reduction and discovers the world that is left on its own’ (Latour 2001: 287). Reducing architecture to presumed knowns fixes it into predefined roles. If it cannot be reduced, it is left in a perpetual state of ‘what happens’; there are constant hesitations, meandering, trails, attempts and translations. No building can be defined outside of ‘what happens’ to it, outside of its making, outside of a controversy. By the same token, design defines ‘itself’, emerging from its participants and objects. This means that we need to rely more upon the actors’ language; similar to the methods pursued by a semiotician or an ethnomethodlogist (Lynch 1993). By doing so we access different hypotheses on what content and context, society and architecture are made of.

There are no correspondences, no reductions, no search of equivalences, no true exchange between the A and B lists in which the world is ordered according to principles, origins and causes. If we only search architecture for the ultimate symbol of ‘man’s conquest of nature’ or for hidden subjectivities and unconsciousness, we miss the extent to which the many actors involved in making architecture rely on the technical, material and non-human world as much as they do on each other. Instead of sticking to abstractions and embracing a subjective and individualized vision of architecture or a purely objective and technological vision of its materials and functions, we follow and account for architectural processes. Pragmatists trace architecture as it unfolds in time and reveal architecture on the move.

How can we understand and account for design *in concreto* without tracing the paths and flows of a variety of actors – both human and non-human – that circulate within them? What does it mean to follow all of those actors that make architecture possible, even graspable? A better understanding of architecture can be gained by literally keeping our compass sights on the paths through the processes triggered by buildings. Keep following the routes that link humans with the natural world, the subjective with the objective, the small with the big and the architectural with the social. To miss these traces and fail to account for these paths is to miss understanding architecture.

A pragmatist approach to architecture will shift architectural theory from its complacency and its ‘strong’ programme that takes society and architecture as givens; clear, framed and secure. It moves to a radical programme and highlights the ‘weak’ and indecisive sense of architectural processes, but opens it up to the ‘happening of things’. The pragmatist view is respectful of the actors’ own understandings of shared meanings and the practices and procedures they undertake to detect these meanings. Pragmatism refers to a set of processes that helps us to understand what gets actors concerned about the design of cities and buildings and how they become attached to things, situations and moments, while simultaneously sharing and discussing concerns with others.
A pragmatist understanding helps us to rely on the properties of architectural objects – which, far from being given, have to be deployed in order to be grasped – as well as on the techniques and devices necessary for architectural objects to act in a situation. This means taking the multiplicity of matter seriously. Matter is neither neutral nor passive; it is significantly more active and vibrant than symbolic interpretations of architecture present it. In a spirit of a ‘culture that has been impregnated with platonism’ (Dagognet, 1989), matter and its transformations have been steadily disregarded. The multiplicity of materials that we glimpsed during the slate story of the Welsh Assembly controversy and in the glass story of parliament architecture (Chapter 1) is too often forgotten by mainstream architectural theory. Waste is also ignored (Dagognet 1997). The solid and static are treated more favourably than liquid states of materials; the durable receives more attention than the fragile and the vulnerable. When dealing with the symbolic human aspect architectural theory has systematically neglected the role of materials and undermined the importance of matter.

Far from needing a spiritual atmosphere or a symbolic aura that will make sense of its ‘simple nature’, matter has a rich and vibrant life on its own. This life can only be described using the term ‘materiology’ (Simondon 1989, Souriau 1956, Dagognet 1989). Materiology is the variability of matter. It does not consider the materials scientifically (analysis of the structure of architectural objects) or poetically (an interpretation that is based on words and poetic meaning). Rather, materiology accounts for the full deployment of material qualities: the unexpected surprises, the technical gestures of the maker, the unforeseen consequences and the underestimated properties of the materials (Yaneva 2009b). You see, just as I do, the pertinence of considering material variations when we follow architectural processes and the importance to account for them as phenomenal ensembles.

Follow how architecture happens, watch how matter acts, witness how actors attribute meaning to their actions, track design processes as they unfold (Houdart 2008, 2009, Yaneva 2005, 2009a) and you will witness buildings that are not made by powerful minds; that are not meant to symbolize, but architecture that emerges as it traces many intricate relationships with slate, steel, glass, with materials and technologies.

Follow the Kabyle people making a house, not the house when it is made. Follow them using a house, not the inert used object. Explore the house as it unfolds and the experience of interacting with it: do not deduce this from its layout on plan. Then you will understand the limitations of the static understanding of architecture offered by Bourdieu. You will discover that there are not two separate worlds. There is not a world of the possible behind the real or a world of the symbolic behind the objective or society behind architecture. Following all of the actors involved in the making of architecture will allow you to witness them straddling these sacred divides. You will understand how they are arbitrarily assigned into provisional categories that we call ‘house’, ‘built form’, ‘architecture’ or ‘social context’, ‘social environment’, ‘society’. You will realize, just as I have, that to place them in these categories misrepresents them. There is no real house structure on one side, and symbolic meaning and social and cultural significance on the other, or behind it,
simply waiting to be unveiled. There is no architectural content on one side and, at a cosmic distance, social context on the other. Following what happens to buildings and how design protagonists define themselves as they act helps us to circumvent static categories and redistribute artificial divides.

Suspend the zoom, multiply the adjunctions between the different views, re-localize the sites where one can follow the making of a building and you will see a building that is invisible prior to its study; a building that cannot be grasped in a panoramic way, but only through a number of narrow circuits between humans and non-humans (Latour and Hermant 1996). It is a building that is to be composed and aggregated (Zitouni 2010). Do not rush into classifying and inserting what you see into contextual frameworks, pre-defined lists and categories of explanation! Just follow and describe, describe and draw, draw and map! Neither the building nor the context will appear to be static. Architecture will appear neither as infrastructure nor as a frame in which we situate moving subjects and project subjectivities, identities, roles, and meanings. Architecture will become a moving target.

BACK TO CARDIFF BAY: NOT SOCIETY, BUT MAKING ‘SOCIAL’

Let us reconsider our Cardiff example: the making of the Welsh Assembly. We have established that attempts to understand and explain architecture with determinants outside of it fails to account for the dynamics of contemporary architecture. The Welsh Assembly provides a good illustration of this. As we flip through our press clippings and other documents on the controversy, we see that building projects and designs unfold to their own logic. Hence, their inner drives and puzzling aspects must be considered with care.

Following the Welsh example, we see that the difficulties of this project cannot be explained by invoking a social force such as bureaucracy, political disagreements and economic difficulties. The question is not how to explain architecture by referring to the social sciences and substituting building forms with social dimensions. Substitution and reduction will not lead us to a better understanding of the Welsh controversy. The aim is not to explain, justify, or reduce a building but to deploy its reality.

It is important that we change the entire regime of explanation. ‘Explanation’ – yes. But why should it always be ‘social’? The Welsh Assembly controversy shows that the materiality of this building is as complex as the world of its symbolic interpretations. Yet, adding the material multiplicity to the symbolic multiplicity will only produce a bigger mess. The muddle will proliferate as we trace every actor that partakes in the controversy, track every place that they have visited, follow every difficulty that they have had and map every single concern, every statement, every alliance, every animosity and the shaping of every new association. By following this highly contested building we gain access to the social and the architectural in their fluid states. Only when we are in the midst of this process can we witness what architecture and society are really made of. We do not take them for granted.
While following the controversy, we may wonder: is this ‘social’, ‘economic’, ‘natural’, ‘aesthetic’ or ‘technical’? It can be difficult to judge. It is even harder to carve out these distinctions from the entanglement that holds it together precisely because it associates as many heterogeneous elements as possible: architects, MPs, visitors, public money, techniques of calculating construction budgets, and varieties of glass and slate.

Thus, architecture is not autonomous. Before we even try to distil it from the rest, we should attempt to describe and account for the imbroglios it opens. Defining the social and defining the architectural is something that we may do at the end of an analysis, rather than making it the entry point. The heterogeneous associations of actors that disagree and join the controversy (which was supposed to be explained) is precisely what gives strength to the social at the end when it was supposed to offer an explanation. Welsh society does not exist ‘out there’, it is not separate from the Senedd controversy and it cannot explain the parliament building. The dynamics of the debate surrounding the Welsh assembly cannot be reduced to anything. In the course of our study of the controversy, we will irreversibly alter the meaning of the word ‘social’: it is the outcome of all the trials that the actors undergo.

To follow architecture we will need to traverse the revered boundary that separates ‘architecture’ from ‘society’, ‘meaning’ from ‘materiality’, ‘technology’ from ‘symbols’ many times. Only by engaging in an anthropology and ethnography of architecture can you gain access to that particular moment when the divide between content and context has not yet been made. It is a moment when the architectural and the social are fluid and mutually define themselves. It is a unique moment when all redistributions are possible.
PART II

MAPPING PROCESSES
Chapter 4
Controversies in Architecture

Controversies are seen as integral to many features of architecture practice, of design and use. The word ‘controversy’ is the best way to describe the many issues with which administrators, architects, urban researchers and citizens have to deal with on an everyday basis. The list of design issues is endless as are the various and constantly changing patterns of urban and political uncertainties. It is, in a way, the very success of architectural design that has triggered this massive backlash. The first reason to focus on architectural controversies is the rarity of contemporary social or political issues that do not contain a part of urban expertise. Second, these are the issues which impact upon the public because of their very complexity.

THE SYDNEY OPERA HOUSE: RE-VISITED

Let us revisit an old textbook controversy – the Sydney Opera House. Who made this building possible? Jørn Utzon? Arup? The Labour Government? Australian taxpayers? To tackle the question of ‘who’ we usually isolate the technological virtuosity of the concept from local politics. But why do we do this? How can we possibly distil Sydney’s ambition to get a landmark building from the streets protests against Utzon’s resignation, from the architect’s strong ego, from the compromise engineering solutions devised by Ove Arups’ company? Can we still simply say that Utzon designed the Opera House in Sydney?

It was indeed Jørn Utzon who was awarded the first premium in 1957 after an international competition organized by the Sydney Opera House Executive Committee (SOHEC). The competition attracted the best talents in the world. Much of the interest in Utzon’s building focused on the dramatic form of the roof, which was supposed to be made up of a series of quarter shells: ‘when the audience pressed forward to examine Utzon’s design in an exhibition display, it was obvious that nobody had even seen anything like that before. Many people felt the minute they looked at it that here was something transcendental’ (Yeomans 1968: 27).
Surprisingly, when Utzon was preparing his competition entry he took no engineering advice. It was difficult to visit the site and so he studied the qualities of the promontory from photographs and postcards while drawing the first sketches. He even ignored the competition rules: ‘he placed the two theatres side by side (...) the other entries placed the theatres end to end’ (Murray 2004: 7). Utzon’s competition entry failed to include the required perspective drawings and showed only enlarged sketches. His design also exceeded the limits of the site.

The first time that Utzon visited the site was six months after it was announced that he has won the competition. Too late to correct the mistakes made with the first sketches! Thus, starting from a number of sketches drawn far from the site that never consulted with engineers to assess its viability, Utzon was gradually led to make a detour in his initial design intentions. He had to collaborate with the engineers from Arup – the company that SOHEC commissioned to work with Utzon. Created in 1946 by the Dane, Ove Arup, the firm had built up a reputation of providing structural engineering advice to the architectural profession. The detour to the competences of Arup, this step aside, followed by many other steps aside, was difficult for an ‘I want’ architect like Utzon to make. Let us follow how these deviations from his initial design reconfigured the overall concept for the Sydney Opera House.

The design of the beams posed a big technological challenge. Utzon’s early drawings showed the concourse supported by a number of columns. Arup suggested that the job could be done by a single span and was keen to investigate a novel form of beam design that: ‘would reflect the architect’s desire to express honestly the characteristics of the materials used. “Let the structure speak for itself”, Utzon would often say. The design should be bold, simple, on an impressive scale and combine sculptural quality with a clear expression of the forces acting upon it’ (Murray 2004: 25). At the ends of the beam the most effective section was considered to be a T-shape and at the centre it was a U-shape. Arup integrated both shapes to create a sculptural and efficient form that Utzon accepted enthusiastically as ‘Ove’s invention’.

Equally challenging was determining the shape of the roof shells. During the first years of planning, a double-roof made of two membranes of concrete separated by beams was the structural system decided upon. After numerous discussions and tests the double-roof plan was forgotten. The precise shape of the shell was still not decided. Working hard on various geometries for the roof, Arup also tried to find theoretical solutions for the forces in the roof. Two different structural models were made to establish the magnitude and distribution of wind forces on the roof structure. They equally spent years investigating the stresses and strains due to gravity loading. To accurately calculate these Arup made another detour: a detour to the computer technology. Computers allowed Arup to calculate whether the available technology was advanced enough to construct the shells according to the sizes and curvatures that Utzon had indicated on his initial sketches. Computers were then a relatively new development that Arup engineers were only learning how to use. Without them they could not have made the credible calculations on the Opera House’s roofs, beams and other technological challenges. Thanks to this
detour, Arup's use of computer technology to aid design gave them the ability to offer solutions to the technological challenges. Yet, none of the solutions provided was good enough for Utzon. Numerous speculations were made on how much the structure would deflect in strong winds; how much the consequent vibration would shorten the life of the building and whether it would cause panes of glass to crack and alarm any audience inside the theatres.

In 1958, pleased with shells drawn as parabolas, Utzon wrote back to Arup: 'Many thanks for the beautiful “shells”...We are all thrilled with them. They are much better than the competition project’ (Murray 2004: 29). By the end of 1961, further tests and calculation led to an agreement that the roofs were to be elliptical paraboloids. This system of paraboloids was as close as Arup could get to modelling Utzon's free floating shapes. The engineers also suggested closing the end of the shells, but Utzon did not like either the resulting internal appearances or the method of closure. Arup also suggested triangular plates meeting at the apex rather than continuous shells. To get Utzon's poetic shapes to stand up, the engineers separated the three sets of shells from each other to form separate structures– this rationalized it and changed the initial idea of Utzon's design. The engineers accepted that 'it was their job to make the architect's concepts work' and were entirely committed to doing so. To stand up, each roof vault was to be formed of two rows of concrete ribs rising up from the podium; every rib would need an individual shape if the roof vaults ultimately produced were to be elliptical paraboloids. Utzon plumped for the ribbed structure (versus an amended original scheme in steel and concrete) saying that: ‘I don’t’ care what it costs, I don’t care what scandal it causes, I don’t’ care how long it takes, but that's what I want’ (Murray 2004: 34). After further engineering tests and discussions with administrators, it was decided to abandon the elliptical paraboloids for a spherical shape as a regular geometric form out of which the various chunks could be lifted and put together to provide a satisfactory shape for the roof vaults.

The change in shape from parabolic to spherical caused the press to comment. Utzon tried to play down the significance of the changes. 'The silhouette hasn't' altered' he told the Sydney Morning Herald (Murray 2004: 36). However, the change in the building profile was radical; the smoothly-curved shells of the competition entry had been exchanged for the upright arches of the actual spherical solution. Thanks to the detours to Ove Arup and then to computer technologies, Utzon's initial sketches, quickly drawn after the postcards, changed considerably. So too did his design intentions.

It was very difficult for the engineers to realize the architect's idea without any alternations and Arup's interventions here modified the traditional formula of collaboration between architects and engineers. Conventional thinking implied that an architect employed the engineers' advice after designing the building and to ask them ensure that the building would stand up. In this process, it was essential that the engineer retained the quality of the architect's original design and only adaptated the shape of the building and size of the structural members. Such an approach worked well when architecture typically consisted of beams, columns and walls. However, in the case of the Sydney Opera House, with its complex design
and use of new technology, the engineers joined the design process at an earlier stage. Rather than realizing the architect’s idea, handing over finished designs and imposing a solution, the engineers became part of the design team and their mobilization of new technologies led to novel design solutions.

One element that the architect usually decides on in such projects is the dimension of tile lids. In this particular case, the difficult geometry and the scale of secondary stresses and temperature movements, prevented the architect from supplying the outlines. It was Arup who made the calculations and provided 350 detailed drawings. Utzon expressed serious concerns about the fusion of roles and claimed that it appeared as though Arup were doing the architecture as well as the engineering. He often stated: ‘Only I, I am sure, can possibly visualize the final picture of the Opera House. All consultants, all contractors, every craftsman should in a way, understand this in order to enable us, together, to achieve the perfect building’ (Murray 2004: 49). At the same time, Ove Arup fulsomely praised the architect claiming that: ‘He is a brilliant designer – one of the best, and probably the best of any I have come across in my long experience of working with architects – and he has a remarkable ability quickly to understand the essence of other technical disciplines as they impinge on his architectural conception’ (Murray 2004: 45). The architect had to accept, little by little, that a project of such complexity required design and construction to be totally integrated. The traditional divergence between architecture and engineering, inherited from the 19th century, had to be overcome. Meandering on the way to the long dreamt Opera House in Sydney, Utzon had to consider the complexity of engineering decisions and the challenges of new technologies at use.

It becomes impossible to say any longer that Utzon did this novel roof. The realization of the roof required the ground-breaking use of computer technologies, and teamwork between architects, engineers and consultants; that is, it was a work of ‘total architecture’. There were risks and promises in diverting from Utzon’s intention to realize the design according to his initial sketches. The promise was so powerful: Utzon hoped to go back to his initial aim, but believed that he would be stronger when equipped with engineering solutions and new computer technologies that produced exact calculations and allowed for numerous construction drawings to be delivered on time. Helped by the computers, the engineers also promised to become more powerful in responding to the design challenges. Helped by the engineering solutions, Utzon’s sketches promised to gain more power than ever. Yet, he risked being unable to go back to the initial design intention since the design was now made by a number of joint interests: of Ove Arup, his engineers and computers, and Utzon and his practice.

These deviations from Utzon’s intended linear path actually made the project much more complex and composite. Responding to the technological challenges led Arup to break new science and technology grounds that nudged forward the frontiers of building science. The design progressed by derivations, which led to innovations, and displaced the architect from following a linear step by step trajectory towards the final aim – the opera house as envisioned by Utzon. The ambiguity of the composite design action remained until the end of this project:
Utzon mobilized Arup for the realization of his design intentions; Ove Arup made Utzon engage in a series of detours for the sake of new technological innovations. At the end of the process Utzon was replaced by a team of architects who completed the building. Yet, he was the one who recognized more than anyone else the importance of these detours to Arup’s engineering technologies and expertise: ‘I was pushed aside as architect for the job. Luckily Ove Arup stayed on the job; otherwise it would never have been completed’ (Murray 2004: 136). So, throughout the course of the project the relationship between architect and engineer was entirely re-defined. None of these professionals could exist as solitary experts, as isolated consultants in a project of such scale and technological uncertainties. Instead of playing a game of superiority – asking whether the engineer is superior to the architect or whether the architect is more important – they reconciled the tensions stemming from rigid professional divides. As a result, design appears as a collective venture that integrates architecture, engineering, cost consultancy, urban and product design all within one studio; design action – collective and composite.

The detour to Arup was also important to enable the architect to keep up to speed with the construction process of one of the most complex building projects in the world. The architect often wanted to change things as if the concrete structure was a mediaeval masonry. Denmark’s strong craft tradition and smaller scale projects allowed Utzon to work like this. His office was very small and bright architects worked for him, but most of them were inexperienced. He needed more time to achieve detailed perfection and he always wanted to change things; nothing was ever finalized but each change was viewed as an improvement. It became impossible for Utzon to fulfil this extremely complex project with his small team of architects and the craft ways of working that they employed before this commission. To complete the drawings on time Utzon needed 30 architects but he had only 9-12 architects in his office, all of whom were experiencing their first major building project. Utzon needed another important detour to the expertise of Arup. This is also something that made the design action look even more composite. Because of the different times that architects and engineers were moving and the different rhythms they followed, they could hardly be regarded as a team. They remained visible as two distinct professional groups who were always in disagreement rather than being in a harmonious working relationship. In 1964, the architect was not supplying the drawings needed for the construction to continue to schedule. Arup could not understand why Utzon’s working methods meant that they could not be supplied with drawings. It was clear that Utzon was not able to anticipate hiring extra staff adequate to meet the needs of this gigantic project.

As the design was continually changing and the negotiations between architects and engineers always took longer than expected, it was impossible to have a fast-track construction: in order for the basic floor plan to be constructed the roof had to be fully designed. A fast-track building programme requires a continuous supply of drawings. This stood in conflict with the architect’s desire to design ‘the perfect opera house’; his frequent changes of mind and a client,
SOHEC, who were undecided over their precise requirements. The technological uncertainty concerning the engineering of such a complicated design structure entailed constant changes; even when the architect was satisfied with a particular engineering solution, the government was not because the costs increased. So the government sought alternative advice to reassure them of the stability of the proposed structure. The delays slowed down the construction process and led to budget increases that worried the politicians: concerned communities and the Australian taxpayers began to express their fears over the design.

One can see that it is a very long path to follow a political decision to back a young architect's daring vision for a new symbol that could strengthen the image of Sydney, through to the many detours from his initial sketches and design intentions. It is hard to say that political will was incorporated into a project; that a daring vision followed a political aim; that politics and society stand apart from architecture and form a separate ‘bubble’. Every single engineering solution found required precise architectural drawings. These were always delayed because the architect needed more time to refine them, review design solutions and chew over problems. In many cases the problems were solved in the designer’s own mind and sketches. The detailed work still had to be carried out by others and required more time. This delayed construction, increased the budget and gradually led to the political failure of the project. Design, as the moving target it was for Utzon, was complicated by the disagreement with Arup and delays from the politicians who allocated funding: this made planning a complex business. Design does not happen as the progressive realization of a daring vision, as a flight of imagination. Many design changes were made; the numerous relocations of the building functions impacted on the design and construction programme and modified the original concept every time. The shifts and detours in design process made it impossible to express the integrity of Utzon’s vision for the building. The initial idea reflected in his first sketches got translated so many times: transcribed, displaced and transported with so many transformations.

More political actors entered the story because of construction delays, notably – Davis Hughes and Norman Ryan, who both served as Minister for Public Works under the two different governments who spanned the project. Concerned with an increase in costs from A$12.5 million to A$17.4 million, Ryan appointed the architect Bill Wood to represent him and take part in all of the consultations that affected the design and construction of the Opera House. Although Wood was only employed as an administrative architect and not a designer, Utzon was never happy with his involvement.

Concerned with increasing costs, Utzon was called to a meeting by the Prime Minister and the cabinet sub-committee formed to look into the administration of the Opera House. Little by little the project was becoming embroiled in wider politics; elections were looming and the Opera House was an issue. Unable to understand Utzon's unconventional working methods, the government insisted on subcontracting the work to another firm who would work in collaboration with Utzon. By 1966, the government lost confidence in Utzon. The Minister Davis Hughes announced Utzon’s resignation in Parliament on the afternoon of Tuesday.
1 March 1966. Street protests and demonstrations took place in Sydney with thousands of students calling for the reinstatement of Utzon as architect of the Opera House.

Utzon’s resignation provoked many discussions over the role of the architect in such projects: some thought that the separate control by consultants was detrimental to the satisfactory design and construction of the project. Equally, others thought that the architect’s role should be to coordinate the work of the various consultants employed for design. When Utzon was asked to collaborate with a team headed by a government architect, to be responsible for the planning of the design and construction programme, he refused to work in this way: ‘I am at all times prepared to work with them [a team of leading architects] as your representatives, but not under them’ (Murray 2004: 81, emphasis added). Eventually, Hall, Todd and Littlemore were the architects appointed to complete the job. Utzon’s wish to be fully in charge of the concept and his refusal to share the responsibilities and partake in the design and construction team were detrimental in a project of such scale and complexity.

When Utzon quit the project and flew out of Sydney in April 1966, he accused Arup of failing to understand the work of an architect and for over-estimating the role of the engineers. Utzon strongly believed that no one could complete his work and that he would be called back once the new team had failed. He thought that no one could emulate the mind of the architect and copy his creation. Later, in 1967, he changed his mind and was prepared to go back to Australia and work in a team according to the project costs, feasibility and timing but it was too late. In 1968, Utzon again expressed enthusiasm for returning to Sydney to finish the building and stated explicitly that he would not insist on being the controlling architect if he was brought back. He was never asked to return.

The Sydney Opera House was opened on 20 October 1973 by Queen Elizabeth II. Utzon was invited to the ceremony but did not attend. Yet, he is still the main architect with whom we associate this building. In 2003, he was awarded the Pritzker prize for the design of the Sydney Opera House.

The Lines of Interpretation

From the ‘I want’ and ‘only I can design the opera house’-architect that Utzon was at the beginning of the controversy, he was finally ready to become, after many detours, an ‘I will collaborate’-designer. From declaring that ‘only I have it in my mind’, he became ready to share a team philosophy of making. From a vision architect he was ready to embrace the role of a professional and become concerned with design development and drawing production as important elements in the realization of the vision. That is, he was ready for an important shift in the architect’s role: from the 18th-century genius that he considered himself to be at the beginning, always looking for his dream to come true, in moments of solitary confinement, in search for perfection, he was finally prepared to become a 20th-century designer, a team player. Yet, when he finally made this shift it was too late since the design of the building was too advanced and further changes to the concept would have
tremendously increased the cost. The political disagreements would have been even sharper than at the time of Utzon’s resignation.

We also witness an important shift in the engineering innovation process: the groundbreaking design concept pushed architecture to the edge of the possible and inevitably generated difficulties of timing, of technology and of cost that stretched the patience and relationships of all of the protagonists in the process. There were no ready engineering solutions to the problems; the technologies available were not adequate to solve these uncertainties and gain new knowledge about construction. Computer technologies were at the very beginning of their development for architectural purposes. For the daring design to succeed new techniques had to be promoted and developed. Technological innovation needed more time.

Thus, invention had one speed of flight, slower than the organizational speed. Construction time sequenced by management constraints had a different speed of flight. There were two discrepant rhythms. On one side, the rhythm of the creative process, of a dreamer that ‘takes too long to deliver the goods, or costs us too much money’ (Murray 2004: 102), who needed to retire many times to refine the concept and make it perfect. On the other side, there was the organizational rhythm of construction, cost, time, tenders and committees. These rhythms were never fine-tuned together: the rhythm of a designer perfectionist – a man for whom the quality of the end product was of greater importance than cost and time; and the rhythm of the public organizations – for whom delay in construction meant an increased budget, disappointed taxpayers, loss of public trust. That is what all of the interpretations of the Sydney Opera House ‘saga’ tell us. On the one hand there is the individual. On the other there is society and politics, with their institutions and organizations. One could say that the rhythm of design flew at a different pace to the one of politics and society.

Let us set the questions again: ‘who, in fact, designed the Sydney Opera House?’ and ‘who is responsible for the shape that the building has today, for its iconic status, for this priceless brand?’ One way to tell the story is to narrate the groundbreaking design as something that happened in an isolated bubble of architecture and then impacted upon Australian society and politics. If design (as seen in the sketches of Utzon) was viewed as a separate entity the architecture of this building would never appear as composite. To blame the sphere of politics or of Australian society as wholly incapable of understanding Utzon’s genius would be as erroneous as blaming Utzon for being unable to understand the constraints placed upon the politicians and their important role of allocating and controlling public expenditure. Accusing the architect of not having political know-how, as one of the skills that successful architects should have in their armoury, would be to pass the ball to his part of the tennis court without predicting how quickly it can reach the baseline and return to the part of politics and escalate into a no-win situation.

**Untangling the Lines**

Yet, if we closely follow the controversy (Figure 4.1) and restrain ourselves from embracing these lines of interpretation, we will find out that there are not two
distinctive bubbles; one of the individual and one of society. There is not a powerful individual; Jørn Utzon, the architect, the dreamer, the creator, the unrecognized genius on one side with politics on the other. Follow instead, as we have, all of the actors in the controversy, both human and non-human: the roof, the competition rules, the assessors, the architect, Utzon’s office, Hall Todd and Littlemore (the architectural consortium that replaced Utzon in 1966), Ove Arup and Partners, SOHEC, the contractor, the politicians, the consultants (such as acoustics, theatre principles, electrical engineering and mechanical services), the Public Works Department, the supporting cast (Bavinton 2006). You will then be led to discover a fine mesh of moves between both sides of the court (politics and architecture). We will find layers that multiply further. Each of them will correspond to a course of action, followed by a number of detours, each of them modifying the initial design vision and aim of the project. These layers will compose the cooperative action that designing a building implies.

Let us reiterate the questions: who designed the Sydney Opera House? Was it Utzon, or Arup, or the other architects who stepped in the job when Utzon resigned? Who was responsible for Utzon’s resignation? Who is responsible for the state of its design today? If there are so many actors who took part in its making then whose signature should be kept on the building today? The questions have been answered in different ways. One way recalls the process of inventing a daring design and then evaluating its impact on society, on Australian culture and politics. Another may explore how Australian politics and social context made it possible to conceive of the type of architecture that we see now in Sydney. Yet, neither the daring sketches of Utzon nor politics are

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powerful enough on their own to change the image of Sydney. There are not two bubbles to be drawn on our diagram, one for design and architecture and one for politics and society, which denote two distinctive fields existing prior to the controversy that can be opposed and juxtaposed to allow us to compare and find connections.

Design is neither in the mind of a sole architect nor in the outer framework of a society. It is always composite. Architecture is composite and this composition, as seen here, is always ambiguous: it was Utzon’s masterpiece yet he did not complete the building; many design features were different to those that Utzon anticipated with his first project; many ideas got abandoned; the creation of the huge over-sailing roofs was a magnificent achievement of engineering; the completion of the project – a thorny political matter. Thus, the architect’s drawings were transformed by other engineering drawings, helped by new technological innovations, and continued by media pressure and political decisions. The layers in this controversy are more difficult to follow than those of the opera house competition in Cardiff. The detours are multiple and they modified the initial aim shaping, in this way, a composite collective action where the artistic ego of the architect, the engineering philosophy of Arup, the new computer technologies of the 1960s, the shape of the shells, the political pressure from the new Labour government, the street demonstrations and the doubled budget should equally be taken into account. They will all become parts of a joint diagram in which Utzon will be just one of the myriad of actors to follow (Figure 4.2). The Sydney Opera House was the result of collective action. It was composed as a series of so many practices, preoccupations, design difficulties, technological challenges and different languages and actors. Architecture appears to be an impersonal process over the course of which a building is composed; it is made of the many different pieces brought by different actors who may or may not be connected with the one that signs as an ‘author’.

The question ‘who is the designer?’ is not answered at the beginning of a project when a winner is chosen out of short listed finalists in a highly contested international competition. After witnessing the complexity of the controversy, we cannot simply reiterate the well-spread interpretation that the design was already decided in the first sketches of Jørn Utzon and that the only thing that mattered was his talent, his daring visions and his perfectionism. Instead, the question of ‘who’ comes only at the end, when all of the detours are made and all of the actions are recollected. Without the forced collaboration between the two famous Danes, without the public pressure exercised by politicians and the media, the Sydney Opera House would never have been realized. Without the introduction of computers to assist in design tasks during the 1960s, the engineering profession would never have pushed the frontiers of architectural technologies so far; the opera would never have been such a design achievement. Design can only succeed as a joint action!

Follow Utzon, follow the numerous solutions discussed regarding the beam design, follow the letters written by Ove Arup to Utzon, follow the Minister for Public Works redefining the roles of both design and coordinating architects, follow the © Ashgate Publishing Ltd
students protesting against his resignation, follow Peter Murray’s account of the controversy and you will find out how difficult it is to separate the puzzle of their actions into what pertains to the domain of architecture and engineering and what pertains to the field of politics and societal changes in 1960s Australia. One can understand now that it is impossible to begin from a pre-established domain that we all call ‘architecture’ and then define another domain called ‘époque’, ‘society’, ‘intellectual milieu’, ‘political context’ or ‘zeitgeist’ so that we can question their possible relationships. We cannot continue to juggle these two giant balloons until they finally pop. And you know, just as I do, that when a balloon suddenly pops it is impossible for the air to slowly leak out, which results in a loud bang that can cause fright. To save ourselves from this huge shock we need to understand the reason why balloons pop the way they do. We need to understand how they are made and what they are made of: the rubber-like materials, their elastic properties, the limits of their stretchiness, the different techniques of filling them with air, how quickly the latex can tear, how air seeps out of them...

Questioning whether it is ‘the individual architect’ or ‘society as whole’ that should be blamed or praised for the success or failure of a particular project is wrong. This question should be replaced by a programme of inquiry. It is an empirical programme, a slow and painstaking inquiry that will allow us to follow, as long as we can and as far as our analytic and visual tools will allow us, the meanders of the collective action of architecture that can mobilize elements with variable

4.2 Mapping Controversy – the Sydney Opera House overview; copyright – MSA.
ontology through many detours and compositions. The idea of an architecture that exists autonomously (so often taken for granted) as well as being a resource to explain contemporary architectural issues by juxtaposing them to culture, society and politics (other domains we often assume to be autonomous) is turned into an object of study that should be seriously tackled.

WHAT IS A CONTROVERSY?

Controversies, as seen here, are complex phenomena. Design controversies involve all kinds of actors. Not only are there human beings and human groups but there are also natural and technical, individuals and institutions: beams and dreamers, engineers and protesting students, politicians and roof shells.

Controversy displays the design and the social in a very dynamic way; design precedents and communities, political protests and design concerns. The actors never appear alone but in a network. The social and the cultural are to be found as architectural practices unfold, as design happens; they are not outside, far away or beyond architectural objects and processes. Following the controversy as it unfolds allows the unravelling of the normally hidden social and political dimensions of architecture.

The controversy functions as a ‘hybrid forum’, a space of conflict and negotiation between actors (Callon et al. 2001). Forum refers to those particular spaces in which various groups can meet and debate different issues and the technical choices that are of importance to the community. They are hybrid because the people involved and their representatives are heterogeneous: experts, politicians, clients, architects, technicians, and concerned lay people. Hybrid because the questions to be tackled are of a different nature: from political and ethical concerns through to mechanical engineering and aesthetics.

Design quarrels are so interesting because they open up ‘black boxes’ – things and understandings that otherwise will be taken for granted.1 Before the Sydney Opera House controversy, many people will not have been aware of the complex relationships between architects and engineers, or of the technical challenges or the costs needed to construct an icon. They will have assumed taken the consequences of the ground-breaking shape as given designed by an award winning architect, Jørn Utzon.

Those among you who have tried to trace the detours in the Sydney Opera House story that I have guided you through might have used brilliant design skills to draw them. Yet, whatever mastery you use, you would never be able to cut out architecture as a domain of material activities, of aesthetic and technical challenges, that can be entirely distinguished and separated from the rest – the values of the society, the cultural habits, the local politics, the economic climate. You will naturally question how you can visualize the meanders of the architectural, the political, the technical, the social. The answer, as we shall see in Chapter 5, is to map all of their traces and entanglements.
ENDNOTES

1 'The black box' theory of architectural conception accepts that all significant parts of the design process are internal and unavailable for empirical discussion; therefore design is considered to be a hermetic and undecipherable work of the brain (Boyd 1965, Akin and Weinel 1982).
Chapter 5
Visualizing Controversies, Tracing Networks

FROM A STATIC OBJECT TO A SPLINTERING COSMOLOGY: THE EIFFEL TOWER

Let us now look at a more recent controversy. In March 2008 the French architect David Serero announced his plans for the new design for the restructuring of the public spaces of the Eiffel Tower (Figure 5.1). His proposal suggested doubling the size of the tower’s highest observational platform. Serero claimed that the proposal was accepted after an open call and that the structure was expected to be assembled for the 120th anniversary of its construction.

Shortly after this the government-contracted firm that manages the tower – la Société d’Exploitation de la Tour Eiffel – contradicted him by stating that Serero’s claims were a ‘hoax’ (Miller 2008). Their communication chief denied that there was ever any call for architects regarding plans to redevelop the monument and that Serero Architects never presented themselves as candidates for such a competition. Nevertheless, media outlets that ran with the story included: The Guardian, The New York Times, Architect, Bustler, the Daily Telegraph and the Belfast Telegraph.

In an interview in May 2008 Serero declared that: ‘I wanted to do with the Eiffel tower, what Christo did with Pont Neuf some years ago!’ Commenting upon the media controversy he argued: ‘We had no idea that our project would create such an excitement and will provoke reactions from Parisians and people around the world’…Most of the people in Paris ignore the tower. They don’t look at it and often cannot really see it, as the city fabric is very dense…It is just a strategy to give attention to this monument’ (Miller 2008).

The suggested alteration of a historically and culturally important structure provoked a lot of reaction. It attracted criticism from the architectural community, journalists, Parisians and visitors to Paris. Many architectural blogs discussed the recommended extension. Journalists wrote numerous articles and those who were impatient to break the story were later accused of failing to verify the facts.

Intrigued by the controversy, I conducted many interviews with the young architect in his office in Paris. Yet, I cannot say if a competition took place or not (or if Serero is simply a PR genius!); I cannot say who is telling the truth – is it architect
Yet, what I know is the fact that a lot of groups felt concerned by the tower alteration and that they expressed reactions of affectedness as they began gathering on internet blogs and on the pages of different newspapers.

Whatever the accuracy of the story, it had a huge impact because it made me rethink the importance of the Eiffel Tower for Parisians. It made me go back to Gustav Eiffel, to its original design, and revisit the history of its construction and the controversy surrounding its design in 1889. Serero’s project enabled me, as well as many interested readers of architecture news, to reopen the Eiffel Tower ‘black box’ and discover hundreds of hitherto-unknown actors that were drawn in the discussion. Suddenly everyone discovered that the Eiffel tower is not the icon or the synonym of Paris that stares at us from all the postcards and posters. We realized that it is encased in an organization – La Société d’Exploitation de la Tour Eiffel. The controversy also enabled us to test attachments to the building and, as a result of this debate, the tower gained new allies and critics.

A comparative analysis of the figurative languages of Gustav Eiffel and the architect, David Serero, cannot explain the tower design. Entering the controversy in 2008, gradually led me to open the ‘black box’ of Eiffel’s design. As I delve into history I discover that the tower has an amazingly rich controversies career, to use an expression popularized by anthropologists (Appadurai 1986, Tamen 2001). To gain access to the Eiffel Tower’s repertoire of actions I go into the archives to find out what the building did. I learn how it reacted to the attempts of architects to design it in one or another way (1884–1888); the attempts of politicians and urban planners to demolish it (1903) and how various actors spoke on the behalf of the structure. I resist deducing the Eiffel Tower’s meaning from the mythologies of the time, from stylistic patterns or any kind of causalities (the history of the ‘French Nation’, the late 19th century-zeitgeist, the ambition to create a symbol of ‘Modern France’). I do not trace a linear account of the Tower’s architecture from Eiffel to Serero based on a comprehensive historical investigation. Instead, the recent controversy allows me to embark upon a retrospective analysis of the past, to engage in a process of interpretation of the building and its performance.
understand this commonly considered ‘iconic building’ – the Eiffel Tower in Paris – I
eed to unravel the rather messy history of its design controversies.

Considering Gustav Eiffel’s Tower against Serero’s recent design proposal for its
modification, I draw on the vast literature and film materials (for instance Simon
Brook’s film The True Legend of the Eiffel Tower from 2005) on the Eiffel Tower’s
construction. I argue that even a building that is commonly perceived as symbolic
(Levin 1989, Thompson 2000) is pragmatically knowable.

Following the actors that gather around the construction site in the 19th century
and the worlds that they shape one can witness the following process. As the
controversy developed a larger number of actors and resources were mobilized:
Édouard Locroy (Minister of Trade) who defended the erection of the Eiffel Tower
against artistic Paris, workers, preservationists, modernists, beams, families of
the workers, Mr Jean Compagnon (the head of construction), Le Petit Journal
(the daily Parisian newspaper published from 1863 to 1944), stones from Garonne,
intellectuals, artists, writers such as Alexandre Dumas and other intellectuals,
Jacques Carlu (architect of the Palais de Trocadéro), the statue of Liberty to which the
Eiffel Tower was compared and the tower in construction. Even actors and resources
that were not directly concerned by design nor educated enough to judge design
and engineering issues were mobilized and new associations traced among them.
As it gained more allies and critics, letters of support and complaints and agitated
different city groups, the Eiffel Tower became a full-blown actor. As more people
spoke against and in support of this building, the bigger the crowds of visitors and
bloggers got; locally available resources and allies increased; the design became
more social. Here is where the social is located: in the process of mobilization and
enrolment of actors rather than outside, explaining the controversy.

Following the controversies and the detours in Eiffel’s intentions to build it in a
particular way and in Serero’s wish to modify the viewing platform means that we
cannot talk any longer about the tower as one static modernist object, a construction,
a Modern symbol (as presented on Figure 5.1). Rather, we speak
about an object plus its anticipated demolition or modification, plus the
variety of other actors mobilized: Gustav Eiffel, politicians, Parisians,
French intellectuals, workers and their families, architects, the press,
the business world, the wind, the stones, the beams, Eiffel’s family
and the costs (Figure 5.2). That is how the building becomes
a multiple object, an assembly of contested issues: the wind
resistance of the tower, the delicate beams installation, the aesthetics of
Champs de Mars, the neighbours’
vulnerability, the intellectuals’ fears, the burden of iconicity, the working class health concerns. The structure that looked like a simple technical or aesthetic object has become in the controversy, a socio-technical, socio-aesthetic, socio-political. Built once and then forgotten, it became potentially extendable, modifiable. Taken for granted, it became contested. Once immediate, now mediated. From rapid to slow. From a static object to a ‘bird in a flight.’ Not an autonomous, emancipated, coherent modernist object standing ‘out there’ on Champs de Mars facing the Trocadero Gardens, but a complex ecology (Figure 5.3).

We cannot continue to act as if this building was made of parts presented on technical drawings that remain in the timeless and immutable realm of pure geometry and forms. We cannot continue to represent it as if the ontological qualities of the building were the same as the ontological qualities of its drawings made in the 1880s. Nor can we stick to the futuristic image of its extension produced in an adventurous process of computer rendering according to playful analogies with the DNA spiral in Serero’s office. Nor can we freeze-frame it in numerous popular culture interpretations on postcards. Tracking the building’s controversial career enables us to trace how it inhabited and inhabits the world. If we wish to provide a view of this building that will give justice to its turbulent life, we need to add to the assemblage of its parts an assembly of actors and entities. To its technical feats we add the crowds of humans and conflicting worldviews (Figure 5.2). Drawing statement bubbles and actors trajectories is our naïve and modest attempt to present a building as a cosmic thing rather than as a static
de-worlded object. We need to find a way to draw all the worldviews connected to this object, its ‘cosmograms’ (Geertz 1973, Tresch 2005, 2007, Ohanian and Royoux 2005).

A Building as a Cosmogram

Taking inspiration from the anthropologist, Clifford Geertz, John Tresch has defined a cosmogram as ‘a text that results in a concrete practice and set of objects, which weave together a complete inventory or map of the world’ (2005: 67). Cosmograms embody the relationships between humans, nature and the common world they share; cosmograms ‘establish the relation between different domains or ontological levels’; they ‘imply an ecology’ in which all things are interconnected and interdependent (Tresch 2005, 2007). Cosmograms concretize: they offer a set of practices and of rituals to enact participation in the world.

Following Tresch, to draw a building as a cosmogram means to depict it as the product of an infinity of relations that extend far beyond its visible material form, grasped in space and time. That is, to make visible the activities that made it possible so as to reconnect the objective with the subjective, the material with the human. We should be able to depict all of the actors and the worldviews that they invest in this object, the way that they represent the universe to themselves and to others in the form of a concrete visible building. All workers, architects, intellectuals and dreamers, steel and wind become part and parcel of the gathering that the Eiffel Tower is.

Producing a ‘thick description’ of a building in a book or a film can recollect the cosmic nature of buildings. By cosmos, I do not mean a world that is ‘out there’, but a world whose ingredients and list of entities we must take into account when we explore the compositions that building constitute, including all the vast numbers of non-human entities making humans act (Stengers 1996, Latour 2004b). Yet, we still do not know how to present in a single visually coherent space all of the entities necessary for a building to hold. How can steel, wind, high construction and the worlds that humans shared with them to shape this building be presented together on a drawing? How can we gather the actors and concerns expressed in Brooks’ movie together and make observable the multiple cosmograms that are in circulation? How can we collect, familiarize and draw together the practices and objects that make a cosmos visible. How can we draw a ‘thick’ description of a building to give justice to it as a cosmic ‘thing’? How can we visualize not what a building is and what it means but what it does and what worlds it is able to enact.

With these questions in mind I entered the Cordingly Lecture Theatre in the University of Manchester some three academic years ago to deliver a humanities course in architecture, at BA level year 3. As the course developed many things changed: I changed, the students interest and motivation varied, the content was diversified and the examples got refreshed according to the new controversies that caught the media attention and triggered agitation in the design worlds. Yet, one particular set of questions remained the same: Is this really a humanities course? Or is it a technology course? Is this design or is it theory? In what follows, I ask this question with the same persistence and curiosity that my students
kept asking me throughout the duration of the course; thrilled by the change but always feeling insecure straddling the stable boundaries of technology and humanities. I will discuss the specificity of the teaching philosophy that controversy studies imply.

MAPPING CONTROVERSIES AS A TEACHING PHILOSOPHY IN ARCHITECTURE

Developed initially by the French sociologist Bruno Latour and applied across a variety of disciplines, Mapping Controversies offers a new way of inquiry in social sciences based on Actor-Network Theory. As a teaching philosophy, it is used largely in the fields of Sociology, Political Sciences, and Engineering Studies, primarily in French-speaking universities across Europe. Only recently was the teaching method introduced in English-speaking universities with Manchester (Architecture) pioneering this field along with Oxford (Geography) and MIT (Science Studies). Only recently was the teaching method introduced in English-speaking universities with Manchester (Architecture) pioneering this field along with Oxford (Geography) and MIT (Science Studies).2 Drawing on controversy mapping theory and previous teaching experience in École des Mines, I started the course Mapping Controversies in Architecture in 2008/2009.3 I asked my students to use their advanced design skills to draw, map and visualize not an object (typically a building or a site) but a controversy, that is, a complex ecology of connections of an architectural, cultural, economical and political nature. This implied a very different inquiry in the cosmic nature of buildings, which made the students ask more and more interesting questions.

Two Types of Inquiry

Donald Schön’s (1983) concept of ‘reflection-in-action’ revolutionized design anthropology in the 1980s and founded a new epistemology of practice that stands the question of professional knowledge on its head by taking as its point of departure the competence and artistry already embedded in skilful practice. This type of studio-based reflexivity is followed in many architectural schools today and is commonly privileged by the professional schools of many research universities.

If reflection-in-action stands against the scientific, linear way of knowing, what kind of inquiry could complement the systematic way of knowing about architecture? I will argue that architects need to engage with a pragmatist type of architectural inquiry that is a situation-based, distributed way of learning about architecture and its various entanglements rather than one that relies on a stable stock of systematic, scientific knowledge. Mapping Controversies in Architecture was introduced to the curriculum as a pragmatist, self-exemplifying mode of engaging with architecture. As opposed to the reflective studio-based learning of what it means to design, it implies an out-of-the-studio way of learning about design, which is simultaneously an out-of-the-auditorium mode of questioning the multifarious connections of architecture, society, economics, culture and politics. Some results from this educational experiment are discussed below.

Let us follow Petra (a student) and Quist (the coach) in their attempt to design a building. The example is taken from Schöns Educating the Reflective Practitioner...
As they discuss the project they also sketch different buildings: a reflective mode of designing. This reciprocally reflective dialogue of coach and student happens in the studio. Their design process traces a web of projected moves and discovered consequences and implications, sometimes leading to a reconstruction of the initial coherence – a reflective conversation with the materials of the situation. We follow Petra and Quist’s conversation with materials and shapes. Drawing and talking, Schön informs us, are parallel ways of designing and together make up what he calls the ‘language of designing’ (Schön 1987). Petra is stuck. She has tried to place the shape of the building into the contours of the land but the shape does not fit into the slope. Quist criticizes her framing of the problem and he repositions it as follows: ‘you should begin with a discipline, even if it is arbitrary… you can always break it open’ (Schön 1983: 83). In the media of sketch and spatial-action language, he represents the site, draws and redraws different options and simultaneously evaluates the consequences of every move on the sketch.

Each move has implications that bind later moves and each of them can potentially create problems that need to be described and solved, sketched and re-sketched. Quist designs ‘by spinning out a web of moves, consequences, implications, appreciations, and further moves’ – that is how Schön defines what it means to design (Schön 1987: 57). Both Petra and Quist engage in a reflective conversation with the situation. Each move is a local experiment that contributes to the global experiment of reframing the problem. It is a reflective process: ‘As Quist reflects on the unexpected consequences and implications of his moves, he listens to the situation’s back talk, forming new appreciations, which guide his further moves’ (Schön 1987: 57). Design progresses as Quist reframes the problems posed by Petra and engages in a reflective conversation with the situation and the implications of the new design moves.

Here is another type of inquiry. It is 2006 and we are in the midst of a controversy surrounding the proposed expansion of London’s Heathrow Airport. Robert, Aisha, Joe and Sophie delve into the press clippings and internet image galleries to try and unravel all the traces this controversy has left in the digital sphere. They explore the archives of Heathrow developments, governmental papers, news reports covering the community and activists’ protests, images and videos. They are my architecture students and I am not a coach in the studio but a lecturer in humanities.

They learn about the nature of dissent, they identify the actors, they stare at a complex timeline of the controversy that incorporates all of the actors and they follow the different events. Images and YouTube material inform us about the key actors and we can literally hear their voices: ‘voices from the remembrance service for the victims of climate change on the taxiway at Nottingham East Midlands Airport held by the Baptist minister, Reverend Malcolm Carroll, held on 24 September 2006’; ‘Voices of protest from the 14–21 August annual climate change camp held at Sipson. Over 2,000 people attended’; ‘Voices of protests from 21 March when Plane Stupid activists do a banner drop near Edinburgh Airport’. And we can extend that list.

Robert, Aisha, Joe and Sophie immerse themselves in complex datasets that allow them to reflect not only on the design of the third runway and the sixth terminal
to Heathrow Airport but on all those issues design is related to. How will the new terminal affect climate change? How many surrounding homes will the expanded airport destroy? How will the new design affect the residents of Sipson? Will the campaigns against Heathrow’s expansion change any of the design plans? As my students collect the data on the controversy and try to analyze and visualize it, they actively engage in a type of pragmatist inquiry called mapping the controversy. They trace the actors’ trajectories; draw their diagrams of relations and the timeline of the controversy while collecting the data. They do not simply deal with the sketch and the design coach but interact with a much vaster and heterogeneous assembly of actors: the Mayor of London, Boris Johnson; greenhouse gas emissions and nitrous oxide levels; Greenpeace and its celebrity supporters such as Emma Thompson and Alastair McGowan; environmental impacts; residents’ health concerns; the activist group, Plane Stupid; environmental, aviation and welfare groups; air companies such as Co-op Travel, British Airways and the British Airports Authority. All become part of the complex ecology of the proposed airport expansion.

When dealing with all of these actors, Joe and his team do not learn what design is; they learn about what design does – what kind of effects it can trigger, how it can affect the observer, divide communities and provoke disagreements; they immerse themselves into the many consequences of design practice and gain an awareness of its various implications. So, if Joe, Robert, Aisha and Sophie were asked to design a new terminal, especially after the controversial fame of the recent Terminal 5, would they still stay in the studio? Would they remain absorbed in a meditative dialogue with the sketch, staring at a model and ‘engaging in a dialogue with materials and shapes’, trying to solve the paradoxes of design? No, they would rather plunge into the design world outside the studio and face its complex ontology.

What kind of inquiry is this and how does it differ from Schön’s studio type of reflection-in-action (Schön 1985)? Does it still require designers to engage in a meditative process of communicating with materials and shapes in search of good airport design? No. Is it inspired by critical theory and does it engage in a meta-reflexive analysis that explains design by situating it as much as possible into reflexive frameworks? No. Neither of these approaches can describe the Mapping Controversies exercise in which Joe and his friends engage. It is neither a purely reflective nor a meta-reflexive inquiry.

Compared to the studio reflection-in-action that deals with the uncertainty of design, taken in the specific materiality of cognition, the mapping is a self-exemplifying type of inquiry that deals with the consequences of the manoeuvres of all actors involved in situations of uncertainty, their implications, their changing positions and opinions. As Joe and his team search among the piles of articles in the library and navigate databases and image galleries on the internet, they witness a web of moves composed of all of the actors’ stances involved in the controversy. This exercise is not about designing a building and trying to fit it into a slot but about weighing up the impacts a building could have and evaluating the consequences of design and its implications. The mapping does not advance by a subsequent reframing of the problem or by the sketching and re-sketching of
different options and possible scenarios; it progresses by following all extending webs and multiplying their proliferation through the inquiry. In the first case, Petra and Quist try to understand what their building will look like and how to design it in a better way by solving all the problems of site, scale, materials and shapes. In the second case, Joe and his team try to comprehend the consequences of design and the web of shifting positions within the controversy.

You could argue that the two types of inquiry are not comparable at all. One occurs in the US during the 1980s and the other in the UK in 2009. One involves a student and coach; the other is a group learning environment with a lecturer; one refers to a situation of learning to design; the other implies situations of learning about design; one could be quickly called ‘design practice’; the other ‘design theory’; one will take its inspiration from technology; the other from humanities. And if we were to continue the list of comparisons we will get deeper into the dualism of technology and aesthetics, architecture and society, theory and practice. Sceptical of the rationalism that distinguishes art from science, the mapping controversies method attempts to endorse and cultivate a specific attention to the performativity of design through teaching.

I refer to Schön’s study in order to shed light on the differences between a bidirectional reflective inquiry and the self-exemplifying multidirectional type of inquiry implied by Mapping Controversies. In the former, the designer and the result of his design are affecting one another in a situation that renders both directions into a relation of cause and effect, where every design move ‘bends back on’ and affects the entity instigating the action. There are many ways of comparing the design reflexivity of Petra and Quist described by Schön with what typically happens today in a studio practice. Whatever differences we can establish, Schön’s types of reflectivity can still be found today in architectural schools.

Moreover, designers take a variety of other data into account when designing: they do not engage in solitary coach-and-student problem-solving with the help of a sketch. The dialogue with sketches and shapes is complemented by an intense search of data, design precedents, image retrieval, actors’ statements, archival materials, government papers and data about the architects in charge. These new sources of design inspiration would imply a different mode of communication with materials and shapes, a different type of cognitive practice. The thinking about what they are doing while they are doing it makes the drawing design practitioners reflective, while the mapping designers are rather surfing practitioners. You might object to this as a rash comparison and say, ‘but many professionals today rely on browsing large amounts of data at the beginning of every inquiry’. What is it that makes the surfing Joe a design practitioner? If design happens by surfing and drawing, how can designers find their way within these various datasets – the digital masses of data on their computers and the heaps of drawings, paper cut-outs and physical models in the studios? How does this type of hybrid inquiry, with tracing paper and screen pixels, travel and generate a new type of design practice?

To answer these questions we will leave Petra and Quist for a while, arguing over the sketch and reframing design problems, and focus on the mapping venture that Joe and his colleagues are about to undertake. Why do they deal with controversies...
rather than simply with buildings and shapes? How does the engagement with controversy analysis and mapping lead us to a different epistemology of practice? What are its implications for design education?

What Does it Mean to Map a Controversy?

The students follow and map different controversies by focusing on the dynamic debates surrounding particular buildings or projects ranging from local UK controversies such as, Robin Hood Gardens in Sheffield, BBC Broadcasting House, Chelsea Barracks, and Arcelor Mittal in London, Birmingham Central Library, the Dunes of Scotland Golf Resort, to overseas projects with importance for the international design community such as Expo 2010 in Shanghai, Nu River Dam in China, Okhta Tower in St Petersburg, the CCTV in Beijing, the Park 51 mosque project near Grand Zero. Controversy, I explained to them, does not refer particularly to media debates, scandals, rumours surrounding design plans, uncertain architectural knowledge, buildings-in-progress, tentative technologies or building innovation. Instead, controversy points to the series of uncertainties that a design project, a building, an urban plan or a construction process undergoes; a situation of disagreement among different actors over a design issue. It is a synonym of ‘architecture in the making’. Mapping controversies means ‘analyzing controversies’ and covers the research that enables us to describe the successive stages in the production of architectural knowledge and artefacts, buildings and urban plans. It also refers to a variety of new representational techniques and tools that describe the stages of controversies.

Students are invited to follow, document and map (analyze and visualize) a controversy surrounding a particular building or design artefact. This may involve a master plan, a design proposal, an urban network, a technological or material innovation, or otherwise it may take the form of controversial statements or declarations. The instructions and definitions given are:

1. To follow requires being able to trace the dynamics of the controversy in time: the actors (individuals, groups or institutions), their arguments, the different positions and how they change and progress over time, the spaces in which they develop, the many ways of closing and reopening the debates, the extent of public involvement and participation in the process.
2. To document the controversy requires the collection of a variety of materials. Compile a research dossier that includes press clippings, images, interviews with architects, clients, and investors, public bodies, concerned citizens and users. Include materials and extracts from the literature related to other buildings of similar type. Seek information from governmental papers and archives. Examine and compile architectural plans, drawings and diagrams.
3. To map (analyze and visualize) means to present the chronological development of a dispute surrounding a building, a design project, a master plan but also to represent it with visuals. To capture the dynamics, visualize the timeline, the chronology of the controversies, the weight of...
the different actors. Provide a visualization of how the actors’ positions disperse or converge and how a personal position might change the whole configuration of arguments, and the timing and spacing of these arguments. To map denotes being able to visualize and analyze an argumentative space – a space shaped by disagreements and tensions, triggered by the controversial architectural object.

In their attempt to map the Heathrow controversy, Joe and his colleagues returned to the library and spent many hours browsing the internet. Firstly, they started following the dynamics of the controversy: the actors, their arguments, the different positions and how they change over time. Secondly, they documented the controversy by collected a variety of materials and compiling a research dossier composed of press clippings, images, and interviews with architects, clients, investors, public bodies, concerned citizens, and users. To this they added materials and extracts from the secondary literature related to other buildings of a similar type. They looked for information from governmental papers and examined architectural plans, drawings and diagrams. Thirdly, and the most challenging step, was to analyze and visualize – to present the chronological development of disputes surrounding the airport expansion design plans and also to represent it with visuals; to capture the dynamics, visualize the timeline, the chronology of the controversies and the weight of different actors’ positions. Employing the digital media, the students created interactive chronologies that display primary events based on media representation and which inform the website visitor who are the actors that are most connected with a particular event. The diagrams permit an overall visual depiction of chronological events and grasp the relationships of the heterogeneous actors involved in the controversy in a more intuitive and user-friendly way. They made videos and used materials available on YouTube, as well as podcasts that were accessible through iTunes. They provided visualizations of how the actors’ positions disperse or converge, and how a personal position might change the whole configuration of arguments and the spacing and timing of these arguments. There are semantic web-crawling tools appearing online, which can connect with data sources. Employing complex linguistic and referential algorithms, they dig out articles, reports, and official websites connected with particular topics by noting interconnectivity between websites, terminology, and keywords (Venturini 2011). The creative use of semantic web tools and architectural design skills led them to produce innovative visuals to trace the dynamics of the controversy and its changing argumentative spaces.

The students have no definitions to learn and no strict recipes to follow; they describe what they see meaning that they must be attentive to the details to find a unique account of a given situation. There are two reasons that this is experimental. Firstly, because students need to restrain themselves from explaining design with a single theory or viewpoint, for instance, the political factors or the ecological crisis that would give a particular shape to airport design. Secondly, they observe the controversy not through a singular design viewpoint or through the narrow glasses of the sketch (as Petra and Quist would do in their studio). Joe and his
colleagues put different hats on their heads when trying to unpack what such a design project means. They follow it from as many viewpoints as possible: the village inhabitants, the land occupants, the aviation companies, the pollution, the planners and the designers, the celebrities, the airport authorities, the carbon dioxide emissions and so forth. They listen more to the voices of the actors than to their own presumptions. They put the quick and easy explanatory schemes of design critics and theorists aside. Instead, Joe and Aisha, Sophie and Robert listen to what actors, protest demonstrations and the resistance of materials say and forget (even for a while) all presumptions of what this controversy might be about.

Using new objects of research and new techniques of representation means that Joe, Aisha, Sophie and Robert do not simply tell a story about a possible/impossible new terminal design at Heathrow. They also tackle the classic question of representing the subjects of design whose composition is always variable. The mapping refers to the variety of tools that describe the consecutive steps in the production of architectural knowledge, focusing on visual representations of the stakeholders, linking their various interests and tracing their development through time. There are many digital technologies that students can employ and I encouraged them to choose freely from what we provide and also what they find under their own initiative. The software used to embed these actors into a representational space ranges from basic web tools, such as web page editors Flash and Java, to 3D visual software in accordance with the content that the students are dealing with. All and all, the design students have successfully created novel modes of visually incorporating controversy studies suited to a digital format.

The results were presented in websites in which the design controversy and its moves are described. We stipulated that each project website had the following items:

**Homepage**
The simplest part of a website should include the title of the controversy and a list of chapters and authors. Each site should use a different format based on the particularities of the issue being explored.

**Presentation of the extent of dissent**
Dissent is a key feature of a controversy (Figure 5.4). A multiplicity of dissent is one of the first things that a viewer should find on a mapping controversy website. It is important to note that this is precisely what is missing from other websites on controversies where you may find a large list of links and information. However, there is no relative weighting of the importance of the actors and their concerns. Nor are there clear and coherent associative connections between the various actors. The idea behind mapping controversies is that you know how to organize the data in such a manner that these elements are clearly visible and navigable on the website.
Presentation of context
The third element concerns the type of contextual knowledge required to take part in the debate. On the web we are often bombarded with masses of data and we are not equipped with the means to extrapolate any significant knowledge. For this reason, a Mapping Controversies website should strive to provide some sort of context. This may seem difficult due to the fact that context itself is often contested but it can nevertheless be done through a careful and pragmatic presentation.

A multiform documentation
In a school of journalism, the following are regular activities: site visiting, picture-taking, reading papers, compiling a bibliography and performing interviews. Architects often engage in some of these activities as part of studio projects. They are equally important for the students’ mapping controversies websites where, for example, they can transcribe interviews, post photos or perhaps make a film. It is important to carry out this fieldwork because while much information can be found on the web, the internet does not, of course, include absolutely everything. Limiting oneself exclusively to digital technology can mean that important information is left out and a project will suffer as a result.

Many technical tools invented in order to navigate and gather masses of statistical data have now completely changed their meaning; they navigate
through masses of information which remain accessible at the elementary level rather than at the macroscopic level. The web has extraordinarily renewed all of the techniques which are dependent on information technology.

**Statistical analysis**
With each successive layer, and the added complexity they imply, it becomes paramount to create a mapping or cartography of the many positions involved in the controversy with the help of statistical tools. This is what is referred to as ‘second-degree objectivity’ (Venturini 2010) – the novel modes we have of accessing extraordinarily large amounts of data.

As the web has expanded, it has not only multiplied the sources and quantity of accessible data but has also stimulated a proliferation of creativity in terms of the many cartographic and quantitative tools and crawlers which allow for visualizing, or re-visualizing, that same mass of data. It is now quite possible and relatively easy for a student to map the relative authority of key figures in a dispute. It is important to note that current web technology permits us to make a cartography of opinions with the very same tools, honed in years of scientometrics, which have been used for analyzing scientific facts.

**Chronology integrated with documentation**
The sixth element that is always visible on project websites is an interactive chronology (Figure 5.5). This looks like a simple feature but is nevertheless a very elaborate tool. A chronological timeline can be used to map and gather masses of information obtained through the work of the reporters. The students can be very creative in their ways of visualizing the time of the controversy, its flight, and its different speeds.

**List of actors**
The seventh element is a presentation of the actors in a controversy (Figure 5.6 and 5.7). When searching on Google for information concerning a disputed fact, a person does not seek an endless stream of unorganized data but a manner of discovering who the main actors are and how they are gathered. A controversy can be visualized in the form of an assembly or forum in which the perspective of the issue alters according to your position. To create this effect, even simple colour-coding works well towards aligning the interests of various groups together. Once a controversy has been mapped the same website can be used as an interactive forum to continue and animate the debate.

A website may be developed in such a manner that it not only presents information but also produces it with data automatically read or streamed into the website for further exploration of the issue. It is now possible to access data depicting the phenomena themselves in addition to their abstract descriptions in static written form. Video resources allow witnessing the ‘dispute’ rather than merely presenting abstract concepts and terminology. The empirical tradition is deeply revolutionized by the possibility of having direct access to the data; empiricism itself is being renewed.
Students can even choose to transform the website visitor into a *producer* of fresh data because they can be given the possibility of intervening in the dispute. More and more websites allow for virtual experiments that replace abstract notions with visual access. The use of virtual labs allows becoming a virtual witness and developing the basic competency and skills needed to enter into the debate.

Digital technologies can be mobilized to *simulate* the different versions that actors have of the same dispute. The students look at some of the innovations present on the web and consult the resources section of the course website (http://www.mappingcontroversies.co.uk/) to get access to a selection of tools relevant for design education; a larger collection of resources is available at http://www.demoscience.org (resources).

To summarize, it is important to see a website as a ‘gathering’ or assemblage of information derived from papers, reports, images, recorded interviews and videos (Venturini 2011). The key point for evaluation is whether or not controversy websites utilize digital web technology to its full extent. The students should overcome the tendency to reproduce data in a static book form and push towards dynamic presentation and visual novelty. Incorporating all of the new digital tools at our fingertips and capitalizing on new forms of visual architecture are the key factors for effective controversy mappings in the future. Architecture students find that it
is also a great challenge to use all of the advanced design skills that they have acquired to produce original visualizations (with AutoCAD animations, videos, and so on) and use them in the websites. They equally make use of the digital technologies and the huge amounts of available web resources to better visualize the complex nature of buildings, and their changing cosmologies.

The aim of the website presentations is not to unveil some general structure of social and political factors concealed behind the phenomena. Their only purpose is to provide the most detailed description of the phenomena as seen by their protagonists. As Latour says, ‘If your description needs an explanation, it’s not a good description’ (Latour 2004: 67). The visuals used by architects do not simply describe, but also deploy the phenomenon. In the first step (following the controversy) and the second step of the inquiry (documenting the controversy) students only observe and describe what they see and find, thus putting aside any social theory, any metareflexive frameworks, that would explain particular courses of actions or the specific nature of actors. Then, in the third step of mapping, they deploy with design virtuosity the ontological charade they find when studying a controversy on the move.

Every controversy sets a trail that makes us reconsider what a building is and how many elements it is made of. Mapping Controversies allows students to follow this process and rethink the nature of buildings. Its techniques hinge on the idea that ‘things’ generate contested spaces in which an artefact is produced following a plethora of material and subjective considerations (Harman 2002, Latour and Weibel 2005). Buildings are ‘things’ as they appear as the result of a protracted process involving multiple concerns. In the diagrams of the mapped controversies, the students present the variable ontology of all kinds of actors enrolled: activists, groups and single architects, aviation companies and wind resistance, farmers and celebrities, house owners and drawings. And because the protagonists in a controversy are so heterogeneous (materials, experts, politicians, clients, architects, technicians, and concerned lay people) in the process of mapping them students learn about the hybrid nature of the issues at stake. The questions to be tackled in an architectural debate, to their surprise, are far from being of aesthetic and technical nature only; they range from political and ethical concerns through to mechanical engineering and environmental politics.

Mapping Controversies allows students to display the design and the social in a very dynamic way. The actors never appear alone, in isolated bubbles or structures, but always in a network. A building is seen through these mappings as an animated collection of criss-crossing trajectories of unstable definitions and expertise. Rather
than merely adding external concerns to objective entities, this advocates a new perspective to buildings where humanities and technologies, design and theory join synergies. And yes, it ends up as both humanities and technology by redefining them and justifying the need to tackle them together.

Following controversies also prevents students from falling into the trap of reductionism – reducing and explaining the protest to the Heathrow Airport runway with the political climate, cultural changes or social factors. These are easy frameworks of explanation. Students account for as much as those lines as they can without reducing the building specificity, or in fact any design matter, to one type of factors only. They account for the complexity of design venture and the underlying social, political and cultural dimensions of the process of design. Controversies also open ‘black boxes’ and allow students to get access to things and understandings that otherwise will be taken for granted. ‘Before this runway controversy many people were not aware of all of the environmental effects of aircraft or of the fact that the government can forcibly purchase your house,’ stated Joe with surprise at the group presentation of their controversy mapping.

This is also a good rehearsal for the profession of the designer. In a design process an architect does not simply draw in search of perfection of form, ideal geometry and aesthetics. For design work to be successful the architect should endeavour to trace the cosmogram of the users’ worlds and worldviews by identifying and tracking the practices followed by various sets of actors (for example, clients, actual and future users, contractors, citizens). Engaged in mapping the controversy, students ask the questions: ‘In which world do you live?’ ‘How is this world structured?’ ‘With whom and with what are you ready to

5.7 Actors diagram of the controversy surrounding the Birmingham Central Library; copyright – MSA.
share it?’ ‘What do you cherish the most?’ ‘Who are your allies and who are your critics?’ ‘How does change happen in this world and alter entire cosmologies?’ They try to understand the actors and their worldviews, what they cannot live without, and what they cherish the most. Aren’t these precisely the questions that a future designer should ask?

Even though some controversies never reach the intensity of open fights, the construction of a shared universe is often accompanied by the clash of conflicting worlds. That is why design controversies have the power to recompose cosmologies. Very often the proposed change in a controversy will entirely reconfigure the connections of existing actors and rearrange their worlds. It is crucial for an architect to understand the cosmology of the users for whom he is designing.

Rethinking the way we tackle buildings (with narratives and freeze frames in humanities and many technical drawings and visuals in technology) in the mapping controversy exercise, the students make a step towards innovating the visual vocabulary that needs to be invented to do justice to the idea of buildings as contested spaces. Through numerous animations and videos they produce descriptive accounts of buildings that contrast greatly with the older and more reluctant view of buildings as objective static objects.

Looking at the maps and the inventive use of design visuals, we can witness the students’ awareness that a building, seen through a series of contested projects and users’ demands, resembles a complex ecology more than it does a static object. In this experiment, buildings reveal their nature as ‘things’; that is, as gatherings of many conflicting demands. They cannot be reduced to what they are and what they mean as architectural theory has traditionally argued by adding ‘symbolic’, ‘human’, ‘subjective’ or ‘iconic’ dimensions to them. These visuals (animated plans and sections, actorial diagrams) talk convincingly about the ‘thingness’ of architectural and urban projects. Aiming to understanding controversies in urban design and architecture, this experiment also brings theory and practice together by reconnecting and strengthening the synergies between them.

From Reflecting-in-Action Towards the Mapping of the Real

An understanding of a building as a plethora of material and subjective considerations and as the result of a protracted process involving multiple concerns, will move beyond the traditional two or three-dimensional image, reaching out to represent additional human factors, and indeed reducing the need for distinctions between subject and object. Look at the sketch of Petra: we are in a simple Euclidian space. A building that we witness in a controversy mapping is rather reminiscent of navigation through a controversial datascape. Rather than merely adding external concerns to objective entities, the students’ visualizations make a step towards the invention of a visual vocabulary that will do justice to the idea of buildings as contested spaces.

Both the design enquiries of Petra and her coach and those of Joe and his colleagues deal with uncertainties. We gain valuable insights about the meaning of design in these enquiries. The designer in Schön’s account is someone who
deals with uncertainty, with complex, incoherent and messy situations and converts them to a determined form (here Schön follows Dewey’s view of the designer); they ‘construct and impose a coherence of their own’ (Schön 1987: 42).

In our Mapping Controversies case, the designer is one that recognizes and completely takes into account the complexity of design by observing it then simplifying it through the production of descriptions and visualizations.

When we observe controversies, we focus on the liquid side, as only in quarrels, disputes and flights, can new actors make their way to the surface of society. When we describe controversies, we contribute to the solidification of some portions of social magma reducing its complexity to a manageable level. Both tasks are equally important and closely connected in the practice of social cartography (Venturini 2010: 11).

The experiment of Mapping Controversies makes us perceive design as being concerned with the entire web of moves that are traced by the actions of design; it is about property, swarms of birds, affected nature, polluted air, the destroyed coherence of the neighbourhood, contested zoning regulations, costs, local politics, legacy, and community vitality. It is much more complex indeed than simply trying to put a building on a site and adjust its scale, gradually solving design problems.

The links between architecture and society are traditionally explored in their solid states. Instead, following controversies allows us to witness the social and the architectural in a non-stabilized state where all has melted. Follow the actors in a controversy, how they agree and disagree, how they shape alliances, how they scale and rescale the spaces where they move and create spatial disjunctions. Here is where you find the social. The cartography of controversies is conceived as a toolkit to cope with the different hybridizations of actors and knowledge, as an effort to follow disputes when they cut across disciplinary boundaries. Mapping design controversies pushes the investigation of architecture students far beyond the limits of sociology and history of design towards neighbouring human sciences, technology and even the natural sciences. Questioning the new Heathrow Airport runway will lead us to question climate issues, airline politics and landowners’ property rights. How can aviation companies profit better from the design? What kind of impact can a new terminal have on the environment? How will the property prices change as the construction progresses? All of these issues are not technical minutiae but important questions that lie at the core of the controversy and deserve greater attention. This realistic mode of inquiry greatly differs from the reflexive inquiry and the meta-reflexivity-based approach in design education. Through mapping controversies, architects learn that a building is something to be scrutinized, investigated and sought. It is not ‘out there’; it is to be followed and mapped. Only through constant attention to the performativity of design can design education sustain its integrity, value and effectiveness. Developing the Mapping Controversies in Architecture approach is a way in which design education can have a future.
ENDNOTES

1 Interview of the author with David Serero, 30 May 2008.

2 The six universities teaching the course across disciplines are joint in a teaching consortium and have a website platform managed by MIT: http://www.demoscience.org.

3 The course is presented on the web-based platform Mapping Controversies in Architecture (http://www.mappingcontroversies.co.uk, or http://www.msa.ac.uk/mac). This platform is devoted to understanding urban controversies. Given the rising interest in Actor-Network Theory from a range of disciplines like geography, anthropology, organization studies, planning and landscape, the platform has the potential to serve as an example of research-based teaching for these disciplines.
Chapter 6
Mapping Controversies

THE LONDON 2012 OLYMPIC STADIUM CONTROVERSY

The recent expansion of design controversies is a direct result of their spread throughout the whole fabric of our existence. In 2012, London will be the centre of world attention as the host city of the 30th Summer Olympiad Games. As the date draws closer, more attention will be drawn to what is typically the architectural showcase of the Games: the athletics stadium.

How could we expect the design of such an important building not to meet resistance? A building that, once constructed, will trigger the entire transformation of East London, modify the mayoral politics in London, raise greenhouse gas emissions and nitrous oxide levels, and impact on the residents’ lives and health. Indubitably, a building of such cultural importance will provoke many reactions once it is built and will draw large and varied criticism from the architectural community and the press as well as from politicians, inhabitants, and visitors to the city. Architectural blogs will discuss the final design along with the legacy scenarios, while journalists will recollect the impressions of the first visitors to the venue. Numerous groups will feel concerned by its design and express reactions.

We do not need to wait until the 2012 Olympic Games to hear the critical reactions. How is this controversy to be tackled as it unfolds? Should we simply engage in the venture of explanation? What would happen instead if we were able to systematically foreground, analyze and map the changing sets of positions triggered by contested design? How can we account for the long-term consequences of controversies that surround contested urban knowledge? What does a mapping enquiry imply? How does it differ from an explanatory inquiry?

Explaining the Stadium Design

For the historians and architectural theorists who will have the chance to interview architect Peter Cook or HOK Sports (now named Populous), lingering for more than
a day in their practice or on the construction site of the stadium is a waste of time. The only tools they need to explain Cook’s approach is to refer either to the larger theoretical influences upon the design, to Archigram, to blob architecture, or to contemporary politics and culture, to zeitgeist.

All of these interpretations will be made after the building is completed. Journalists will be impatient to break the story; architectural critics will passionately praise the building style and will evaluate their ways of experiencing the building; the international sports organizations will be thrilled by the new venue; and sports fans will be eager to visit the site and witness the event. Stepping aside from the design process and leaving design experience apart will not lead us to understand how the building will take shape and what the reactions of the entire design world will be. However, if we follow the design controversy, now, as it slowly unfolds in time, we are able to interpret the building taking shape out there in East London. We will see it as being connected to both the conditions of its making and the design experience of architects, builders, Olympic authorities, the city council, the communities of East London, the media and politicians. We will unravel the entire ecology of design in the making as being significant for undesigning this building.

What is it about the London Olympic Stadium that provokes so many good and bad reactions during the bid, design and construction? What kinds of actors respond to the design proposals and claim to speak on its behalf? One way to answer these questions is to deduce the building’s meaning from stylistic patterns or any kind of causalities. So, in the sense of the mainstream social sciences to explain a building like the London stadium means to produce a ‘social explanation’ of its design. As we have established, this approach ignores the specificity of architecture. In spite of the fact that the project has its own strengths and logic, it will be assumed that it simply reflects the challenges of contemporary urban politics and its shape will be commonly associated with the social context, the cultural and the political climates of our time. In spite of the fact that there are so many actors enrolled in the controversy, the design will perhaps be said to pertain to the individual creative approach of a single designer, of Peter Cook or to HOK sports, whose creative solutions will be praised or criticized for decades. The other voices will be forgotten.

The alternative to reduction is to follow and account the process of making and debating the stadium building. Following controversies prevents us from falling into the trap of reductionism. It becomes possible to trace architecture in the making and learn about its underlying social dynamics. This method draws on existing digital research habits developed over the last two decades to search qualitative and quantitative data on the web, allowing us to follow and map the London Olympic Stadium design controversy and so gaining access to the not-yet-stabilized states of the urban and the social.
MAPPING THE CONTROVERSY

Fragments from the Controversy Diary²

2003 – Keith Mills, chief executive of the London 2012 Campaign, and Tony Winterbottom, director of regeneration and development for the London Development Agency, express how the London bid will be contingent on the ability to provide a lasting cultural and sporting legacy to the city (Kirby 2003).

2004 – A concept design is released on the 7 November 2004 in The Independent (Hubbard 2004). It figured a muscled outer structure as conceived by Alejandro Zaera-Polo from Foreign Office Architects (FAO) who is hired for the task. This design forms part of the bid by London to host the Games and is received positively by the architectural community in the UK. It is used extensively during the London bidding campaign where the city competed against contenders such as Paris, New York, Madrid, and Moscow.

The London bidding team – with the support and efforts of Tony Blair, then prime minister – made legacy and community redevelopment an explicit part of their campaign and were therefore bound to these commitments upon winning the 2012 Games. The Report of the IOC Evaluation Commission for the Games of the XXX Olympiad in 2012 states that:

> London has proposed Games based on providing world-class facilities and services for the athletes, and a legacy for sport and the community through new and enhanced facilities and a greater emphasis on sport and physical activity (IOC, 2005)


With a large amount of infrastructure already planned by the time London won the bid, the stadium plan remained to be finalized. A final design had not yet been formulated and it was thought pertinent to await the decision of the International Olympic Committee (IOC) before moving forward with a complete design.

After the announcement of London’s successful bid in July 2005, responsibilities were divided between newly created and pre-existing bodies. The protagonists were: the London Organising Committee of the Olympic Games and Paralympic Games (LOCOG) who were responsible for preparing and staging the Games; the Olympic Delivery Authority (ODA) with responsibility for venues and infrastructure; the Mayor of London, tasked with ensuring that Londoners benefit from the Games; the British Government were represented by Tessa Jowell, a new Minister for the Olympics. The ODA’s remit included the design and construction of the Olympic Stadium and they immediately searched for a team to determine the definitive design (Waite 2006).
2006 – HOK Sport, the renowned designers of the Sydney 2000 Olympic Stadium and Arsenal’s Emirates Stadium (2006), are involved as consultants from the beginning and are the natural choice for the London Olympic Games and its representatives – ODA and LOCOG. Following the annual RIBA conference in 2006, concerns are voiced about the lack of design input into the project. In response, several new figures are brought into the design process including the designer Peter Cook and Sir Nicholas Serota, the director of the Tate Gallery.

On the 13 October 2006, contributors to Building Design considered HOK Sport (now Populous) as the clear favourites in the bidding because of their excellent reputation and a lack of competing bids (Building Design 13 October 2006). FOA and other leading architects did not enter an independent bid for the stadium because of the recent experience of Wembley Stadium, designed by Foster and Partners and HOK Sport, that had become the most expensive stadium in modern history. According to The Independent, the public tender for the Olympic Stadium envisioned around six competing bids but this competitive format never materialized (Beard 2006). As a result, HOK Sport became de facto winners of the bid with little comment in the press.

That was until controversy broke out in 2006 following the RIBA conference in Venice. The architectural community, as represented by RIBA, criticized the lack of expertise on design and architecture in the ODA’s decision-making processes. Richard Rogers spearheaded the criticisms and maligned the ‘design and build’ strategy employed as opposed to a ‘design-led’ building process (Dorrell 2006a). The ODA responded by making a number of new appointments to increase the design input including Peter Cook, a designer famous for his conceptual work with Archigram in the 1960s. The chief executive of the ODA, David Higgins, argued that:

*The Olympics is a vast stage show and it needs to be thought of like that. It’s about the temporary structures, what they’ll look like and their colour and how they’re branded. There’s also the sculpture, temporary bridges and landscaping. That’s what we’ve got to get right* (Baillieu 2006).

In this sense, Peter Cook’s involvement in iconic and theoretical studies, such as that of Instant City project (1968), made him ideal for the role. As critic Amanda Baillieu noted, Cook might ‘find his Archigram experience useful as he searches for a solution to the stadium brief which requires a facility to hold 80,000 people’ (Baillieu 2006: 1). The ODA also appointed Tate Gallery director, Sir Nicholas Serota, to its advisory board hoping now to have allayed the concerns expressed by the architecture community regarding the bidding process and design input. The new team was assembled to form the ‘final’ design of the stadium and comprised of HOK Sport with the advice of Peter Cook. Their mandate included retaining an athletics capacity for London beyond 2012.

Yet in the intervening period between forming the design team and the unveiling of the final design there were reports of continued controversy over the legacy options for the stadium. The 80,000-capacity venue was designed so that 55,000 seats and the upper crown can be removed to retain a 25,000-seat
stadium as a smaller athletics venue. Government ministers and the ODA searched for a permanent owner for the stadium with local football and rugby clubs listed as possibilities. Others, most notably Sebastian Coe (LOCOG) and Lamine Diack, president of the International Association of Athletics Federations (IAAF), were adamant about retaining an athletics track. London’s bid to hold the 2018 FIFA World Cup has changed the dynamics of the debate as has the creation of the London 2012 Legacy Company, with Margaret Ford at the helm as chairwoman. Baroness Ford, a new player on the scene and Boris Johnson, the incumbent Mayor of London are amongst several voices who want to ensure that the possibility of the stadium being a World Cup football venue remain on the table.

Since the very beginning, this building has been expected to have a ‘community-oriented’ look such that the components removed from the stadium after the Games will be useful buildings in their own right. ‘People will enjoy the components. They will be put to use in the area, for example in schools,’ stated Cook (Malvern et al. 2006). However, concerns about legacy design continue to be raised even as construction draws close to completion.

2007 – The final design is unveiled to the press on 7 November 2007 by the London Olympic authorities and HOK Sport. The computer-modelled design has been replicated with solid materials and the marketing of the 2012 Summer Olympics is beginning to make its first tentative steps at capturing the national consciousness. The official unveiling of the Olympic Stadium design gave birth to a flurry of activity on the web as journalists quickly wrote up articles and people traded impressions over blogs. Appointed design critics in architectural journals and newspapers, such as The Guardian, mobilized to form opinions about the design.

Reactions were mixed, ranging from praise for its simplicity and sustainable thinking to criticisms over its purported lack of flair and panache. The majority of the British architectural community were negative. They compared it with the Beijing stadium (2008). A debate emerged about what sort of ‘image’ London should be providing to the world when the most ambitious and flamboyant projects were appearing in the Far East. Few were unanimous in their praise although some commended the lack of ostentation and focus on practicality. The controversy accelerated its speed.

2009 – The legacy of the stadium building is highly debated. It is largely assumed that it will continue its international role, hosting athletics tournaments and being promoted for future football and rugby world cups. A global economic downturn from 2007 means that cost becomes a big factor. Concerns are voiced about the post-Games usage of the Olympic Village with its expensive facilities. With the election of Boris Johnson as the new mayor in 2008, there was an increased impetus on behalf of the Greater London Authority and Westminster to ensure that the future of local communities and London cultural life are increasingly brought into the centre of the debate.
2010 – Slowly but surely, with the steadfast rhythm of honeybees, a small army of contracted workers is raising the new 80,000 capacity Olympic Stadium in the East End of London. The Stadium is completed in 2011. The controversy over its legacy is more alive than ever.\textsuperscript{3}

2011 – West Ham wins the battle for the Olympic Legacy park by offering a more compelling legacy case – to retain the athletics track. Their proposal is considered to be better than Tottenham’s rival bid, which offered ‘an iconic anchor centrepiece’ where the Olympic Stadium would solely be used for football and the athletic track will be demolished. The legacy controversy continues to unfold as we write (Warner 2011). The plan by West Ham collapses in October 2011 under the weight of legal challenges. For now the stadium is kept in public hands.

As we read the diary excerpts a variety of discordant voices and actors with different ontologies meet together: David Higgins, Peter Cook, Commission for Architecture and the Built Environment (CABE), Baroness Margaret Ford, RIBA, Ken Livingstone, the Athens 2004 Olympic Games, Boris Johnson, the Westminster Government, Alejandro Zaera-Polo, LOCOG, the Beijing 2008 Olympic Games, etc. They express design preferences, discuss legacy scenarios, argue over costs and sustainability issues, go back to design precedents, form new political alliances, reshape their groupings, trigger new city events and discuss neighbourhood transformations. East London’s community is divided and united many times by the different scenarios for development and regeneration prognoses.

The controversy refers to a situation in which all of these actors disagree; it begins when they discover that they cannot ignore each other and could end when actors manage to work out a solid compromise to live together. ‘Controversy’ points out to every bit of design and architecture, which is not yet stabilized, closed or ‘black-boxed’. Thus, when we talk about controversy, it does not necessarily mean that there is a fierce dispute or that it has been politicized. Controversy is used here as a general term to describe shared uncertainty over the stadium shape, legacy scenarios and the consequences of its design.

Following the 2012 Olympics design debate makes the city and the design-related social transformations appear as incredibly intricate, unbounded entities. To grasp London or the area of East London, traditional cartographic tools are no longer appropriate. The superposition of networks makes it difficult to understand even the historic centre of the city using traditional representation tools (Dodge et al. 2009). It is even more difficult to map the becoming-Olympics of London as existing representational tools are not powerful enough to grasp the active groupings, moves and tensions triggered by the controversy or its fields of tensions and transforming networks within a city that is about to host the Games.

The shortest route to a clear-cut analysis of the design processes and social issues related to the Olympics Stadium will express it in familiar language: tackling the social issues and redevelopment plans for the Lea Valley in East London, the urban regeneration and city re-branding strategies (Gold and Gold 2008); the role of the Olympics for urban governance and its impact on city politics (Newman 2007); or to measure impacts from hosting the Olympics (Atkinson et al. 2008). Yet,
these common social science interpretations remain insufficient to understand the entire magnitude of the design-related transformations at stake.

One might ask: why fully map the controversy instead of trying to understand solely the identities of the actors involved or the nature of their concerns? Why extensively map its dynamics instead of trying to explain it by situating it within its generative context? Why map a phenomenon of such scale when easy explanations are at hand? Sceptics may reply: isn’t that just a question of choosing the best designer? Isn’t that just a question of urban politics and mayoral governance? Isn’t that just a part of the regeneration agenda of East London? However, this reduces complexity to the general categories of urban regeneration, mayoral politics, design creativity and will not lead to a better understanding of the controversy dimensions.

It becomes crucial to follow and map the controversy as well as finding out new ways to navigate through the controversial set of opinions. Exploring the controversy offers access to the complexity that all of the possible lines of explanation could trace and prevent us from embracing any of them individually. Mapping the controversy will help us to understand the uncertainties surrounding the stadium design in greater depth and will provide us with the unique opportunity to follow the becoming-Olympics of London.

**MAPPING: PITFALLS AND STEPS**

Is a map not a representation of the world (Pickles 2004) but an inscription that does work in the world? Some cultural geographers disagreed with the traditional preconception that maps reflect territories, lands and spirits. Instead, they argued that maps establish their sole form of existence; maps create rather than merely represent the ground on which they rest (King 1996). Thus, maps are not just representational tools; map-making and mappings perform. Exploring the ways in which maps and mapping function in contemporary societies, cultural geographers followed how they produce subjects, shape bodies and constitute identities. This way of thinking about maps emphasizes the unremitting materiality of a world where there are no pre-existing objects and fixed identities.

The massive diffusion of digital technology has allowed us to shift from a mimetic use of maps towards a very different interpretation of the mapping enterprise – a navigational one. Digital technologies have reconfigured the mapping experience into something else, something reminiscent of a navigation platform that is characterized by the presence of a databank with some interface for data handling (calculation, treatment and retrieval; a dashboard for interfacing with the users both ways; and many different outputs tailored to a great variety of users). Far from increasing the feeling of dematerialization, digital techniques have rematerialized the whole chain of production to show a number of features that maps had long before the computers (November et al. 2010).

The term ‘mapping’ is widespread in STS (Callon et al. 1986), a field that advocates that the world is made up of all kinds of things brought into relation with one
another by the universe of spaces. Mapping introduces us into the spatialization of the phenomena. As Nigel Thrift puts it, ‘space opens up whole new worlds by making it possible to write…about society without falling back on to static categories and about knowledge of being without falling back on the recondite’ (Thrift 2006: 140). That is exactly what mapping is meant to be: a tool that enables us to remain in the process, in the durée; it grapples the ‘processual sensualism that a material schematism provides’ (Thrift 2006: 140).

Mapping refers also to a present-oriented, cartographic, understanding of person that is to be found in Deleuzian’s philosophy. Such a notion is quite different from an archaeological conception of the person rooted in psychoanalysis. Deleuze makes the distinction clear by saying that:

*The latter establishes a profound link between the unconscious and memory: it is a memorial, commemorative, or monumental conception that pertains to persons or objects, the milieu being nothing more than terrains capable of conserving, identifying or authorizing them…Maps, on the contrary, are superimposed in such a way that each map finds itself modified in the following map. Rather than finding its origins in the preceding one: from one map to the next, it is not a matter of searching for an origin but of evaluating displacements (Deleuze 1993: 83).*

With the advent of digital technologies, maps also began to be used more extensively for the understanding of social phenomena and their realities. To map a social phenomenon is not only to represent it but to make sense of it. Maps are not only representations of what is; in an implicit or explicit manner they make a case for what is really important, what should be kept and what should be transformed, and in what direction. The problem is that we have only limited models, tools, and methods to capture spaces of imitation and invention traced in the mapping.

**STEPS**

We follow the controversy on the move. Our knowledge of the London Olympic Stadium controversy is based upon its manifestations in the media and through publicly available documents on the websites of official organizations (Figure 6.1). We follow and enlist the whole range of actors concerned by the stadium’s design whether they are architects, clients, communities, costs, design precedents or existing buildings, area regeneration prospects or legacy scenarios, diagrams or sketches, beams or structural models or indeed anything else.

Using the generic term ‘actors’ we designate all beings enrolled in the controversy, human and non-human. We identify relevant online sources and map the actors’ relationships through various ‘actorial diagrams’ (Figure 6.2). To identify the actors, we read online sources and ask ourselves if the presence or absence of an actor makes any difference. For instance, the Beijing stadium appears to be an actor along with Boris Johnson, HOK Sport and Peter Cook. This might look surprising. Yet the reference to the Beijing stadium design makes a difference in our London Olympics story because it is a precedent that colours the perceptions of many actors.
Everything can be an actor as long as it makes a difference. No one will be surprised to see that the architect is never on his own in the design and construction process. Many other individual actors join in: Boris Johnson, Sebastian Coe, Tessa Jowell, Ken Livingstone, the former Mayor of London, Jacques Rogge, president of the IOC, Rod Sheard, architect with HOK Sport (Populous), Baroness Margaret Ford, John Armit and David Higgins of the ODA. There are many institutions mobilized in the controversy that show themselves as full-blown actors: LOCOG, ODA, HOK Sport, the IOC, RIBA and the design community, West Ham United and CABE. Then there are the non-human actors: Athens 2004 Olympic Games, Manchester 2002 Commonwealth Games, recession, the Millennium Dome, Beijing 2008 Olympic Games and Wembley Stadium, amongst others.

We slowly follow how the controversy unfolds and how the actors’ moves trace new networks. We track the interventions of different protagonists, we account for every design move and every new disagreement. We map the actors’ main

6.1 Diagram presenting the steps of controversy analysis; copyright – the author.

6.2 Actors’ diagram of the 2012 London Olympic Stadium controversy; copyright – the University of Manchester.
statements and trace the thick mesh of relations among the statements circulating in a dispute. For instance, among the most frequent criticisms of the final stadium design is that it resembles a great ‘circus tent’. The analogy is interesting as it brings us to the discussion of legacy, which is central to the controversy debate. This is a statement that circulates across the actors enrolled. Peter Cook, in an interview with the *Architectural Record*, draws the comparison directly by stating that ‘[i]f it’s a temporary condition, then you can take advantage of that in the same way as when the circus comes to town. In a way you could say Instant City is, intellectually, the model’ (Rousseay 2007). In an ironical twist, the appointment of a noted designer seems to be bound up with the criticism later given by the very same design community that complained about the place of design in the Olympics.

We can also visualize the networks of actors. Visualizing the making of the stadium as a moving network is a challenging task that requires the production of numerous interactive diagrams that can grasp the relationships of the heterogeneous actors involved in the controversy. There is no such thing as an isolated actor. Actors are always interfaces of connections, as they are both composed and components of networks. We endeavour to reproduce a more nuanced understanding of the overall dynamics of the controversy through visualizations of the actors: showing with whom they are associated and outlining how their mediating agency transforms the debate. Actors are such because they inter-act, shaping relations and being shaped by relations. Actors gain their identity in the disputes.

Whether the reactions of the actors are good or bad, slowed or speeded up, they have a positive impact because they make us rethink the importance of stadia for a big metropolis like London and they make us go back to design precedents to revisit similar controversies surrounding stadium design. As we evaluate the enrolled actors in the London controversy, we begin to open the design ‘black-boxes’ of other stadia, such as the Beijing National Stadium with its innovative steel structure design and its thoughtful integration into the layout of the Olympic Park and its host city. The comparison with Beijing is recurrent: it is primarily discussed because of its aesthetics but the financial and material-limiting factors ensured that a similar scale of construction was deemed unfeasible for the London Olympics where raw materials and labour are more expensive. Just like the 2008 Beijing Olympic Games had a significant bearing on how China is perceived and treated by other nation states and international organizations, it is now anticipated that the London Olympic Games will be of intrinsic national importance for the UK and provide an opportunity to display national socio-political and cultural vitality. The Beijing Games were of epic proportions and exceeded in terms of spectacle and mass organization many, if not all, previous Games. While hosted in a decidedly modern and wealthy city, the London Olympic Games will necessarily differ from the Beijing Olympic Games in scale.

The ‘Bird’s Nest’, designed by Herzog and de Meuron, has won several prizes including the RIBA’s Lubetkin Prize in July 2009. It has been lavished with praise for its architectural virtuosity, engineering accomplishment and for its thoughtful concept development. The London Olympic Stadium has been designed and planned in the shadow of the Beijing Olympics and, to some extent, its critical appreciation is slowly morphing from one of bemoaned dismissal for a lack of
audacity to one of reserved praise for its straightforward common-sense and legacy planning as a reaction to criticisms of the Bird’s Nest.

The ‘Bird’s Nest’ stadium is one among many actors altering the perception of the emerging London Stadium along with other precedents. The Athens 2004 Olympics is analyzed as an example of a legacy failure while the Manchester 2002 Commonwealth Games as an example of successful legacy. The Millennium Dome is held up as an instance of an inadequate legacy planning and Wembley Stadium given as an example of poor economic management. As soon as a design precedent is discussed, the ‘black-box’ of its design is temporarily opened and dismantled into smaller attributes. This makes us realize how many actors are involved in the making and the maintenance of a stadium today; it tests the attachment to stadium buildings as well as the cohesion of the communities around them.

Thus, we are in the midst of the controversy and we plunge into press clippings and image galleries on the web to try and unravel all the traces it has left in the web space. We are immersed in complex datasets that allow us to reflect on the design of the London stadium and, crucially, all of the issues to which design is related. For example, how will the new design affect the residents of the villages of Old Ford, Stratford Waterfront, and Pudding Mill? Will the concerns against its design change any of the design plans? Which scenario will be accepted and how will this affect the post-Games life of the community? So, as we collect data on the controversy and try to analyze and visualize it, we are actively engage in the pragmatist enquiry of mapping the controversy. When we trace the actors’ trajectories and draw the diagrams of relations and the timeline, we do not engage in a meta-reflective analysis of the factors behind the stadium design inspired by the critical theory. Instead, we interact with a much vaster and heterogeneous assembly of actors. When dealing with them, we do not simply learn what design is; we learn about what design does.

The digital technologies at our command provide us with abundant resources to follow the controversy surrounding the contested design of the stadium. Yet, we do not simply document the course of the controversy. We also visualize the complex and dynamic ecologies that this building constitutes.

**VISUALIZING CONTROVERSY DYNAMICS**

As soon as you ask architects to visualize a controversy, they would probably use AutoCAD and Adobe Illustrator, mobilizing the skills of drawing 3D Euclidian space. These are the tools usually used to draw static objects. But we know that a building is a project, rather than a static object (Yaneva 2009a). How can we draw a contentious project, a complex ecology or a network? Something different from CAD techniques and perspectival drawing is needed to capture their dynamics. If perspective drawings and CAD software are not powerful enough to help us in this undertaking, what kinds of tools can picture, in a versatile way, actors’ dynamics, trajectories and variable ontologies? What is the alternative to reducing buildings to static images or architecture studies to studies of images (that is, the direct translation of Bildwissenschaft)? How can we transform the static view of a
building into one of successive freeze-frames that document the continuous flow that a building always is? How can we gain a different understanding of a building relying on the entire visual experience that we acquire when recollecting the events of its making?

In what follows I will recount, in a meticulous and reflexive fashion, an attempt to map the London Olympics controversy in a dynamic way in collaboration with computational designers. Accounting the process of mapping will allow us to witness a shift in the way we tackle complex social phenomena thanks to the advent of digital technologies.

Collaborations at the crossroad of the fields of STS and web technologies have led to numerous attempts to visualize networks (Callon 2001). Network points to the fact that knowledge practices are defined as restricted and circumscribed into tiny, fragile and costly networks of practices. Sociological analysis:

usually adopts one of two methodological alternatives to the two equally unsatisfactory alternatives: either they provide thick descriptions of selected sites, thus missing the figurational dimension of the collaborative network, or they attempt to account for figurational complexity by reducing it to a few quantitative indicators, thus destroying for all practical purposes the very phenomena under investigation (Cambrosio et al. 2004: 325–326).

To overcome the limitations of these two alternatives, STS scholars opted for a combination of ethnographic methods (interviews, content analysis) and computer-based mapping using a software program, Réseau Lu, specifically designed for the treatment and mapping of complex, heterogeneous, relational data that becomes visually interpretable through the maps (Cambrosio et al. 2010). In these pioneering attempts to combine qualitative and semi-quantitative methods, the making of hybrid collective spaces is traced and documented. Yet, maps are never an end in themselves that can replace other existing methods be they quantitative, qualitative or visual. They are meant to inform, enrich and complete an enquiry conducted with qualitative methods, and even serve as a starting point for new enquiries (Bourret et al. 2006).

Another web technique – Issue Crawler – allowed researchers to explore debates on the web by tracking the relationships between actors involved in them through the inter-hyperlinking as well as mapping of their discursive affinities (Rogers 2004). The underlying claim is that hyperlinking and discursive maps provide a semblance of given socio-epistemic networks on the web (Marres and Rogers 2000). This kind of mapping enabled scholars to find out the particular issues acknowledged by the actors and to witness, in the process of mapping, the making of a debate whose format and magnitude might not be obvious at the start.

The use of Issue Crawler and Réseau Lu maps constituted a major step forward in tracing the networks visually and analytically, thus enabling STS to powerfully respond to common critiques of its predominantly qualitative methods. The particular STS take introduces mapping into the analysis of heterogeneous networks and allows for the inspection of their constitutive dynamics. Other software that is used to map networks, such as social network analysis, is a priori unsuited for the
task of grasping the complexity of socio-technical networks because, as argued extensively by ANT, networks cannot be reduced to social relations only (Callon 1986). The power of the mapping techniques developed with Issue Crawler and Réseau Lu lies in their capacity to give visual strength to analytical arguments, to act as a tool facilitating the generation of qualitative data and to provide a comprehensive view of the network and the actors’ constitutive relationships.

However, the existing network maps of complex phenomena suffer from two main deficiencies. Firstly, although they are based on dynamic web browsers, the final maps are static and difficult to manipulate and update; they are far from being navigational tools. Secondly, their visual repertoire draws on rather limited graphical conventions: the nodes (circles and squares) correspond to the main actors in a network, each node appears only once on each map and its size is proportional to its relative importance. The size of the connecting line is also proportional to the number of connections and co-occurrence ties. The location of nodes in two-dimensional space and the length of the connecting lines have no metrical meaning. The more related two actors are, the closer they appear on the network maps. This allows clusters of connections to be easily visualized.

Consequently, in a technological and visual sense, a network map is often a chart made of nodes connected by lines with the node being the result of a conjunction of two intersecting lines. This makes the maps look like ‘anaemic’ representations, as Peter Sloterdijk drew our attention to in the distinction between networks and spheres (Latour 2009). Praised in the beginning, these maps were subjected to further scrutiny and subsequently assessed as being overwhelming and difficult to read. To develop mapping as an analytical method that can portray the degree of complexity so inadequately captured by traditional qualitative and quantitative methods, we took inspiration from computational design.

To address the limitations of the existing network maps and develop their visual and performative aspects we set a number of questions: how can the ‘anaemic’ aspect of the network maps be overcome? When we draw actors as dots and nodes, and their connections as lines, we assume that the actors’ identities are determined prior to the mapping and outside of the mapping. Mapping as a particular version of representation carries assumptions about what can be known (epistemological assumptions) and about what it is that can be known about (ontological assumptions) (Law and Singleton 2002). How can the ontological assumption of ‘out-thereness’ be overcome? How can connections be better pictured without pre-defining the essence of the actors enrolled in a network? How can networks be more efficiently presented to avoid the traditional separations between actors and network, between individual and society? How can we equally overcome the static representations of networks? What kinds of tools can we use to present a space inhabited not by facts, but by ‘matters of concern’ (Latour 2004), a space of tensions, rather than a space inside which reside objects and subjects? How can the mapping capture dynamically the entities that engender their spaces as they trudge along?

Attempting to escape from the very beginning the traditional interpretations of the stadium design as legitimizing power relationships, and solving out the social
problems of the underdeveloped communities in East London, we are left with the alternative of treating the architecture-related social transformations in a reflexive and critical fashion. Yet, a critical interpretation would ignore the fluency of the social world of design and analyze it in terms of static categories only. To be able to fully map and explore the stadium controversy as it happens taking advantage of the newest developments of architectural software, we have first chosen to use parametric design. The second stage of the development of the mapping implied the use of other forms of computational design and simulation to better amplify the phenomena (Loukissas 2009). Using these techniques in combination with the web, we explore alternative ways of digital data analysis to present a space where controversy is rife, not a static object, but a moving network.

**Mapping Controversies with Parametrics: Potentials and Limitations**

Parametric design offers a new approach to architecture based on advanced computational design techniques. Parametric design is predominantly used by architects to visualize the dynamic relations of all technical features that generate a new shape following a pre-established sequence of parameters. Consequently, it constitutes another stage in the ongoing historical connections between digital culture and architecture. There are a number of reasons that made us choose parametric design to map controversies.

Firstly, parametricism offers a flexible set of components; their manipulation can lead to an infinite amount of variation. In the past, there was a strong allegiance to rigid geometrical figures. A conceptual definition of parametricism shows that it offers an alternative: ‘the new primitives are animate, dynamic, and interactive entities (…) that act as building blocks for dynamic systems’ (Schumacher 2008, 2010). Parametric design confronts architects with a much more fluid world of dynamic entities in which the form of the phenomenon does not appear as determined from outside; it is being shaped in the geometric flows in the same way as a slow analysis of a controversy will do by unravelling the invisible fields and forces that constitute it. The mapping that emerges is inseparable from a continuum of alternatives obtained from direct deformation or parametric variations (spatial framework). The form that the controversy network could take as the time flows back and forth is not the one of a unified composition; it remains an assemblage of sequences that are inflected by their mutual process.

Secondly, a parametric animation relies on the assumption of subjects and objects that cannot be isolated from their surroundings but appear in continuity with them. It points to ‘mutually shaping process through which the dynamic of formation is supposed to concern simultaneously subject and object’ (Rahim 2006: 136). The outline of the controversy is displayed on the computer screen as a temporary appearance or a selection in a geometric flow. Initially, it gives us the impression of an overstatement, perhaps a mannerist or baroque-like intricacy. Later, we find out that instead of distinct objects occupying separate places in a passive space derived from Descartes res extensa, we see fields, flows and gradients that generate provisory assemblages. Repudiating all traces of dualism between...
mind and matter or between object and subject in a perspective characterized by Kwinter (2008: 146), amongst others, as a new and radical materialism, these assemblages are reminiscent of Deleuze and Guattari’s rhizomes (1987) or Latour’s hybrid networks (1993). Those are entities on the level of the real; they are never entirely separated from their surroundings. Both designers and social scientists remain in the world of the controversy unable to look at it from an outside position; they engage with the continuity of the real.

Responding to the challenges posed to network maps, an animation of the controversy was developed using parametric modelling (Figure 6.3). We use parametric modelling to visualize how an assembly of heterogeneous actors, their locations in time and space, and conflicting concerns work in tandem to shape the controversy. This animation showcases how the controversy unfolds as it is driven by a number of concerns: cost, legacy, community and design. It also provides a worldview of all the actors in relation to media attention, depicting when they entered and exited the debate. This simulation allows us to track the actors’ involvement in the controversy in a dynamic way and to identify the nature of their involvement. One can witness the flexible grouping and regrouping of heterogeneous actors gravitating around the concerns, their attraction or shrinking as time unfolds and the different speeds of swarm formation according to the changed magnitude of the concerns in the media debate.

Time, presented as a timeline in our very first visualization, lent itself to spatialization at the expense of losing what is most essential to temporality: its spatio-temporal dimension.
dynamic movement. To solve this, we developed a ‘time flasher’, which presents time as a series of flashing points that correspond to key events in the controversy life-span; in an attempt to imitate the tentative movement of time. Although space has an equally dynamic nature, this mapping makes it appear as the static backdrop to time’s activity. This equally ignores the myriad poetics of movements occasioned by situational densities and intensities of the connections, including horizontality and verticality. Moreover, our first network map is still quite ‘anaemic’ (made of moving dots and dancing lines) and remains an ‘epistemological tool, which works to protect ontological singularity’ (Law 2004).

THE OFFERINGS OF POST-PARAMETRIC COMPUTATION

‘The use of computer in architecture to produce new and spectacular forms is only one aspect of something larger, just like the invention of the perspective at the Renaissance was linked to broader issues than the mere research of geometric regularity’ (Picon 2010: 55). This leads to considering the digital realm as a culture, a ‘digital culture’, understood in a much broader sense as connected to ‘many digital-technology-related phenomena, because of their impact on lifestyle’ on our everyday habits and rituals, on our conducts as well as our representations of the world (Picon 2010: 50). Just as the rise of computer epistemology changed the way architecture looks today, we believe that computational epistemology can deeply modify the traditional ways of tackling social phenomena. Moreover, it can cause the very epistemologies of social sciences to change.

To refine the dynamic cartographies and overcome the limitations of our first animation produced with the help of parametric modelling, we collaborated with computational designers from Aedas R&D. The company extensively uses computational design and embarked on a constructive critique of the limitations of parametric modelling as a problem-solving approach (Derix 2010). Parametrics was developed for problem solving but the Aedas R&D approach can be defined as ‘post-parametric’ computation because they employ heuristic computing and simulation in design that ‘worries’ about problems but does not always solve them. The group undertakes groundbreaking research in simulating spatial conditions and phenomena through computational design and research. The ‘spatial simulation framework’ constitutes a large programming platform for computational design with many algorithms, heuristics, data structures, interaction modes and interface elements. This requires a number of lightweight, functionally limited and interactive applications to be assembled by the designers to create integrative workflows customized to the brief and visualization task. Aedas’s R&D team considers computation not as a simple tool but as a heuristic device that fosters novel insights and generates new forms in the tentative process of design; a versatile venture that happens in-between architects and code widgets, computing and form finding (Derix 2009). Working with the team led by Christian Derix, we have produced a more elaborate simulation of the controversy (Figure 6.4).
This simulation enables us to follow the same assembly of heterogeneous actors; their groupings in time and space and their conflicting concerns work in tandem to shape the controversy. This way of visualizing the controversy dynamics allows us to explore the relative importance/weight of different actors and their concerns over the course the design controversy; visualizing the actors’ main statements and trajectories and tracing the thick mesh of relations amongst the statements circulating in a dispute; tracing the networks and articulating a more nuanced understanding of the overall dynamics of the controversy. If the parametric visualization was animate (= not-alife but imitate; dynamic = sequence; and interactive = control), the second visualisation of the controversy simulates reality; it follows a self-organizing sequence. In this ‘post-parametric’ version of controversy mapping, we do not know in advance how the actor-fields define the map. Whereas parametric models predetermine associations, ‘post-parametric’ modelling does not define relations to pre-determined parameters. In Aedas’s simulation rhizomes emerge to allow for novel non-tautological interpretations; the conditions created are not final results like in parametrics; they are rather ‘states’, conditions of the network (Derix 2010).

This new simulation showcases a dynamic mapping, with the actors clustering according to particular concerns. It also highlights the varying densities of the actors’ groupings and the changing intensities and speeds of the controversy. Time folds and unfolds at changing and reversible paces (when compared with the simulation on Figure 6.3. where we have a simple time flasher). The network map shows, for the first time, a visualization in which the actors are not drawn with different coloured dots/nodes that assign them with an identity prior to the mapping. A more nuanced

6.4 Simulation of the 2012 London Olympic Stadium controversy; copyright – the University of Manchester.
understanding of the overall dynamics of the controversy is achieved. We witness how actors trace associations and it also outlines how their mediating agency transforms the debate. Changing size according to the magnitude of their connections, actors appear both as composed and as components of networks. They gain identity in the network; actors appear and become visible as connections are traced and intensified and the clusters become denser. They are capable of infinite multiplication in the process of enquiry. The colour of the cluster can be added later as a marker of various densities of connections rather than as a pointer to a pre-given (and therefore pre-coloured) identity. The simulation makes a step forward towards less anaemic network mapping, a mapping that becomes a tool for underlining ontological singularities.

The simulation is not only dynamic but features a user-friendly interface that enables the user to be in the controversy world. You can switch on and off the concerns ‘toggles’ marked in different colour in the upper left side. Doing so allows you to produce selective maps based on a number of chosen concerns only. You can pull and drag the timeline as you wish; you can change its pace since time is reversible and foldable in the simulation. You can literally ‘pull’ or ‘push’ an actor, as if you were to pull an elastic string from an installation of Tommaso Caraceno, and test how many other actors are moving as you pull it; this will allow you to test connections and establish the actors’ profiles, which are far from being given. Click gently on a concern or an actor in the network map and they will immediately gain colours that render them more visible, perhaps highlighting significant links which otherwise would remain hidden in the dense grey nets of the maps.

This concern-oriented mapping is also dynamic in a different sense than the mapping presented on Figure 6.3. It is connected to the primary web sources and can be swiftly updated (Figure 6.5). For instance, clicking on the concern ‘legacy’ on the left hand side will pop up a red window ‘open url’ that will guide you to the primary data (all of the articles in the press which allowed us to map the controversy and trace the actors’ statements).

Architectural tools have a great potential to map human and non-human relationships, to follow multi-actorial dynamics and time track the trajectory of issues. The use of architectural tools (parametric modelling and post-parametric computational tools) for controversy studies offered us a unique way of presenting controversies in a fertile and engaging manner that allows users to remain in the world of the controversy while also having an overview of it. There is a considerable potential for future explorations of controversy visualizations in concrete form by sharing expertise in architectural computation, digital methods and science studies theory. Working at the interface of these disciplines may lead us to pioneer a model of longitudinal methodology for studying urban controversies based on network analysis and real-time data mapping. Subsequent development aims to automate the mapping. Automated data analysis and visualization could then map the debate in real-time, informing a larger audience about the controversy. The simulation of controversies can contribute to a better understanding of their long-term consequences and social, political and economic effects.

Our initial assumptions only considered computation as a performative tool that would be the perfect irreductionist technique by deploying and amplifying

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the phenomenon under scrutiny. However, we discovered that, by the same token, computational design hides a certain type of heuristic potential that may easily serve reflexivity. For instance, as we were directed towards tracking the involvement of Alejandro Zaera-Polo, the first architect involved in the bidding in 2004, we questioned his connections and disconnections with other actors in the mapping. In the beginning, any implicit link between computation and criticality appears to be contradictory and difficult to reconcile. Yet, we can argue that these seemingly irreconcilable objectives can work together should the digital virtuosity of the mapping allows it. Computation per se does not guide us to strictly frame the way we analyze and visualize a phenomenon with an uncertain shape, nor does it articulate particular preferences of interpretation. Rather, it broadens the range of possibilities for interpretation and analysis offered to designers and social scientists working together.

SEIZING THE FLUENCY OF THE SOCIAL

Following the making of dynamic controversy maps allows us to rethink the very concept of maps (and mapping). When we now say ‘map’, after having gone through all the challenges of this mapping controversy experiment, we no longer
refer to a glossy atlas or a cramped printout that helps us find our way throughout an unknown city. The experience that we now have of engaging with mapping is to log into a databank that gathers information through a digital interface. Moreover, the dynamic mapping of the stadium design controversy differs from other interpretations of the stadium made with traditional social science methods in three ways. First, it traces the dynamic trajectory of concerns rather than situating them within the existing contexts. Second, the mapping becomes the object of study when the object is on its own a move to be followed and traced. Third, nothing suggests linearity, a gradual step-by-step progression. By following the interlinked number of trajectories of actors and concerns, circuits and detours, barriers and agents, thresholds and closures, we witness the entire assembly of actual entities forming a dynamic cartography.

This mapping better accounts for the duration and fluency of social phenomena. It shows the real internal constitution of the particular existence of the controversy – its ‘concrescence’ – to use a term from Whitehead’s philosophy of process (1978: 210). The simulation allows us to see the particular fluency that is inherent in the making of the stadium, while the prevailing interpretations of its design will rather treat it as a static entity. On the other side, as we observe the simulation unfolding, we can see how each element in the mapping constitutes the actual, the ongoing as an original element in the constitution of other actual entities, actors and concerns, that are deployed and elicited by repetitions of process. Far from representing existing social features, far from mapping objects, arrangements and organizations, the dynamic network maps instead capture occurrences, events and situations. The mapping of design phenomena implies a dynamic cartography of events that make the social traceable, graspable.

Time flows and is reversible in a way that allows the past to remain a nexus of actualities, not a closed chapter. Its flow relates to the ‘shī’ described by the philosopher Jullien (1995) as the potential born out of disposition, a critical element of which is space. For much of what counts as configuration is exactly that: a continuous re-arrangement of actors and concerns in response to events. So, for the controversy shape to emerge, the mapping permits all manner of spatial operations: linking, distance, separation, combination, tension, movement, alternation, oscillation work out in a series of different registers. The controversy appears as an animated creature whose movements generate almost continuous streams of nets, with the intimate connection between form and flow made explicit in an almost cinematographic way.

The mapping of the controversy surrounding the London Olympic Stadium for the 2012 Games illustrates the research potential of mapping controversies and presents new ways of visualizing the dynamics of controversies with architectural tools. Controversy mapping enables us to follow and better understand urban dynamics and design concepts rather than quickly explaining them with social factors. It allows us to witness, analyze and map the variety of elements of which a building is constituted together with the vast range of factors that impinge on design. Moreover, architectural computing and its specific epistemology allow us to grip new ways of making sense of the social dimensions of architecture.
By encapsulating the dynamics of design controversies and opening it to more informed scrutiny, this approach can permit a more efficient decision-making process at urban scale.

ENDNOTES

1 This chapter is based on findings from the EU-funded project MACOSPOL facilitated by Bruno Latour. Within the framework of this project I led a small team, which experimented with different tools for dynamic mapping of the 2012 London Olympics Stadium Controversy (Liam Heaphy, Danny Richards, and Nick Dunn participated at the first stage of the project, and designers from Aedas R&D group, at its second stage). MACOSPOL gathered the set of tools and visual resources available for mapping controversies on one single platform: www.mappingcontroversies.net.

2 For a comprehensive study of the controversy surrounding the London 2012 Olympic Stadium design, see http://www.msa.ac.uk/mac/london/.

3 Our mapping of the debated ended in 2010. We are currently mapping the controversy on the basis of its media appearance in 2010 and 2011.

4 Aedas R&D was set up in 2004. The Computational Design Research group's aim is to extend the problem-solving approach to computation in architecture introduced by firms like Foster or SOM into spatial simulation and design generation.
Conclusion:
The Architectural as a Type of Connector

We started with a concern. The literature on architecture is torn between two versions of design process: a technological one (how a building responds to material and financial constraints) and another more social or more humanistic (how a building expresses a certain style, a certain period or a certain idea of what it is to inhabit a place). Architectural scholarship too often reproduces the very ambiguity of architecture between efficacy and symbols or, even more rudimentary, between function and form.

By sustaining these divides, architecture is believed to have an autonomous moment. As an autonomous practice, it reacts to the influences of economy, society and culture and acts upon these realms, although both resolutely remain on opposite sides of the barrier. Thus, the divide between internalist and externalist interpretations is maintained. Michael Hays’ journal, *Oppositions* (published 1973–1984) tackled the tensions between architecture as a closed system and its contingency, even its determination by historical forces beyond its control. In rejecting the myth of Architecture’s autonomous character, Jeremy Till argued that architecture is a dependent discipline; at every single stage of its existence it is buffeted by external forces. He comments that: ‘Architecture is thus shaped more by external conditions than by the internal processes of the architect. Architecture is defined by its very contingency, by its very uncertainty in the face of these outside forces’ (Till 2009: 1). Moreover, the architectural process is open to events and unforeseen circumstances; design invention follows uncertain and unpredictable paths (Yaneva 2009b). Till’s ambition is to open up the discipline to dependency and to view this not as a threat but as an opportunity. My modest aim here builds upon this to open up architectural research to the hybridity of architectural processes and the contextual malleability of architectural objects. This is not a threat to rigorous scholarship but an opportunity to gain a better understanding of architecture.

Mapping Controversies provides unique access to architectural processes. Extending the method to the field of architectural theory allows us to witness,
analyze and map the variety of elements and issues that architecture is made of, together with the vast range of factors that impinge on design (Yaneva 2011, Latour and Yaneva 2008). As a new research method and teaching philosophy, Mapping Controversies places architecture back at the intersection of the human and the non-human, the particular and the general; it allows the networks of architecture to be re-established and to run between the local and global, social and technical. Mapping Controversies offers ‘scenarios of dramatisation’ (Deleuze 2002) of the many ways that the divides can be crossed. The Mapping Controversy philosophy avoids architectural theory’s common simplifications by focusing on the insignificant, the detail, the banal since they contain the significant, the essential; and contain it only in different properties and events.

The Mapping Controversies enquiry is inspired by William James’s project of radical empiricism that argues for a different sense of the word ‘empiricism’ (2003). Empirical should mean to be faithful to what is given to experience and the numerous connections that are revealed in it. Equipped with this new type of enquiry, architectural theory should be able to witness and describe the modes of existence of various architectural objects. It should be able to account for numerous architectural connections that flow out of these streams of experience of designers, constructors, users and citizens related to the building. It should focus its efforts on accounting for and understanding – not replacing – the objects of architecture and built environment, its institutions and different cultures.

This type of enquiry shifts the way that we conceptualize architecture – a move from the regime of explanation/causation to the regime of ‘presentational immediacy’ (Whitehead 1978: 174). Drawing on a pragmatist approach, architectural theory can strive towards understanding the architectural character of architectural objects and the urban character of urban phenomenon, networks and artefacts, instead of trying to provide, by every means, a stand-in explanation of architecture. It implies a possibility of following the actors of design as they move and leave traces on the web, to track their trajectories and tentative moves, to follow the course of events as they happen.

While advocating the importance of critical theory today, Jane Rendell stated:

**Critical Architecture makes clear that design is a mode of enquiry that is capable of generating new ways of knowing and understanding the world through creative processes and the production of artefacts, but also that designers are able to offer critiques of their own mode of practice, both self-reflective and politicised (Rendell 2007: 7).**

Yet before we engage with critique we need to fully understand what the world is made of and how architecture contributes to its making; that is, a pragmatist way of grasping the world of architecture is needed to apprehend all of the undertones of the social and the cultural that architectural production is entangled with. The argument here is not that society and culture have no relevant connections to architecture and architectural analysis. It is that they are not abstract constructs outside of architecture’s remit or far from the architectural objects and processes. Instead, the social, the cultural, the economic are underlying dimensions of
architectural processes that can only be grasped by following how they unfold. Here is the social – in the course of the events that make architects connect with engineers, politicians, contractors, citizens, journalists, Welsh slate and transparent glass. Here is the social – in the many unpredictable alliances that all those protagonists with variable ontologies and discordant voices can shape together while moving according to different times and spaces, following the multiple tensions and lines of forces of a debate. Here is the social – in the process of tracing tentative trajectories and accounting for all design transformations.

The Mapping Controversies method of enquiry rethinks the very notion of buildings. A building is not a container of life processes but a setting that conditions and embraces many ontological events that lead to the generation of complex spaces. Not a neutral space offering the possibility of coexistence and inviting objects to invade and fill it with life; it is the co-existence of many actors with different ontology and disagreements and the ways they share a common world that makes buildings possible, thinkable. Not an absorbing container but an auto-generic network. Not a passive immaterial surface able to reflect a complex society or become its serviceable weapon; but indeed far more complex.

Thus, there are no buildings! Have we ever seen buildings without builders, constructors and building technologies? Have we ever seen ways of bending the roof structures and materials without procurements systems and value engineers? Constructors without different ways of calculating construction budgets? Architects without perspective drawings and scaling instruments? Users and clients without changing demands? A building or any other architectural work – master plan, design proposal, development strategy – is not a coherent and self-contained entity placed in a space, designed in an architectural practice, built on a site; it is rather a dynamic network of real entities. Defined on the basis of numerous situations of coexistence of these entities, it is made of many spatial pluralities as they enfold in time. It is hybrid (Latour 1999) and ‘could be understood as the intersection of a range of forces, from political to the natural, from the real to the metaphorical. A balance, indeed, of colossal forces’ (Till 2009: 56).

It is a society on its own! Society, defined not as an enigmatic abstraction ungraspable with empirical tools, but as a network of real events: diverse, situated, plural (Tarde 1999, Whitehead 1978). The symbolism is the ‘magic of those who have lost their world’ (Latour 1988: 282). Mapping Controversies allows us to remain in the real. It enables us to pay attention to all the associations of small entities; tracing them in a situationist, pluralist, associationist, morphologic, and psycho-topographic way. We gain a better grip of architecture by tracking all of these real entities (human and non-human actors): how they move and co-exist in the multidimensional cartographies, how they share a world together, and how they trace associations.

A building, indeed any kind of architectural work, appears in the numerous cartographies presented here not as a static immutable object, freeze framed in social and economic interpretations. It is rather a dynamic rhizome composed of internal spaces; a fine envelope of all of the networks traced, a composition of many
diverse compositions, a plurality of pluralities. It can be understood on the basis of original spatiality and its diversity of spaces; a polyvalent space of flat connections.

Yet, we cannot think of architecture as being only spatial. Mapping Controversies adds the dimension of time. It overcomes the rigid interpretations that otherwise deny rhythm to architecture and elude its experience as being perceptual. Dividing the spatial and temporal does not help us to understand architecture. Adding the dimension of time makes possible to engage in what Stewart Brand (1994) has coined as ‘sequential studies’ of buildings that account for their numerous changes in use. Mapping Controversies provides the tool to engage in such a sequential study in a day-to-day fashion that captures the entire world of actors that those changes assemble, grasps repetition and imitation and seizes the durée of the design and construction processes.

The Mapping Controversies methodology also shows that designing is not about situating a building within an environment; it rather consists in situating and installing an environment made of different spatial pluralities and actors’ voices within a building. Sloterdijk calls this ‘inversion of the environment’ (Sloterdijk 2005: 292). The use of Mapping Controversies methodology does not lead to the generation of a new architectural theory but inevitably generates many new theories that are better suited to explain the actors’ worlds. As those interesting stories unfold, we find the implicit theories that come right from the actors’ worlds and are told with their native words. The methodology developed to track design in the making can be extrapolated to a wide range of other complex phenomena of hybrid nature.

NOT ARCHITECTURE, BUT THE ARCHITECTURAL

Architecture commonly denotes objects – buildings, urban plans and infrastructures generally expressed with nouns that are marked off into different classes; divided and sub-divided into different styles, types, trends and movements as if they are things to be fixed in themselves. To find out more about an architectural work, we usually ask questions such as ‘what is this?’ or ‘what does this work of architecture mean?’ We are in the regime of definition. Trapped in metaphysics of essence, a definition discloses the inward reality (the elements of the building that make it fit a category) and causes the thing to be what it is and to be pigeonholed into the classification (post-modern, high tech, Welsh, and so on). Then, the pigeonhole is declared to be more real than a particular building; to be itself the true architecture.

Architecture is, however, adjectival in nature. Not architecture but the architectural. The architectural is a manner of doing; the architectural is a type of connector. And if we consider architecture as a mode of activity, we cannot divide and subdivide its objects in styles, design principles and architectural languages. We can only follow the differentiation of the activity into different modes as it impinges on different materials and employs different media. It is impossible to name and classify the nuances of architectural experience and processes. The quality of a quality is found in experience itself; it is there and sufficiently there.

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There is no need of reduplication in language. It indicates how things are made and predicts the occurrence of architectural events, it tests for their presence, and, sometimes, makes us immerse into them.

Following and tracing architectural processes helps us to avoid both the fallacy of definition and the fallacy of rigid classifications. Defining a building as modern or postmodern, high tech or traditional, as Welsh or German, will not help us understand architecture. Yet, keeping a diary of the controversies that surround its design and construction, and meticulously accounting for the related events allows us to ethnographically report on what has happened in-, around-, and related to-, this building. Classification for the purposes of easy reference is indispensable. But a cataloguing of architecture would not throw any light on the nature of its works. The latter can be understood only in meticulous studies of the processes surrounding these specific works of architecture and the networks they trigger. This pragmatist, realist way of tackling architectural phenomena can help to overcome an understanding of architecture that relies on its enigmatic nature only.

Although a parliament building (like the Senedd in Cardiff or the Reichstag in Berlin), a cultural building (like the Sydney Opera House or the Hadid project for an opera house in Cardiff), a stadium (like the 2012 Olympic Stadium in London) or a historic and cultural monument (like the Eiffel Tower in Paris) have their own strengths and inner logics, it is often assumed that a parliament reflects the specificities of a national parliamentarian culture, while a cultural monument mimics the spirit of the time, the stadium expresses regeneration strategies and mayoral politics. Although the architectural project for rebuilding the Reichstag developed according to its own inner drive and competitive logics, it is thought to be better comprehended when commonly associated to the reunification of East and West Germany. Equally, the Senedd design was interpreted as expressing the political chance to open up a new page in the history of Wales. Although the Sydney Opera House controversy developed according to its own logic, its distinctive iconic shape is said to pertain to the unrecognized genius of Jørn Utzon, and is interpreted as a symbolic expression of Sydney's progressive urban culture. The unrealized opera house in Cardiff can be explained with governmental politics and local urban development, political machinations and the battles of elitist and popular culture. Although the process of experiencing the Reichstag building unfolds under its own logic of connecting flows of actors and redirecting visibility, political theorists and historians still analyze it as a blatant image of unity and vigour that symbolizes the innovative and technologically advanced German state. The 2012 London Olympic Stadium will be praised for magically solving social problems in east London. Any type of cultural and social references of a humanistic nature freezes these buildings in a particular shape; in a static image that could express, reflect and symbolize. Yet, buildings are in motion; they are moving targets and their designs can only be apprehended as such, that is, aloof from any interpretative functionalistic frameworks, requirements of the context or any type of references.
Architecture is certainly more than buildings but it is through buildings and through the careful mapping of the networks of real entities they are made of that one can witness architecture’s power to operate ‘contextual mutations’ (Guattari 1994). Buildings provoke profound transformations of the facets of their environments, they generate subjectivities and they reinvent entirely contextual relationships (Deleuze 1997). Therefore, it is not architecture that should be explained by society. Nor is it simple to explain the different forms of social control and governance by referring to the architectural tools they employ and the material arrangements they rely on. Yet, social groupings, parliamentarian cultures, moral aggregates and imprisonment are better grasped by tracking the specific associations, separations and aggregations provided by architecture that vary by shape, size and heterogeneity. Following how architectural processes unfold means to follow what kinds of trails of associations among heterogeneous elements they shape. We are able to seize social phenomena: 18th-century ‘moral’ punishment as being endorsed by the specific architecture of the reformist prison buildings (Evans 1982); the successful process of ‘political’ deliberations in the first parliaments at the time of the French Revolution as being cognitively conditioned by the spatial arrangement of the semi-circular assembly chambers (Heurtin 1999); the new parliamentarian culture of reunited Germany as being mediated by the glass dome architecture of the Reichstag building (Wefing 1995, Foster 2000); the different ‘scientific’ culture(s) of molecular biology in the 20th century as being facilitated by alternative laboratory designs (Galison and Thompson 1999). Mapping Controversies grasps how the inner logic of design and building processes may explain some features of what makes an association last longer and extend wider; that is, what makes the communication among deputies accountable, what makes imprisonment more efficient, what makes sports events more durable, what makes opera culture shared, what renders iconicity problematic.

Architectural Ties for Reassembling the Social

Acting as mediators, regulating flows of actors and energies, concentrating and distributing humans and non-humans, connecting and disconnecting them, facilitating or impeding communication, buildings resist blatant social explanations and participate in the very specific movement of reassembling the ‘social’. Departing from an understanding of the ‘social’ as a separate domain or context in which architecture would be framed but as what is glued together by many other types of connectors (Latour 2005), I argue that the ‘architectural’ is a type of connector among others rather than a separate cold domain of material relations or an infrastructure providing us with glass or concrete ‘containers’ of different programmes. Its investigation may shed light on the other types of non-social ties that are brought together to form a durable whole. To do this we should meticulously follow the sort of objectivity architecture provides between scattered elements: design thinking, results from experiments with materials and shapes, measurements with computers and physical models, renderings on the screen, ways of calculating construction budgets, presentations for clients and users, reactions
to mock-ups and community protests against design (Yaneva 2009a). By doing so, we tackle a specific connector that is not due to the diffracted presence of society, but that connects in a very specific way. The architectural. Whenever architects scale up a model, a client witnesses a presentation or we, as users, pop up on the architectural pages of a local newspaper to glance at the last design proposals for a community project, or we pass by or stroll in the premises of a building swept away by circuits of actors and energies, we link visuals, materials, design statements and users’ agency and expectations through a type of attachment that is typical of architectural connection. What does it mean for an architect to present a design project? What does it mean for a design public to have an opinion about a building? What does it mean for a foam model to be taken in a repetitive course of scaling up and down moves? What does it mean for architects and contractors to negotiate a building programme and adjust calculations to changing demands? What does it mean for designers to render images playing with a random palette of colours and options? What does it mean for a user to disagree with a design solution? What does a petition against a building stand for? What does it mean to experience a building? How does a building surprise? How does architecture work? All of these issues should be treated with extreme care, instead of quickly explaining them with social factors and elucidating the solidity of architectural ties by appealing to the extraneous force of society.

The ties created with architectural means seem not to look like regular ‘social ties’. We are all tied, in addition to the many other ties that we bundle, by these very specific and fragile architectural ties: I design buildings for others and answer to my client’s briefs; I use and misuse daily the building designed for me; glass allows me to see and interact more with my fellow colleagues; the variety of Welsh slate helps me to understand the multiple ways of grasping Welsh identity; I vote for a design proposal at Ground Zero; I sign a petition against an act of postmodernist ‘aggression’ of this beloved modernist masterpiece; I take part in a street demonstration against Utzon’s resignation in Sydney; I express my reaction of disagreement with Serero’s extension of the Eiffel Tower on numerous blogs. Walls divide and keep people apart from me. The legacy scenarios of the 2012 London Olympic Stadium fill the newspapers that we read every morning. All of this does not bind us socially; it binds us architecturally. In that sense, ‘architectural’ is a mode of connector that cannot be explained by others (economic, social, political). It has its own way of spreading, its own objectivity and its own solidity. Following, tracking, visualizing and mapping how these connectors spread and actually manage to connect, will provide us with a better understanding of architecture.
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