Architectural research is best understood as a complex subject area that involves a number of disciplinary procedures including the specific practice of architectural design.

Architectural research and disciplinarity

Jane Rendell

There are at present considerable concerns with how architectural research will be assessed in the Research Assessment Exercise (RAE) of 2008. In RAE 2001, most architectural research was submitted to one of three Units of Assessment (UoA): 33 *Built Environment*, 60 *History of Art, Architecture and Design*, and 64 *Art and Design*.[1] There were subtle, but important, differences in output definition and assessment criteria between UoA 33 and UoA 64 with respect to practice-led research. Most importantly, in UoA 33 practice-led outputs were accepted by the panel, but only as publications, whereas UoA 64 assessed practice-led research outputs accompanied by a 300-word statement that clarified the contributions of that particular research to the development of original knowledge in the field. The diversity of methods and complexity of output types, combined with the composition of UoA 33, led to results that many feel did not properly reflect the strengths of architectural design, particularly practice-led research. This methodology essentially disenfranchised a significant part of the community from the RAE process to the detriment not only of the community, but to the credibility of the process itself.

'in order to fully acknowledge the wide range of methods adopted and outputs produced within architectural research, we need to engage with discussions around disciplinarity'

I consider intellectual debate concerning the relationship between the RAE and architectural research to be important. This paper does not therefore aim to promote the interests of one particular group of researchers in architecture, but rather to promote a critical and conceptual discussion of the various methods and outputs of architectural research. If the paper does have an objective, it is to propose that in order to fully acknowledge the wide range of methods adopted and outputs produced within architectural research, we need to engage with discussions around disciplinarity.[2]

University Research is funded predominantly through two sources: Quality Related (QR) funding and through the seven Research Councils. QR allocations are calculated on the results of the peer review based RAE. This funding derives from the Department for Education and Skills (DfES) and is distributed to Higher Education Institutions (HEIs) as part of their block grant. In 2004–2005, QR funding will be £1625 million across the UK. The amount of research funding distributed by the Research Councils is of the same order – their combined budget in 2003–2004 was £1892 million. This is almost 30 times larger than the amount of research funding distributed through the Arts and Humanities Research Board (AHRB), which is annually estimated at 'almost £70 million' (HM Treasury, DTI, DfES, 2004). In 2005, the AHRB is due to become a research council. The following footnote in a recent government paper on research funding for science and innovation provides a useful indication of the place arts and humanities research occupies in governmental strategic thinking:

> *'To become eight [Research Councils] on completion of final legislative processes following Royal Assent of the Higher Education Act, when the Arts and Humanities Research Board receives Research Council status. In this context 'science' should be read in its broadest sense to encompass all aspects of engineering, technology, design, social sciences and the arts and humanities.'*
> (HM Treasury, DTI, DfES, 2004, p42, n3)

It is beyond the scope of this paper to explore in detail how research operates within the science paradigm, but we can make some provisional observations concerning the kinds of research output produced by scientists, the ways in which those outputs are assessed and the social processes for conducting research. Science research tends to be carried out through funded bids to research councils for teams of researchers to pursue projects headed up by established and senior research professors. Named principal investigators take charge of the intellectual leadership and the management of projects while research fellows, assistants and

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technicians carry out the actual research. Research findings are usually delivered as peer-reviewed papers at conferences and published as conference proceedings, or as refereed papers published in journals ranked internationally. It is common for papers to be multiple authored, with the most senior figure listed last, the principal investigator first, and others involved in the project listed alphabetically in between. Research excellence is judged on the reputation of the named researchers, the ranking of the journal, combined with the publication's impact factor measured through citation indices. The government claims that citation is 'the generally accepted measure of research excellence' (HM Treasury, DTI, DfES, 2004, p20).

In the arts and humanities, the situation is rather different. Research has traditionally been conducted by individuals operating independently producing solo authored books and works in their research time. This consists in the main of the 20% allocated to research through QR in most permanent lecturing contracts, as well as academic holiday periods and the occasional sabbatical or period of funded research leave or fellowship. While researchers in the arts and humanities do publish material in refereed journals, monographs tend to be more effective in achieving reach and influence for scholars. There is no single published ranking system agreed internationally, rather different academic groups regard certain journals and publishers to have more status than others – it is here that the disciplinary differences that lie buried within the term 'arts and humanities' start to surface, concerning, for example, different paradigms of knowledge and research methodologies in social science and visual arts practice. Almost all national and international rankings of universities, such as the recent 'World University Rankings' published by *The Times Higher Education Supplement*, take citation as a key index of status, yet the fact that citation is not taken as a measure of excellence in the same way in science and arts and humanities research remains relatively undiscussed, as does the global distribution of publishers and citation companies. Since the number of journals listed in the arts and humanities citation index is 1130, compared with 5900 science journals, it is clear that a university whose main research is in the arts and humanities will be at a disadvantage.[3] At the time of writing, debate on this issue has finally begun, stimulated by the AHRB's recommendation that the arts and humanities generate a journals reference list (Baty, 2005, p1).

So what does this mean for architecture? Architecture schools in the UK, as a recent project conducted by researchers at Edinburgh College of Art has indicated, are orientated towards one of three different approaches to research – built environment, humanities/social sciences or visual arts research (Jenkins, P., Forsyth, L. and Smith, H., 2004). This tripartite definition takes its point of departure from the location of architecture schools within university faculties in the UK. It also matches the three UoA: 33 *Built Environment*, 60 *History of Art, Architecture and Design*, and 64 *Art and Design* that architectural research was submitted to for the RAE 2001. However, it is also possible to broaden the definition to four, rather than three, disciplinary approaches to research: building science, social science, humanities, and art and design. It is also worth noting that these areas of research are not equal partners. They receive very different amounts of financial support from building science (with the most), to social science, and then (with considerably less funding) humanities and finally art and design. It is also the case that submissions to RAE 2001 were not equally distributed across the UoAs (Jenkins, P., Forsyth, L. and Smith, H., 2004, p8):

> *'Across the UK, 17 schools submitted under Unit of Assessment 33 (Built Environment), 8 schools under Unit of Assessment 60 (History of Art, Architecture and Design), and 8 schools under Unit of Assessment 64 (Art and Design). In addition 4 schools submitted in association with Unit of Assessment 34 (Town and Country Planning). Of these, 3 schools submitted under two Units of Assessment (usually 60 and 64, but also 33 and 34), and 2 schools under three Units of Assessment (33, 34 and 60).'*

Since architectural research can operate using different methodologies, the various research outputs have been equated with those produced within the areas of building science, social science, humanities, and art and design research. Crudely put, technical and materials based research is usually taken to operate following the science model, whereas scholarly research into architectural history and theory is understood to adopt either social science methodology, on the one hand, or humanities on the other, while architectural design research has, to date, been related to other practice-led research, for example in art and design. This model of separating various kinds of architectural research into different areas and their related disciplinary procedures seems reasonably straightforward, so why might it be problematic?

'If national research and strategic initiatives indicate the need for multidisciplinary research does it make sense to continue to separate out the various strands of architectural research?'

A government paper published earlier this year on the future of research funding for science and innovation in the UK emphasises the importance of creating a multidisciplinary environment for research and aims to 'enhance a culture of multidisciplinary research in the UK and provide the underpinning infrastructure and funding mechanisms to support it' (HM Treasury, DTI, DfES, 2004, p28). It is also worth noting that the Engineering and Physical Sciences Research Council (EPSRC) and the AHRB have for the first time collaborated on an arts-science initiative to fund a number of multidisciplinary research networks investigating issues pertinent to 'Designing for the 21st Century'.[4] And finally, in the report summarising

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their investigations into public funding for architecture and built environment research, the Commission for Architecture and the Built Environment (CABE) states that the existing division of research into 'hard' and 'soft' areas, science-based projects and investigations with a focus on creative design and user experience, has not been of benefit to the built environment (CABE, 2004). If national research and strategic initiatives indicate the need for multidisciplinary research, does it make sense to continue to separate out the various strands of architectural research? Is it not the case that architecture, a research subject that is already multidisciplinary, would benefit intellectually and economically from this emerging cultural shift by identifying itself as a multidisciplinary subject?

This is a contentious issue and one that in discussions concerning architectural research is continually connected to debates around architecture's uniqueness as a discipline. Adopting positions of vested interest around RAE politics, many argue against architecture's uniqueness since they believe this marginalises architecture within the academy and strengthens the perception that architecture holds a fragile compatibility with other models of academic research. If we choose instead to argue that architecture is unique, on what grounds can we make such a statement?

If we define a discipline as a system of rules of conduct or as a method of practice, then architecture is not a discipline, since it combines a number of methods of practice. However, if we define a field of study containing a number of disciplinary approaches but with a shared object of investigation as a recognized subject, then we could define architecture as a subject. As a subject, is architecture unique because of the particular combination of disciplinary approaches it comprises and/or is any one of these disciplinary approaches in themselves unique? We could argue that, as a subject, architecture encompasses several disciplines and uniquely brings together modes of research that are often kept apart (historical analysis and material science for example) and so provides possibilities for multi- and interdisciplinary research. We could also suggest that central to the subject of architecture is architectural design, a particular mode of practice-led research whose disciplinary specificity cannot be found in other types of practice or design. We could therefore make the case that architecture is unique as a subject *and* as a discipline.

One of the key changes already in place for RAE 2008 has been the re-structuring of the UoAs as panels and sub-panels, and the transformation of UoA 33 into a sub-panel entitled *Architecture and Built Environment*. Given this change it seems likely that in RAE 2008, the pattern of submission of architectural research outputs across three different sub-panels will change, especially if the working methods and assessment criteria for *Architecture and the Built Environment*, due to be published by the end of 2005, support multi- and interdisciplinary work. It is particularly important then that the specific nature of practice-led research in this sector is taken into consideration during the development of sub-panel working methods, including the definition of output and assessment criteria, and that such methods are coordinated between these and other sub-panels, such as Civil Engineering. As I write (February 2005), although HEFCE is consulting various 'stakeholder groups in four disciplines (engineering, health, education, and art and design)' on appropriate assessment criteria for 'applied and practice-based research', architecture and built environment is not one of them.[5]

In 1993, the Royal College of Art, London, published Christopher Frayling's paper 'Research in Art and Design', perhaps one of the most cited publications in the recent history of design research. In this paper Frayling put forward a tripartite model of 'into', 'through' and 'for' in order to clarify the complex set of relationships between design and research. In this model, research 'for' design tends to involve investigations conducted with a design application in mind. Research 'into' design examines design for a historical and theoretical perspective, whereas research 'through' design takes design processes to constitute the research methodology itself. It is this last category that we would today classify as 'practice-led' research.

'What appears to be have been produced by a designer, under closer investigation reveals itself to have been made by an artist. What defines one object as design and the other art? Is it possible to have a definition of research that includes both?'

Over the last decade research 'for' and 'into' design has developed non-problematically, partly because the work can easily be positioned within existing disciplinary modes in science and the humanities. Research 'through' design has produced more debate and is currently being further developed in discussions around the relation between theory and practice. In 1999 the AHRB put forward a set of criteria for assessing the extent to which practice-led funding proposals could qualify as research. This required that a proposal be defined according to four elements – questions, methods, contexts, and modes of dissemination. This has been widely adopted across the research community as a 'definition' of practice-led research. Along with visual documentation, the written text describing the four elements is taken to be 'a record or route map of the research process', and is understood to articulate and reflect upon the position of the research in relation to a more scholarly apparatus. The AHRB have made it clear that in their opinion not all practice is research:

> *'Not all creative activity and practice, even of the highest quality, constitutes research, and much research in the creative and performing arts involves no such activity at all.'* (AHRB, 2003)

Not all those in practice-led research agree with the AHRB. Some are concerned that this set of definitions

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has been generated through a science or humanities based model and then applied to practice. Others hope that practice-led research can re-inform this model or, better yet, produce its own parallel model of research. There is also disagreement concerning whether practice-led research needs to be accompanied by texts, and whether such texts need refer to a scholarly research apparatus.[6] But, despite stating that not all practice is research and requiring practice-led research to be supported by a written document, the AHRB does not intend its definition of research to imply a linear model. They note 'a widespread recognition that the relationships between the four elements [...] are not linear' (AHRB, 2003).

This acknowledgement is important since it is perhaps in this area – the sequencing of the four elements or research processes – that practice-led work and more traditional 'academic' text-based research differ. One example might be the relationship between posing research questions and finding answers. In much practice-led research the process operates through generative or propositional modes producing works that may then be reflected upon, along the lines of Donald Schön's 'reflection in action' (Schon, 1987). If we take another example – this time context – while a researcher in the humanities would first explore the context for a research question in order to find out the current state of knowledge in the specific field, in some cases practitioners will investigate ideas through the production of a work first and later consider for whom and how the knowledge generated is original. The order inscribed into these four elements through humanities research can pose difficulties when using them to describe certain kinds of practice-led research; however, until a more convincing model emerges out of practice-led research itself, this framework, used both contingently and critically, provides a helpful way of considering the research potential of practice-led work.

It is worth emphasising here the variations in research method between various different forms of practice-led research. Artists and designers, for example, might be interested in gaining different kinds of knowledge and do so through diverging forms of acquisition and dissemination. Traditionally, and I emphasize traditionally, design has tended to position its methodology in response to a brief, where the outcome is the solution to a posed problem but, as a growing number of artists engage in territories usually associated with design and architecture, the distinctions become more complex. As well as producing objects that 'look like' designed artifacts, many artists adopt design-like working methods, such as responding to a need or to a brief. What appears to have been produced by a designer, under closer investigation reveals itself to have been made by an artist. What defines one object as design and the other art? Is it possible to have a definition of research that includes both? The definition of research, for RAE 2008, as 'original investigation[s] undertaken in order to gain knowledge and understanding' is broad enough to encompass a number of disciplinary approaches while also making specific reference to practice-led work, in order that 'the invention and generation of ideas, images, performances, artifacts including design, where these lead to new or substantially improved insights' may constitute research (RAE, 2005, p22).

'The markets, industries and professions to which design is related often make it difficult for products to have no function or to consider criticality or the construction of concepts as their most important purpose.'

The methods used by designers may be lateral, intuitive and creative, but the focus is often driven by 'application'. This means that it is less usual for a designer to make a 'problematic' object or a design that questions the context of application. The markets, industries and professions to which design is related often make it difficult for products to have no function or to consider criticality or the construction of concepts as their most important purpose.[7] This is an important point: how does a work that questions get assessed as research in an applied context? A practice that questions the context and/or reflects on its own methods may produce new knowledge, but such knowledge is not necessarily of 'direct relevance to the needs of commerce and industry', as the RAE definition of research for 2008 demands, though it can 'lead to new or substantially improved insights' (RAE, 2005, p22).

Let us now turn to architecture and, briefly, to Frayling's tripartite division of art and design research into 'for', 'into' and 'through'. Research 'for' architecture could describe work driven by the perceived needs of the sector and cover the development of new materials and technologies. Research 'into' architecture might include the advancement of new scholarship through historical and theoretical interpretations. Research 'through' architecture takes the design process as the research methodology. The focus of such practice-led research in architecture can be on product or process. Original investigations might lead to new knowledge, evidenced through the application of inventive design concepts in buildings. Equally, the acquisition of knowledge might take place through writing, drawing and modelling and generate new kinds of understanding, evidenced in those design processes themselves. Outputs then, may take the form of buildings and parts of buildings, as well as exhibits, installations, artefacts and published designs representing built and unbuilt architectural projects.

The practice-led aspect of architectural design research is closely comparable to practice-led research in art and design; however, it is also worth noting several features specific to architecture. First, the scale and multidisciplinary nature of some building designs suggests a level of complexity that

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can exceed the scope of other designed and artistic artifacts. Second, the collaborative nature of the architectural design process produces a situation where the same building may provide evidence of different contributions to knowledge for each practitioner/researcher involved. Third, certain competitions and non-refereed architectural journals involve peer review processes regarded by professionals and academics alike as highly significant in assessing original design and ensuring the dissemination of influence and reach, despite their absence from ranked lists and citation indices.

We can compare the distinctions between different kinds of practice-led research in art, design and architecture with reference to the four elements of research – questions, contexts, methods and modes of dissemination – put forward by the AHRB. While the kinds of outputs produced in architectural design research vary from books to buildings, it is not only the output type, but also the relationship between research question, method and context that characterize the specificity of knowledge gained through a particular discipline. While designers may follow a science model and test concepts through material application, theorists might adopt a social science method in order to assess an architectural design's contribution to 'improving' the 'quality' of the built environment through quantitative analysis. Conceptual design projects, especially those which are not designed to be built, might follow conceptual art in producing knowledge which questions rather than affirms. Such research outputs place emphasis on architectural design research methodologies that are both productive and critical.

I suggest that it is the reflexive nature of a practice that might help to define the work as research. Projects that put forward questions as the central tenet of the research, instead of, or as well as solving or resolving problems, tend to produce objects that critically rethink the parameters of the problem itself. It is this mode of critical practice that lies perhaps closest to what we call critical theory. While the term 'theory' is often understood to refer to modes of enquiry in science – either through induction, the inference of scientific laws or theories from observational evidence, or deduction, a process of reasoning from the general over-arching theory to the particular – critical theory does not aim to prove a hypothesis nor to prescribe a particular methodology. Instead, it offers in a myriad of ways self-reflective modes of thought that seek to change the world. 'A critical theory then, is a reflective theory which gives agents a kind of knowledge inherently productive of enlightenment and emancipation' (Geuss, 1981, p2). The term is usually used to refer to the writings of those of the Frankfurt School, however, I extend it to include the work of later theorists, post-structuralists, feminists and others whose thinking is also self critical and desirous of social change. For me, this kind of theoretical work provides a chance to reflect upon what is there, but also to imagine something different – to question and transform rather than describe and affirm.

In architectural design, professional practice allows for research through the production of buildings, while academic study provides possibilities for extending and critiquing the profession through conceptual designs. In architectural design research such work can take the form of installations, drawings and texts, as well as buildings – or even parts of buildings – or aspects of the design process. Architectural representations may describe spaces with the intention that they will be realised in built-form, or they can propose architectural projects that are unrealisable, which explore and critique the paradigms of knowledge held within the architectural profession and construction industry that underlie the production of the built environment itself. Such forms of conceptual architecture may adopt the normative language of the architectural drawing, for example producing visual images to persuade clients and developers of an intended scheme or detailed documents that communicate quantities and design processes to those who will build the construction. However, there are also drawn projects that challenge the very notion of the architectural drawing, testing its forms and processes and suggesting new directions for architectural representation. This work is closest in many ways to modes of research in conceptual fine art, but with its specific reference to architectural design and the built environment it is significantly different. Recognition of the new insights such architectural design research produces may vary according to audiences and operate over differing time periods. A conceptual design in the form of a drawing may, for example, influence researchers in theoretical, conceptual and critical architecture more quickly and require a longer gestation period to impact upon the profession and the construction industry.

'Critical theory … provides a chance to reflect upon what is there, but also to imagine something different – to question and transform rather than describe and affirm.'

In both academic and arts-based contexts, the term interdisciplinary is often used interchangeably with multidisciplinary, but I understand the terms to mean quite different things. Multidisciplinary research tends to describe a way of working where a number of disciplines are present, but maintain their own distinct identities and ways of doing things; whereas in interdisciplinary research individuals operate at the edge and in between disciplines and in so doing question the ways in which they usually work. In exploring questions of method or process that discussions of interdisciplinarity and the relationship between theory and practice inevitably bring to the fore, Julia Kristeva has argued for the construction of a diagonal axis:

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> *'Interdisciplinarity is always a site where expressions of resistance are latent. Many academics are locked within the specificity of their field: that is a fact … the first obstacle is often linked to individual competence, coupled with a tendency to jealously protect one's own domain. Specialists are often too protective of their own prerogatives, do not actually work with other colleagues, and therefore do not teach their students to construct a diagonal axis in their methodology.'* (Kristeva, 1997, pp5–6)

Engaging with this diagonal axis demands that we call into question what we normally take for granted, that we question our methodologies (the ways we do things) and our terminologies (what we call what we do). The construction of 'a diagonal axis' is necessarily then a difficult business. When Kristeva talks of 'the anxiety of interdisciplinarity' she is referring to the problems we encounter when we question the disciplines we identify with. Homi Bhabha has described this moment of encounter between disciplines as an 'ambivalent movement between pedagogical and performative address' (Babha, 1994, p163). It is precisely for this reason that I am a passionate advocate for interdisciplinary research, because to truly engage in such work is often a difficult and transformational experience, combining critical engagement with the emergence of new forms of knowledge that are not yet classifiable.

We could describe the position of the architectural design research that takes place between the profession and academia as characterised by anxiety and ambivalence. Typically, the suggestion is that academic research should strengthen its ties with professional practice and act as an incubator for innovations in architectural design that will improve the quality of the built environment. However, this paper proposes an interdisciplinary model that, instead, explores the boundaries of disciplinary knowledge to allow for the production of complex forms of research that are at once self-reflective and propositional. It is at the intersections between disciplines where the tenets of normative architectural design are being questioned through the creation of innovative research methodologies. Beyond Frayling's 'through', a number of other prepositions are in play relating design and research in new ways. Such prepositions possess a suggestive role in constructing relationships between concepts, disciplines and objects. As philosopher Michel Serres has observed, for such small words, prepositions are extraordinary, they have the potential to change everything around them (Serres, 1995, pp140–147).

Notes

1. See www.hero.ac.uk/rae/
2. It is worth noting that this paper discusses architectural research with specific reference to the current UK condition and that this perspective needs expanding to take into account the international context.
3. 'World University Rankings', *The Times Higher Education Supplement* (5 November 2004). It is also worth noting that in subsequent rankings of universities by research area, arts and humanities was the only area whose ranking was generated without the use of citation impact data. See *The Times Higher Education Supplement* (4 February 2005), pp12–13. For citation indices see www.isinet.com/products/citation/ahci/. See also the very different list and ranking produced by the Network for Theory, History and Criticism of Architecture (NETHCA) http://users.swing.be/nethca/index2.htm.
4. See www.ahrb.ac.uk/ahrb/website/apply/research/strategicinitiatives/designing_for_the_21st_century.asp
5. 'Units of assessment and recruitment of panel members' (July 2004). Ref RAE 03/2004, points 11–13. See www.rae.ac.uk/pubs/2004/03/. It is worth noting here that 'to avoid a diversity of terminology' the AHRB have shifted from using the term practice-based, which they believe 'is not universally adopted', to practice-led, yet at the same time the publications produced by HEFCE for RAE 2008 use the term practice-based research (AHRB, 2003).
6. See, for example, Hunt (2003), who in 'Design as Research, Addressing the "New Knowledge" Criterion' suggests the design process produces six knowledge domains, including 'generative production'. See also McArthur (2004), 'Research in the Creative and Performing Arts. A response to the AHRB Paper: The RAE and Research in the Creative and Performing Arts. Review of Research Assessment'. Where the AHRB paper states that creative works need the text-based description of a scholarly apparatus, McArthur argues that this position needs to be stated more 'moderately in order to recognise the realities of the research dimension of the artwork'.
7. See Rendell, *From Art to Architecture* (book manuscript in preparation). See also Rendell (forthcoming) and Rendell (2004).

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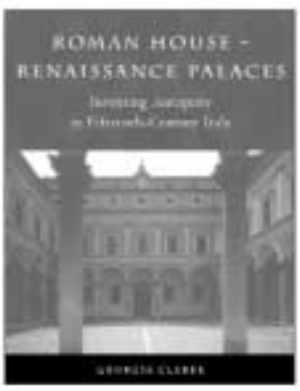

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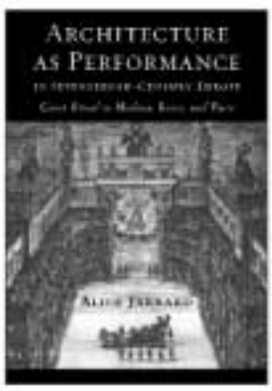

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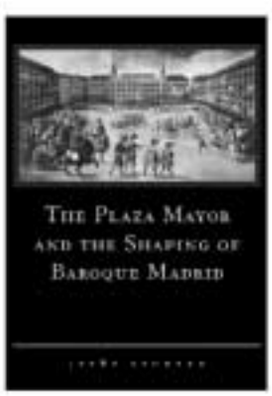

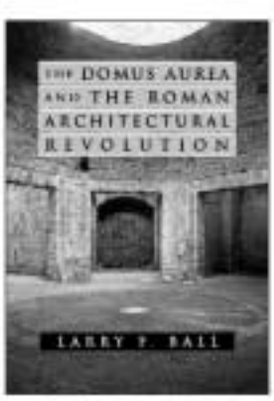

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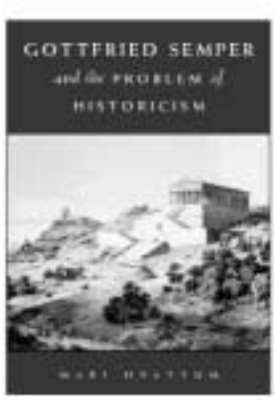

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