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DESIGN MATTERS: MAJOR HOUSE BUILDERS AND THE DESIGN CHALLENGE OF BROWNFIELD DEVELOPMENT CONTEXTS

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Steven Tiesdell¹ and David Adams²

Abstract

The quality of contemporary residential development, and the associated design challenge for house builders, are important current policy issues in England. Until recently, better-designed contemporary housing development was more frequently seen on smaller, more constrained urban or brownfield sites and more rarely on greenfield sites. Set against a significant shift in the prevailing planning regime during the 1990s (from greenfield development to an express policy emphasis on brownfield development), this paper attempts to explain this observation. Utilizing the concept of ‘opportunity space’, it develops a model of the role of design and the designer in the development process, which is then used to account for differences in the quality of development on greenfield and brownfield sites. It is suggested that the development of greenfield and brownfield sites displays significant contrasts and that, as a consequence, successful brownfield developers yield opportunity space in their business strategies to designers.

INTRODUCTION

Until relatively recently, better-designed contemporary housing development in England was more frequently seen on smaller, more constrained urban, or brownfield (i.e. redevelopment), sites and more rarely on greenfield sites (see Figures 1–4).³ Generally of higher density and compact, brownfield developments tend to be well integrated with their local context and have character, identity, visual interest, complexity and variety. The developments are also more likely to accord with the principles and ideas set out in the current generation of residential design guidance (for example, Department of the Environment, Transport and the Regions (DETR), 1998, 2000a; DETR & Commission for Architecture and the Built Environment (CABE), 2000; English Partnerships & Housing Corporation, 2000) and in books and articles by academic and other commentators on residential design (for example, Bentley et al., 1985; Calthorpe, 1993; Bentley, 1999; Duany & Plater-Zyberk, 2000; Carmona, 2001; Carmona et al., 2003). By contrast, poorly designed housing development is more often seen on greenfield sites. Such developments consist largely of standard units with superficial affectations of difference (i.e. through changes of surface materials, details and finishes on otherwise standard units), laid out in patterns that meet basic highway and traffic standards but fail to consider the pedestrian experience or the third-dimensional composition and organization of space (see Department of Transport, Local Government and the Regions (DfTL) & CABE, 2001; House Builders Federation (HBF) et al., 2003). Frequently lacking ‘sense of place’, character and identity, such housing is often indifferent to context.

¹ Dr Steven Tiesdell, formerly Senior Lecturer in Public Policy in the Department of Urban Studies, University of Glasgow, died on 30 June 2011, after a lengthy illness.

² University of Glasgow – david.adams@glasgow.ac.uk

³ In the UK it is commonly accepted that brownfield land is either derelict or vacant (Syms, 1994; Urban Task Force, 1999; Alker et al., 2000). In this paper, the term ‘brownfield’ is used as shorthand for the concept of ‘previously developed land’ contained in Planning Policy Guidance Note 3 (DETR, 2000a).

There are necessarily two caveats to this observation. First, it must inevitably be a general observation that may not be true in any specific case: there are examples of poorly designed brownfield developments and, equally, of well-designed greenfield developments. Secondly, there is a major conceptual problem relating to what is meant by 'better-designed' and, more generally, by design quality, particularly if all stakeholder perspectives are to be considered (see Carmona et al., 2002). It is also important to distinguish between the use of better-quality materials or higher specifications and a more holistic consideration of design. While better-quality materials will directly add to the production costs, better-quality design (which may, for example, involve alternative layouts) does not necessarily increase production costs. Design should also be understood as referring to 'urban design' (i.e. the making of places: see Carmona et al., 2003).



Figure 1. 'Typical' brownfield development (illustration by kind permission of John Phillipps, LDA Urban Design, London)



Figure 2. 'Typical' brownfield development



Figures 3 & 4 . ‘Typical’ greenfield developments (illustrations by kind permission of John Phillipps LDA Urban Design, London).

Nevertheless, explaining why a discernible quality difference between ‘typical’ brownfield and ‘typical’ greenfield developments occurs is of value because it serves to highlight the role (and value) of design in the development process. The design quality difference could be explained in different ways. Brownfield housing might, for example, be of better design quality simply because it is more highly priced (i.e. the average price of a brownfield unit is higher than the average price of a greenfield unit). While this assumes a positive correlation between house price and quality of design, price does not necessarily correspond with quality: brownfield development may be viable only if it can achieve high enough prices to cover higher production costs.

This paper offers an explanation rooted in an appreciation of the land and property development process. It starts by developing a model of the role of design and the designer in the housing development process using the concept of ‘opportunity space’. Opportunity space can be seen in terms of ‘structure’ and ‘agency’. Agency embraces the way in which actors define and pursue their objectives and interests, develop strategies and take action in pursuit of those objectives. Structure

refers to the context within which actors behave and which, at a particular moment in time, defines the range of actions available to those actors. Structures, therefore, define the actor's opportunity space. The model is then used to account for differences in the quality of development on greenfield and brownfield sites. The essential strands of the argument presented are as follows:

- That land development and housing production on greenfield and brownfield sites differ in significant ways and that, for structural reasons, design is not a significant consideration in greenfield development contexts.
- That, because greenfield and brownfield development contexts differ in significant ways, business strategies developed on greenfield sites cannot simply be transferred to brownfield sites.
- That to undertake successful (i.e. profitable) brownfield developments, house builders have to develop new business strategies that, inter alia, require them to yield opportunity space to skilled designers as a means of both overcoming development obstacles and constraints (thereby containing production costs) and achieving the end values necessary to make development viable.
- That the involvement of skilled designers together with the need to overcome the intrinsic difficulties of brownfield sites means that 'typical' brownfield development is often better designed than 'typical' greenfield development.

The overarching conclusion is that, on brownfield sites, investment in better design is a development necessity rather than a development choice.

The paper is in five main parts. The first part discusses residential design quality, focusing on the government-led campaign to increase the design quality of development, particularly of residential development, and the response of the house building industry. The second part sets out the shift during the 1990s in the UK planning regime for residential development. The third part discusses the role of design in the development process. The fourth part discusses major house builders' traditional or conventional business strategies and, in particular, explains why these better suit the development of greenfield sites.⁴ The fifth part provides a more detailed comparison of greenfield and brownfield development.

RESIDENTIAL DESIGN QUALITY

The quality of residential development, and the associated design challenge for house builders, are important current policy issues in the UK. Since the late 1990s, there has been a government-led campaign to increase the design quality of development, particularly residential development. Originating under the Conservative government with the Quality in Town & Country Initiative (Department of the Environment (DoE), 1994, 1995), a new generation of planning guidance relating to the design quality of new residential environments has emerged. The key elements of this are Places, Streets and Movement (DETR, 1998), Planning Policy Guidance Note 3: Housing (DETR, 2000a) and By Design: Better Places to Live (DTLR & CABE, 2001). One of the major themes of this guidance is that the chief responsibility for design quality rests with clients and their designers.

⁴ While there are about 18 000 house builders registered with the National House Building Council, speculative house building is dominated by a small number of major companies, each with an annual output of 500 units or more (Adams & Watkins, 2002). In 2000, there were 43 such companies in the UK. Together they accounted for almost 71% of all homes built by the sector (Wellings, 2001).

Much of this campaign has been directed at the poor quality of development on greenfield sites. Launching the 2000 version of Planning Policy Guidance Note 3 (PPG3), for example, the Deputy Prime Minister, John Prescott, claimed that this new policy approach would “radically alter the way in which we build new homes in this country ... [and] end the wasteful, badly-located and poorly designed building that has gone on for the past twenty years”. Similarly, the design companion to PPG3, *By Design: Better Places to Live* (DTLR & CABE, 2001, p. 8), states that the “greatest challenge to current practice lies in improving the quality of the ‘anywhere, everywhere’ residential environments”.

The first element of the new residential design advice was *Places, Streets and Movement* (DETR, 1998), which contended that an over-emphasis on car and vehicular movement resulted in many developments having the roads designed first and the houses fitted in around them. Explicitly embracing the broader concepts of ‘places’ and ‘streets’, it argued that in “the making of places, it is not the road layout but the relationship of buildings to each other which should be paramount” (DETR, 1998, p. 26).

Published in a new version in March 2000, PPG3 gives general guidance on planning for housing. By including a much greater emphasis on brownfield development and higher-density development, and an increased focus on design, the 2000 version of PPG3 represented a significant policy shift from its 1992 predecessor. The increased emphasis on design is reflected in the second paragraph, where, of eight overarching objectives, five directly related to aspects of design. Local planning authorities are specifically encouraged to create more sustainable patterns of development; to make more efficient use of land, to place the needs of people before ease of traffic movement, to seek to reduce car dependence and to promote good design in new housing developments.

By Design: Better Places to Live (DTLR/CABE, 2001), published in September 2001, was preceded by another important piece of design guidance, published in May 2000: *By Design: Urban Design in the Planning System* (DETR & CABE, 2000). Both *Better Places to Live* and *Urban Design in the Planning System* set out a broad understanding of design as a process of making places. While *Urban Design in the Planning System* outlined a set of objectives for urban design with a strong emphasis on process and procedures, *Better Places to Live* concentrated on residential design advice. Acknowledging lessons from contemporary practice, it was based on a detailed examination of both historic and contemporary practice, from which attributes of successful housing were identified (see Table 1).

Table 1. Design principles from *Better Places to Live* and *Building for Life* (HBF et al., 2003)

Key design principles set out in *Better Places to Live*

- A movement framework that is safe, direct and attractive to users.
- A rich mix of housing opportunities.
- A sense of neighbourhood and community ownership.
- A coherent structure of buildings, spaces, landscape and routes for movement.
- Street layout and design appropriate to use and context.
- Attractive and clearly defined public and private spaces.
- Pleasant gardens and amenity spaces.
- Convenient but unobtrusive car parking.
- A safe and secure environment.
- Well-planned homes that provide space and functionality.

- Housing that is robust and adaptable to changing requirements.
- An environment facilitating long-term maintenance.
- Housing designed to minimize resource consumption.
- Well-considered detailing of buildings and space.

Key design principles set out in Building for Life

- Houses must not show backs to perimeter roads.
- Priority should be given to housing layouts rather than roads.
- Roads should track the line of houses.
- Garages should be brought forward to form a continuous building line, or should be hidden behind properties. Space above garages should be considered for flats.
- Pedestrian routes should be integrated into the development framework and, wherever possible, should be overlooked by dwellings.
- Public and private space should be clearly defined.
- Building style and landscaping must unite to make places.
- Disabled access is essential to creating inclusive communities.

Collectively, these documents have been instrumental in encouraging a step change in prevalent thinking on the quality of residential development. At the same time, the house building industry has become increasingly aware of a need to improve the design quality of its developments, evident in a series of high-profile appeals in the practitioner press and press releases by individual house builders, particularly following the publication of the 2000 version of PPG3. The industry's growing commitment to good design was also demonstrated by the publication in April 2003 of Building for Life (HBF et al., 2003). The manifesto set out a series of priorities, including three with particular significance to this paper: that house builders should recognize design competences as crucial to ensuring their continued competitive advantage; that raising design standards requires major organizational and cultural change within house building companies; and that house builders should improve the process of procuring design skills (HBF et al., 2003). The manifesto concluded by urging house builders to commit themselves to the design principles set down in government planning policy and best-practice guidance and identified a set of key design principles (see Table 1).

As this shows, the design guidance and the response from house builders have tended to come since the latter part of the 1990s. However, prior to this, it had become apparent that brownfield housing development was already starting to be better designed and produced more in accordance with the principles set out in Better Places to Live and Building for Life compared to greenfield housing development. In the remainder of this paper, the authors argue that this improved design of brownfield development cannot be attributed simply to a desire by house builders to produce better designs in brownfield contexts, but must be traced to the particular physical and market contexts that compelled successful brownfield developers to utilize design and skilled designers as an integral part of their business strategies.

FROM GREENFIELD TO BROWNFIELD

Differential housing design quality on brownfield and greenfield sites is particularly interesting because of the emergence of the 'sustainability' agenda in the early 1990s, supplemented at the turn of the new century by an 'urban renaissance' agenda (Urban Task Force, 1999; DETR, 2000b). These agendas shifted the prevailing planning regime for residential development away from policies ensuring a regular release of greenfield land towards policies prioritizing brownfield development (Adams & Watkins, 2002). Until the early 1990s, there had been a relatively regular

release of greenfield land, i.e. a ready supply of land ripe for development and relatively free from problematic site constraints. In what came to be known as an ‘appeal-led’ planning system, developers were able to exploit inconsistencies in the planning system by making speculative applications for residential development on land not designated for such development, with sufficient expectation of receiving approval to warrant the exercise.

During the 1990s, local planning authorities increasingly restricted the release of greenfield sites in order to prioritize brownfield sites. Combined with the introduction of a plan-led planning system in the early 1990s, the new development context led to changes in the business strategies employed by major house builders. In contrast to their previous use of the appeal system to obtain permissions on sites not designated for residential development, major house builders have increasingly sought to influence the process at the earlier policy formulation and development plans stage, for example by seeking to have land use allocations changed in their favour (see Adams et al., 1992).

DESIGN AND THE DEVELOPMENT PROCESS

To develop a better appreciation of the significance of design within greenfield and brownfield development contexts, it is necessary to explore issues of design, design quality and the role of the designer within the land and property development process. This is because, seen in terms of process and product, design issues are both embedded within development processes and emerge from their operation.

Developers’ attitudes to, and appreciation and experience of, the role of design as a means of increasing end values and/or reducing production costs are particularly interesting. As a consequence, the impact of design on the development’s end value must be considered, since this is a primary driver of the development process. The developer’s return is the achieved selling price (i.e. end value) less the full costs of land acquisition and production. Unlike in many countries, major English house builders are simultaneously land developers and house builders.⁵ The return, therefore, comes in two main ways: through land development/dealing (i.e. through buying and selling land); and through housing production (i.e. house building). This distinction is essential to understanding differential design quality on greenfield and brownfield sites.

Typically motivated by the prospect of reward balanced by risk, the financial challenge for developers can be illustrated (in admittedly simple terms) using the residual method of development appraisal. In the residual method, where three of four variables—selling price (or end value), production costs (i.e. site assembly, permissions, infrastructure, construction costs, professional fees and marketing, etc.) and/or the developer’s (anticipated) reward—are known or can be estimated, the fourth (the residual, typically the land acquisition costs) can be found. Based on the anticipated end value, developers can both fix the level of expected return/reward and estimate likely production costs. For any development, they will endeavour to trade off higher production costs against lower site acquisition costs. If production costs increase, then, *ceteris paribus*, to achieve the same level of reward, either the cost of the land must be reduced or the development’s end value must be increased. If developers cannot achieve the desired level of profit, they will pass on the scheme or, alternatively, may simply hold the land in a land bank—a strategy that will be viable while the rise in land/house prices exceeds the financial costs of doing

⁵ In the USA, Australia and the rest of Europe, there is a greater degree of separation between land developers and house builders (see Ball et al., 1988; Ball, 2003). In the USA and Australia, the more common practice is for developers to sell serviced plots to house builders. In European countries, such as the Netherlands and Sweden, the state has traditionally played a larger role in land assembly and in providing serviced plots to house builders, often within the constraints of a masterplan specifying additional development and design requirements.

so in terms of interest paid or forgone. Developers also need to take account of the risk associated with achieving/not achieving the anticipated reward. Because capital is usually borrowed to fund the costs of land acquisition and production until properties are sold, interest rates are a major source of risk in the development appraisal.

Development Actors

The process of designing and producing the built environment involves a variety of actors. While, for the purpose of analysis, development roles (for example developer, funder and user, etc.) are considered individually, actors often perform several roles. As noted above, major house builders typically combine the roles of developer and builder. The actors are connected in various ways but have their own objectives, motivations, resources and constraints. Each development role can be considered in terms of five criteria: (1) the actor's financial objectives; (2) the duration of the actor's involvement and interest in the process and product; (3) the actor's concern with the development's ability to serve its functional purpose; (4) the actor's degree of concern with the development's external appearance; and (5) the actor's concern for the development's relation to its context (see Table 2).

Actors formulate strategies to achieve their objectives based on their awareness of the development context within which they operate and the motivations and objectives of other development actors. Each actor internally trades off between these five criteria. However, because actors have to interact with one another to achieve their objectives, the criteria must also be traded off between actors. Trading off between actors cannot be assumed to be an unproblematic process: actors will have different strengths/powers and 'quality' may be interpreted differently, while achieving better design (however defined) may not be an objective shared by all participants. Furthermore, the costs and benefits of any particular design feature or element—and, more generally, of the overall design of the development—are not neutral in their (perceived) impact on the different development actors. Higher-quality, low-maintenance materials, for example, increase production costs and reduce long-term occupation costs.

While such costs are borne by developers, the consequent benefits accrue to occupiers/investors. As shown in Table 2, supply-side actors tend to have short-term and 'financial' objectives (i.e. where the development is simply a financial commodity). Demand-side actors tend to have long-term and 'design' objectives (i.e. where the development is an environmental product to be used). Two key issues arise from this: (1) the potential for producer–consumer 'gaps'; and (2) the significance of the designer's role within the producer side.

Producer–consumer gaps. Where differing objectives and motivations are traded off between roles effectively played by a single actor or organization (i.e. where a single actor is developer, funder, investor and occupier), conflict is internalized, resulting in the most satisfactory outcome for that actor (subject to budget constraints). Where differing objectives and motivations have to be reconciled between actors (i.e. through market transactions), there is scope for a series of mismatches or gaps, in particular between supply-side and demand-side actors (i.e. producer–consumer gaps). Development quality frequently falls through these gaps (Carmona et al., 2003). Arguably, competitive markets (and greater consumer choice) and/or public regulation (for example, by establishing threshold levels which all developments must achieve and/or making design quality a key consideration in development control procedures) serve to narrow producer–consumer gaps. Producer–consumer gaps are, nonetheless, a structural feature of all speculative developments, especially since some 80% of all new homes in the UK are built speculatively.

Table 2. Motivation of development actors

		Factors of motivation					
					(i) Functionality	(ii) External appearance	(iii) Relation to context
		Development role	Time scale	Financial strategy	Design issues		
Supply-side/producers		Developer	Transient	Profit-optimizing	<i>Medium</i> To enhance marketability	<i>Medium*</i> To ensure marketability (i.e. kerb appeal)	<i>Medium*</i> To exploit positive and reduce negative externalities
		Funder	Transient	Profit-optimizing	<i>Low</i>	<i>Low</i>	<i>Low</i>
		Builder	Transient	Profit-optimizing	<i>Low</i> Indirectly, as advert for services	<i>High</i>	<i>Low</i>
Demand-side/consumers		Owner-occupiers (investors/users)	Enduring	Profit-optimizing/ cost-minimizing	<i>High</i>	<i>High</i> Represents them and appeals to other potential investors/users	<i>High</i> To exploit positive and reduce negative externalities
		Local community	Enduring	Neutral	<i>High</i> where buildings and spaces are used by general public; otherwise <i>low</i>	<i>High</i> Defines and forms part of public realm	<i>High</i>

Source: Adapted from Carmona *et al.* (2003).

*As is argued later in this paper, the developer’s interest in design may vary depending on whether it is a greenfield or brownfield development context (i.e. depending on whether greater investment in design is considered necessary to unlock the site’s development value).

Where producer–consumer gaps occur, the achievement of an appropriate balance of costs and benefits among all actors is critically dependent on supply-side actors being convinced that providing benefits will result in higher prices/ values or, at least, will enable cost recovery. If occupiers do not recognize the benefits of better-designed development by being prepared to pay higher prices/rents for it, then developers (especially) and funders (generally) are unlikely to provide or fund it. Yet, in the absence of effective competition, consumers may have to buy what is available rather than what they actually want, although this also depends on the stage of the market–housing cycle. Lack of sufficient competition also allows developers to produce ‘poorer’-quality developments that serve only narrow financial purposes. While the supply side has to anticipate the demand side’s needs and requirements (in order to produce a marketable product), it also tends to produce, where possible, a product that suits suppliers’ objectives. Thus, rather than consumer sovereignty, there is producer sovereignty, or, at least, a situation of ‘producer convenience’ rather than ‘customer focus’ (Bartlett et al., 2002; Barlow & Ozaki, 2003). This situation gives developers considerable freedom (i.e. opportunity space) to devise business strategies that can exclude improving design quality.⁶

The designer’s role. The prevalence of producer–consumer gaps in the speculative development process and the structural estrangement of developers (producers) from users (consumers) necessitate closer examination of the producer side, and particularly of the designer’s role within the producer side. The producer side typically consists of a number of actors, each with different sets of objectives, of which the designer is one.

Although, in this paper, the term ‘designer’ is used as a shorthand for a ‘talented and skilled’ designer, it must also be recognized that the situation is considerably more nuanced than a simple dichotomy of designer/non-designer or even designer/design technician. Indeed, there are continuums of designers along a non-skilled to skilled continuum; untalented to talented; inexperienced to experienced; and from those who treat design as the application of a general formula regardless of site, market or regulatory contexts to those who treat design as a problem-solving process where problems may be ‘fresh’, ‘novel’ or more simply ‘difficult’.

Examining the designer’s role within the producer side, Bentley (1999) suggested a series of metaphors to describe the designer–developer relationship: ‘heroic form-giver’, ‘master and servant’, ‘market signals’ and ‘battlefield’. Identifying various problems with each of the first three, he found the battlefield metaphor most convincing. In essence, as all actors have some power, some degree of autonomy (because effective ‘control’ is either impossible or prohibitively expensive), some resources (for example expertise), value systems that may conflict with those of other development actors and a degree of self-interest (including incentives both to emphasize and to differentiate their own contributions), the battlefield metaphor suggests actors variously ‘negotiate, plot and scheme’ with and against other development actors to achieve the design/built form they want. Thus, rather than a relatively anonymous structural process dominated by economic forces, the development process can be regarded as a highly social process in which the character, personality and interpersonal skills of the various actors are crucially important.

In explaining his battlefield metaphor, and drawing on Giddens’s (1994) concept of structuration, Bentley (1999) argues that all development actors have ‘resources’ (i.e. expertise and interpersonal skills, etc., which the other actors want and need) and ‘rules’ by which they operate. For private-sector developers, the rules relate to budget constraints, appropriate rewards, the amount of risk

⁶ Closing producer–consumer gaps is a necessary but not sufficient condition of ‘good’ design. Despite responding to the needs of occupiers and investors, developers can exclude the needs of the general public and those of the community at large

to be incurred and the need to create a saleable product. Enforced through sanctions, such as bankruptcy, these rules are not optional and cannot simply be ignored. The rules can be ‘internal’ or ‘external’ to the actor. Internal rules are those that an actor places on him or herself; external constraints are those placed on the actor.

Bentley (1999) argues that the various webs of rules, combined with resources that each actor contributes to the process, create opportunity space within which actors necessarily operate. In negotiating effectively, strategic advantage lies in knowing the limits of other actors’ opportunity space (i.e. how their opportunity spaces are structured). For developers, a key issue is the freedom (i.e. opportunity) they choose to give and the freedom they have to give to designers. For designers, it may involve knowing how far developers can be pushed. The opportunity space for design is therefore defined initially by ‘external’ constraints (for example, the site and its context, the planning policy and other regulatory frameworks and requirements, and market conditions, etc.) on the developer and then by the constraints that the developer places on the designer. The actual boundary or ‘frontier’ to the opportunity space is negotiated, fuzzy and ambiguous, dependent as it is on the respective negotiating abilities of the designer and the developer and the dynamics and precise nature of their relationship (see Bentley, 1999).

Shown pictorially in Figure 5, there are three main external constraints (or structures) on the developer’s opportunity space (and, in turn, on the designer’s opportunity space):

- the development site and its local context;
- the market context, i.e. the need to create a saleable product (i.e. the need to take account of investor and user needs).
- the regulatory context (regime), i.e. the need for planning/development consent, including the need to comply with development plan policies and any site-specific planning guidance.

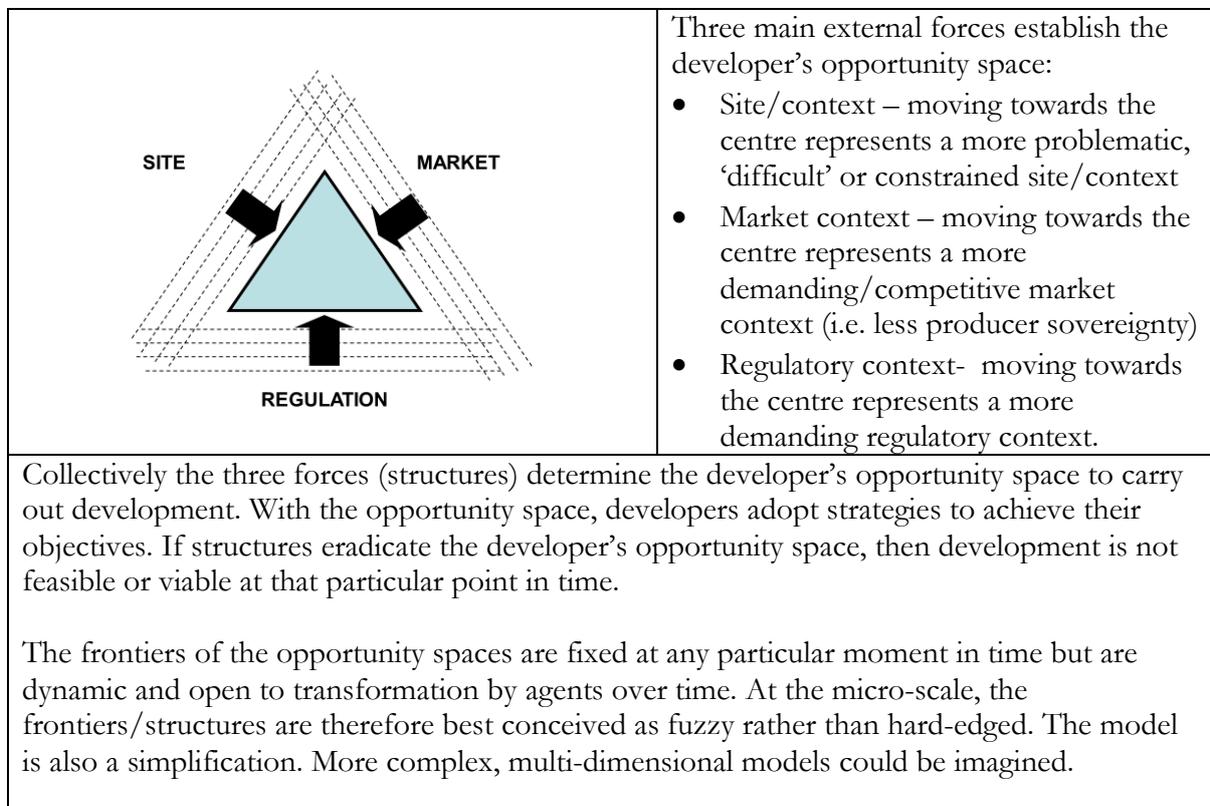


Figure 5. Developer’s opportunity space.

Within their opportunity space, developers devise strategies to achieve their objectives. Within the developer's opportunity space, various actors compete for their own opportunity space and devise strategies to achieve their objectives. For the purpose of this paper, the critical relationship is that between the developer and the designer (see Figure 6).

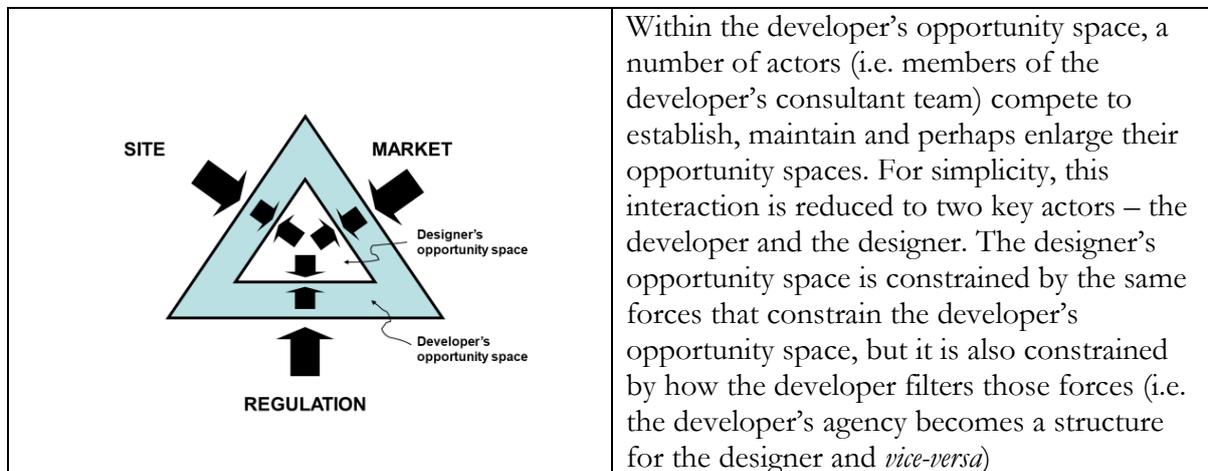


Figure 6. Designer's opportunity space.

The developer's brief (or programme) and the available budget (based on anticipated end values), both of which are based on the developer's understanding of the development context, set the initial agenda and broad parameters for design. The content of such briefs is rarely cast in stone and usually provides the starting point for discussion and negotiation about design. Inevitably, there will be elements that are negotiable and others that are not. On the one hand, and depending on the nature of the development task, designers may be permitted a great deal of freedom to interpret the brief. On the other hand, the opportunity space for design may be severely constrained with designers merely providing a superficial 'packaging' or 'styling', either because all the fundamental design decisions have been made according to a pre-set formula or because the design task consists of laying out standard units. This occurs because there is no external sanction (i.e. the threat of bankruptcy or a failure to achieve planning consent) on the developer that deters or prevents him/her from following this course. The latter frequently results in formulaic and standardized designs unresponsive and unrelated to that context. Equally, the developer's brief is unlikely to be entirely 'arbitrary or capricious', because its parameters are based on the 'needs of the marketplace' and have usually been shown to 'work' (Rabinowitz, 1996), although they may have worked within a different development context.

In general, the more challenging the design task, then the greater the developer's need to utilize design and the talents and skills of a designer as a means to achieve viable development. Hence, the more demanding the site and the greater the challenge of putting the desired development on that site within the available budget, the more likely a developer will be to yield opportunity space to the designer in order to meet the expectations/requirements of the public sector and the user/investor. While this presupposes the designer's ability to respond to identified needs (including reconciling competing needs), such ability is at the heart of design as a problem-solving process (Carmona et al., 2003).

To create the opportunity for better design (and, indeed, to further their own self-interest), designers may seek to enlarge their opportunity space by negotiating with developers. Designers may, for example, seek to persuade the developer that better design is in the developer's interest,

through achieving a quicker or higher-value planning consent and/or higher end values/selling prices. Furthermore, it will be argued that ‘good’ design exploits the site’s positive features, while minimizing the detrimental effect of its negative features. Designers may also utilize the requirements/expectations of planning and public authorities to challenge the developer’s usual practices and, thereby, to expand the opportunity space for design. Equally, the developer may readily appreciate that opportunity space has to be yielded to the designer to obtain planning consent, overcome problematic site conditions and/or achieve a saleable product. A larger opportunity space for design does not, however, ipso facto result in better design. The designer may, for example, merely use the enlarged opportunity space to impose his or her own heroic view. Having developed a conceptual model of the role of design in the development process, the remainder of this paper uses it to explain why brownfield housing is often better designed than greenfield housing. It therefore next explores the UK house building industry’s conventional business strategies, which, it is argued, have been developed primarily to suit the needs of greenfield development. Now that the planning regime has changed (and with it the geographical context for housing development), these strategies are not easily adapted to the different challenges of brownfield development.

THE HOUSE BUILDING INDUSTRY

In any industrial sector, successful firms develop business strategies that give them competitive advantages in respect of prevailing market, fiscal, legislative, policy/regulatory and technological contexts and constraints (i.e. structures). As all firms operate within shifting contexts, this is a dynamic process: changes in (say) the regulatory context provoke and stimulate changes in business strategy and vice versa. There are also inertia and resistance to change, a time lag in adapting to change and periods of adjustment.

By the early 1990s, the UK house building industry had become heavily dependent on the acquisition of large greenfield sites for the construction of relatively standardized developments. At that time, the business strategies adopted by major house builders, reflective as they were of the prevailing (greenfield) development context, enabled them to gain significant operational advantages. Since the availability and ownership of land are significant factors in the housing development process, control of land ownership was a particularly important element of their business strategies. Based on the expectation of a regular release of greenfield land, developers used options and conditional contracts to operate systems of land banking to control land ownership and ensure its availability for development. Such methods gave significant advantages to larger developers able to exploit economies of scale (such as easier access to finance capital) and to adopt longer-term strategies of land acquisition across the business cycle.

To understand why major house builders’ long-established business strategies are less suited to brownfield development contexts, it is useful to highlight five key differences between greenfield and brownfield development (see also Syms, 2001; Local Government Association, 2002).

1. Size of development sites. On greenfield land, developers can benefit from the availability of large development sites. By contrast, as fewer large development sites are available, brownfield land is often available only in smaller parcels. To maintain the same scale of operation, developers need to acquire and develop a number of sites and/or undertake complex and time-consuming procedures to assemble larger development sites or, alternatively, produce more intensive forms of development on smaller plots.
2. Patterns of land ownership. On greenfield sites, the land is often available in large parcels in single ownership (or, at least, with a small number of owners) so that land assembly

becomes unproblematic. By contrast, brownfield sites often have fragmented land ownership, restricting development to smaller sites or for consuming considerable time in assembling land into suitable development parcels, especially where compulsory purchase orders are needed.

3. Landowners' willingness to permit options and/or conditional contracts. For greenfield developments, developers can usually use options and/or conditional contracts to hold the land, allowing house builders lengthy periods of time to bargain with local planning authorities. By contrast, as landowners in brownfield locations are often less willing to accept options/conditional contracts, developers have to risk freehold purchase. Developers, therefore, have less opportunity to build up land banks and have to be more willing to take the risk of freehold purchase prior to planning permission or alternatively be more prepared to work within the adopted planning framework. Once developers have purchased the freehold, there is a financial imperative to undertake development quickly.
4. Contamination. On greenfield sites the probability of contaminated land is low. With its history of previous uses and its higher risk of contamination (and therefore increased costs), brownfield land often involves abnormal site preparation costs, making development appraisal an even more uncertain exercise. In addition, brownfield development often needs to integrate the remediation and design processes (for example, 'hot spots' of contamination may affect layouts). The costs of cleaning up the land may make brownfield development more expensive than greenfield development, which, in turn, may lead to a need for higher-density development to achieve sufficient end value.
5. Source of profits. On greenfield sites, developers have traditionally been able to benefit from increases in the value of the land, with profits/surpluses coming from both house building (i.e. housing production) and increases in the value of land (i.e. land development/dealing). This is because the process of residential development from land acquisition to sales of completed properties is usually a lengthy one that has often coincided with significant periods of house and land price inflation. Thus, cushioned by the increase in the land value, major house builders have not had to generate gains solely through housing production and, in periods of high inflation, have been able to earn a greater proportion of their returns through increases in land value than directly through housing production. Barlow (1999, p. 23) thus claims that from the 1960s until the late 1980s major house builders' main business strategy was "focused on capturing inflationary gains from housing and land markets". Since the uncertain nature of brownfield land markets makes land banking a less attractive strategy, developers are less likely to benefit from medium-term inflationary increases in land value to the same extent as on greenfield land.

For these reasons, brownfield development cannot be seen as a mere geographical expansion of greenfield development since it presents an intrinsically different market/development context (see Table 3). Moreover, the changing regulatory context has turned some of the strengths of the major house builders' long-established business strategies into weaknesses. As Adams & Watkins (2002, p. 131) note, while the prevailing greenfield development context advantaged larger house builders, it also "generated an undue reliance on inflationary increases in land value as a source of profitability". Less likely to benefit from inflationary increases in land value to the same extent, on brownfield sites developers have had to derive a greater proportion of profit making directly from housing production, in which—as can be inferred from the above—major house builders need to

develop expertise.⁷ Furthermore, while major house builders have considerable experience of, and expertise in, greenfield contexts, brownfield contexts remained a relatively unknown arena for them. In practice, specialist firms and subsidiaries of larger firms have undertaken most brownfield development, especially the initial, pioneering developments, and have—in the process—developed approaches better suited to brownfield development contexts. Only three—Barratt, Bellway and Berkeley—of the 14 volume house builders in business in 2000,⁸ for example, could be considered to be at the forefront of urban residential development. The argument is advanced in the next section that to be successful in brownfield development, house builders have had to yield opportunity space to designers.

Table 3. Major house builders’ business strategies

Greenfield development context (policy context post-1990)	Brownfield development context (policy context post-1990)
<ul style="list-style-type: none"> • Major house builders control land through strategies of land banking, which crowd out smaller players (by increasing entry costs) and lead to (local) monopoly situations. • Developers benefit from availability of large developments sites. • Land assembly often unproblematic as land usually in large parcels in single ownership. • Lower risk of contaminated land. • Profits/surpluses come both from land dealing and housing production. • Major house builders have been established to build greenfield housing, with staff having developed expertise in greenfield housing. 	<ul style="list-style-type: none"> • All developers have fewer opportunities to land banks. • Fewer large development sites available. • As land is typically available only in smaller land parcels, suitable development sites often have fragmented land ownerships, needing time-consuming and complex site assembly procedures. • Higher risk of contaminated land (and therefore increased costs). • As brownfield developers are unlikely to benefit from increases in value of land in same way, greater proportion of return has to come from house building. • Major house builders not set up to build brownfield housing. Development typically by specialist firms and subsidiaries.

THE DESIGN CHALLENGE OF BROWNFIELD DEVELOPMENT CONTEXTS

The issues set out in the previous section provide the background for the final part of this paper, which looks in more detail at: (1) the different constraints, problems and challenges of greenfield and brownfield housing development; (2) the necessity in brownfield development contexts for more fundamental considerations of design as a means of achieving a saleable product; and (3) the more competitive milieu of brownfield development contexts. The discussion is summarized in Table 4.

⁷ In other European countries, where there is a greater separation between developers and builders, the house building industry has been compelled to concentrate on productivity gains and cost savings as the basis for enhanced corporate profitability (Adams & Watkins, 2002; see also Gibb, 1999).

⁸ A volume house builder is usually defined as one completing an average of 2000 or more dwellings each year (Adams & Watkins, 2002).

Table 4. Greenfield and brownfield development

Greenfield development context (policy context post-1990)	Brownfield development context (policy context post-1990)
<ul style="list-style-type: none"> • Low site preparation costs permit lower-density development (achieving acceptable residential amenity in lower-density development inherently easier). • Can create and ‘control’ local context: reduces potential for negative spillover effects to be dealt with through physical design strategies. • Site and context are typically ‘pure’ and straightforward, hence urban design is a relatively unimportant consideration. • Economies of scale largely gained through ability to utilize techniques and practices of standardization. • Standardization of house types and components (e.g. standardized products for standardized locations). • Interest in design does not extend much beyond ‘kerb appeal’. • Often able to build at low density, with space for cars and gardens: supposedly in tune with consumer preferences, thereby reducing development risk. • Created by planning system and developers’ land acquisition strategies, locational monopolies (e.g. only one developer on or near site) widen producer–consumer gap and foster conditions of greater producer sovereignty. • Established market: more knowledge about and experience of consumer preferences. • Little (apparent) need for design innovation. • Mature marketing strategies to sell greenfield housing estates. 	<ul style="list-style-type: none"> • High site preparation costs may necessitate higher-density development (achieving acceptable residential amenity in higher-density development inherently more difficult). • Development usually has to be integrated with complex urban context, increasing the need to deal with negative spillover effects through design strategies. • Site and context are typically complex, hence urban design becomes more important both to secure planning consent and to resolve difficulties of local context. • Usually involves the development of smaller sites: therefore unable to gain same economies of scale. • Typically requires greater investment in design/layout (e.g. need individually tailored products for specific locations). • Need to be aware of how design in its wider sense affects value. • Need to build at higher density with limitations on provision of car parking and garden sizes: conflicts with traditional assumptions of consumer preferences, thereby increasing development risk. • As other developments within immediate area, more intense local competition. Design becomes important means of providing additional quality and of product differentiation. Competition also narrows the producer–consumer gap and fosters conditions of greater consumer sovereignty. • Emerging market: less knowledge about and experience of consumer preferences. Design used as strategy to reduce development risk. • Inability to plant existing greenfield designs ‘lock, stock and barrel’ in brownfield locations, resulting in need for (design) innovation. • Different approaches and quite different images needed for brownfield locations set in complex urban contexts.

Site Constraints, Problems and Challenges

Due to their inherent simplicity, greenfield sites can be developed in a formulaic and mechanistic manner, producing cost-efficient layouts. With a few simple rules (which usually relate to highway standards, such as road widths, turning circles and visibility splays), elementary formulas or even computer programs can be written for laying out housing developments. In principle, provided it is tolerably flat and free from any notable landscape features, the same set of rules can be applied to virtually any greenfield development site, further reducing the apparent need for a skilled designer. Major house builders have thus been able to employ ‘technicians’ (rather than designers) to ‘design’ housing layouts, using standardized layouts and house types. This may happen without the technician ever visiting the site and, thereby, without fully appreciating its problems, qualities, attributes and potential. Although such layouts are often entirely functional and meet all regulatory standards, they can rarely be described as ‘good’ designs. On greenfield sites (and in the absence of external sanctions against doing otherwise), developers’ strategic interest in design does not need to extend much beyond ‘kerb appeal’, which, in practice, may amount to little more than different packaging of standardized ‘boxes’.

By contrast, the different constraints and opportunities of brownfield sites mean that standardized solutions are unlikely to suffice, which—in turn—compels house builders to be more aware of how fundamental (i.e. ‘deep’) design affects end values. Where the constraints and problems of site development are more significant (as is typically the case with brownfield development contexts), the need for explicit consideration of design (and, in turn, the need for a skilled designer) also becomes more significant. Greater attention to design provides a means of overcoming these obstacles and achieving a saleable development within budget constraints. Furthermore, the innate complexity means that, rather than giving the computer all the necessary rules to cope with that complexity, it is more efficient to employ a skilled designer to prepare a scheme for that particular site. Carmona (2001), for example, attributes the success of Berkeley Homes and other dynamic companies in the 1990s to their willingness to invest in paying well-regarded architects to design one-off schemes for one-off sites. Hence, one of the many challenges of brownfield development is the need to focus on the design of more individualized and bespoke products—at least in response to sites, if not also to consumers (but see below) (see Figure 7).

Whereas greenfield sites usually have relatively low site acquisition and site preparation costs, the costs of cleaning up the land may make brownfield land more expensive than greenfield development, which, in turn, may lead to a need for higher-density development to achieve sufficient end value. By making it more difficult to achieve acceptable privacy standards, higher-density development increases the design challenge. Hence, developers again have to yield opportunity space to designers. Conversely, higher-density development makes it easier to create well-defined spaces, although these may not necessarily be seen as benefits by potential buyers.

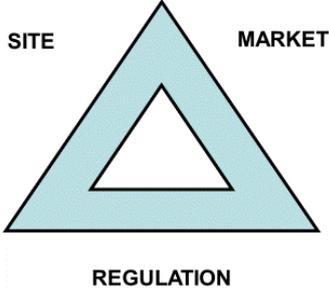
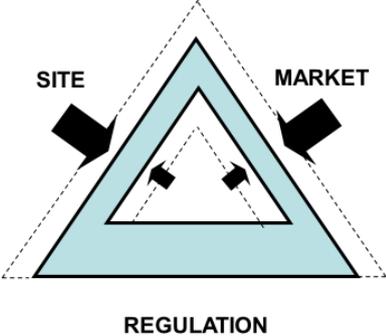
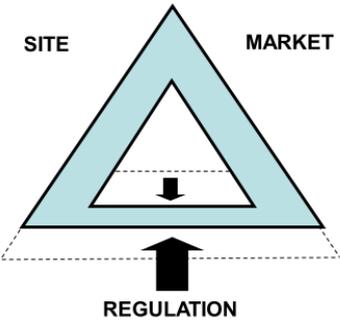
	<p>Greenfield development context (1990s) Developers have a less constrained site, market and regulatory context, giving them a ‘comfortable’ opportunity space. Furthermore, in their business strategies, developers typically did not have to yield space to a skilled designer in order to solve difficult site problems, to use design to produce a more marketable product nor to compete within a more competitive market context.</p>
	<p>Brownfield development context Developer’s opportunity space is squeezed from two directions (and is therefore represented pictorially as a smaller space) – from without by more difficult site/context and by a more demanding/competitive market context <i>and</i> from within by the need to yield opportunity space to a skilled designer (i.e. to solve difficult site conditions, to produce a more marketable product and/or to compete within a more competitive market context, there is a greater need for – and reliance upon – a skilled designer)</p>
	<p>Greenfield development context Post 2000 version of PPG While other features may also have changed for the developer’s opportunity space, following the publication of the 2000 version of PPG3, the regulatory context has become more demanding, which, in turn, has reduced the size of the developer’s opportunity space and within that (smaller) space, the developer also has to yield opportunity space to a skilled designer.</p>

Figure 7. Developer’s opportunity space for different development contexts.

While the planning policy context for greenfield development has been relatively uncomplicated (certainly until the 2000 version of PPG3), the planning policy context for brownfield development is intrinsically more complex. Local planning authorities may, for example, require an element of mixed-use development as a condition of planning consent, creating additional design challenges. Furthermore, rather than incurring the time and costs of challenging planning policy, developers on brownfield sites may need to be more prepared to work within the grain of existing planning policy, thereby accepting additional external constraints on their opportunity space. Although there has been a new generation of planning guidance in recent years relating to the design quality of new residential environments, local planning authorities must struggle to escape from being ‘prisoners of their own history’ regarding the quality of greenfield housing development. Having already permitted poorly designed developments on greenfield sites, they find it difficult to encourage developers to make the necessary step change in the quality of subsequent development. By contrast, as brownfield development is a relatively recent phenomenon, local planning authorities have been able to insist on higher design quality from the start. Higher expectations of design quality by the local planning authority both constrains the developer’s opportunity space and compels developers to yield opportunity space to designers.

Achieving a Saleable Product

Developers do not simply have to overcome site constraints, but must do so in ways that produce a saleable product (i.e. one that is attractive and affordable to a sufficient segment of the house buying public). In general terms, development on greenfield sites can create and ‘control’ local context, reducing the need to address negative spillover effects through physical design strategies. Hence, design, as a means of resolving the difficulties of the local context, is not a significant consideration for developers on greenfield sites. On brownfield sites, the development usually has to be integrated within a more complex, ‘urban’ context with a much higher likelihood of negative spillover effects to be mitigated through physical design strategies. Viewing design as a means of overcoming obstacles and achieving a saleable product, brownfield developers are again compelled both to employ skilled designers and to yield opportunity space to them.

On large greenfield sites, developers can gain economies of scale through standardization. Because there may be fewer constraints and problematic perimeter (‘edge’) site features, larger sites are usually easier to develop through standardized layouts: it is only at the perimeter that a standard layout has to be modified to accommodate the context. The benefits of standardization include facilitating construction by a low-skilled workforce, enabling central purchasing of components, and limiting design costs both directly and indirectly through blanket building control approval. Furthermore, by using ‘tried and trusted’ products, house builders are able to reduce risks by more accurate cost forecasting at the development appraisal stage (and later) and by reliance on designs known to have sold well in the past (see Hooper & Nicol, 1999).

By contrast, brownfield development usually involves the development of smaller sites (i.e. where ‘edge’ conditions become more significant), typically requiring greater investment in design/layout. The need for individually tailored products for specific locations in brownfield development contexts also means that developers are unable to gain the same economies of scale and risk reduction. Furthermore, on greenfield sites, where considerable cost benefits derive from standardization, there is rarely a compelling need or pressure for innovation. Major house builders are thus able largely to ‘free ride’ on the innovation of others (i.e. they do not need to take on the role of technical pioneer for the industry) (see Ball, 1999). Smaller producers, however, frequently need to be more innovative in order to compete. Due to the inability to take standard layouts and plant them ‘lock, stock and barrel’ in brownfield locations, there is often a necessity for some innovation. While there are different dimensions of innovation (for example technical and

organizational, etc.), design innovation usually suggests a need for a skilled designer (and a consequent yielding of opportunity space).

The Competitive Milieu

Not only must developers overcome site constraints and achieve a saleable product, they must also do so in a more competitive milieu. On greenfield sites, aided by the planning system and by their own strategies of land acquisition, developers can benefit from locational monopolies (for example only one developer on or near the site), which enlarges the developer's opportunity space and ability to determine the development's design and quality (i.e. conditions favouring producer sovereignty).⁹ By contrast, brownfield development usually involves direct competition from other developments within the immediate local area. Competition increases consumer sovereignty and reduces both producer sovereignty and the developer's opportunity space to determine the development's design and quality.

On greenfield sites, there is a well-established market, with extensive knowledge of consumer preferences accumulated through experience of previous sales. By contrast, for most brownfield development, there is an emerging market with less accumulated information about consumer preferences. On greenfield sites, risk is attached to changing 'successful' designs. On brownfield sites, with their higher innate risk, design becomes (somewhat paradoxically) a deliberate strategy to reduce risk, with developers frequently having to use design as a means both of improving quality (as a competitive strategy) and of enabling their development to stand out (again as a competitive strategy).

Predominantly based on images of car-based, family-oriented housing, the major house builders' marketing strategies have generally evolved and matured to sell housing in greenfield development contexts. Quite different approaches and images are needed for brownfield developments set within more complex urban settings. Given that it is less family-oriented housing, brownfield housing choices are based more on the freedoms and opportunities of particular lifestyle choices than the restrictions of family commitments. Hence, standardized house designs and layouts are again unlikely to suffice because the greater social and economic diversity of potential urban purchasers is unlikely to be satisfied by a narrow and inflexible product range. It may also be argued that urban consumers appear to be more discerning because they are offered greater choice. As greater competition serves to close the producer–consumer gap by compelling developers to be more aware of user/investor needs (i.e. to have a greater consumer focus), another challenge of brownfield development is the need to focus on the design of more individualized and bespoke products. The need to meet such needs both constrains developers' opportunity space and requires them to yield opportunity space to designers.

On greenfield sites, developers are often able to build at lower densities, with space for cars and ample gardens—development patterns that are supposedly in tune with consumer preferences (and, hence, are relatively low-risk). By contrast, on brownfield sites, developers typically need to build at higher density with restrictions on car parking and garden size (if gardens are provided at all). While these factors would appear to conflict with consumer preferences, thereby increasing development risk, there has been a cultural shift in the attitudes of housing developers, in part achieved through direct experience of brownfield development. It had previously been considered that brownfield developments were unlikely to be commercially viable: fixed notions of what housing consumers wanted, together with sites that could not be viably developed with detached

⁹ This situation is not always true. Larger greenfield sites are often split between—and developed by—a number of different developers on the 'ice cream sellers on a beach' principle (i.e. vendors congregate to maximize their potential market).

houses with ample parking provision and large gardens, meant that housing developers could not provide the product that they thought consumers wanted. Through the experience of pioneering developments on brownfield sites, developers have subsequently found that higher-density developments, with small or no gardens and with low levels of car parking provision, will generate sufficient end values so as to make such schemes viable. This realization has encouraged house builders to reconsider what housing consumers want.

CONCLUSION

This paper has developed a model of the role of design in the development process, which has been used to present an explanation of differential quality in the design of housing in greenfield and brownfield development contexts. The model and the explanation derived from it provide a conceptual framework from which hypotheses can be developed and tested through empirical research. The model is, for example, a 'social' one, which, *inter alia*, emphasizes the scope and potential for ethnographic research on the relations between specific designers and developers and about specific development projects.

The model can also be employed to explain why, following the 2000 version of PPG3 (DETR, 2000a), there is emerging evidence that the quality of greenfield development has also improved (see Table 7). While this paper concentrates on the physical/geographical and market (i.e. the shift from greenfield to brownfield) development context, it is important to acknowledge that other changes in the regulatory context will affect development outcomes. In this respect, it is appropriate to note that, particularly as a result of the 2000 version of PPG3, the regulatory context for greenfield development has changed. The stronger national policy statement has both enabled and encouraged local planning authorities to raise their design expectations in greenfield development contexts. The realization is that in greenfield development contexts improvements in design quality are unlikely to come from the need to overcome problematic site conditions and constraints or, at least in the short term, from the demands of producing a saleable product. Instead, an external stimulus is required in the form of a more demanding regulatory regime, which compels the developer to yield opportunity space to a skilled designer. Two other changes are taking place that will affect design quality: first, the experience of brownfield development is feeding back into greenfield development process; and secondly, increasing numbers of local planning authorities are releasing a smaller number of larger allocations of greenfield land. In essence a means of transferring the costs of infrastructure provision to developers, it also changes the context for design. The sites are typically developed by a number of developers within an agreed masterplan created by the developers themselves, the local planning authority or a third party, thereby creating both a greater degree of local competition and additional design requirements. The masterplan is also a key regulatory tool to improve design quality.

The paper's central argument is rooted in recognition that the brownfield development context differs in significant ways from the greenfield development context, such that business strategies that have historically proved successful in greenfield contexts are both less appropriate for and less successful in brownfield contexts. The significant changes in the development context for house building since the early 1990s have provoked a need for strategic learning by major house builders in order to develop new business strategies, and perhaps also core competencies (see Adams, 2004), that better suit the new development context. Brownfield development contexts typically are, for example, inherently more challenging, local housing markets more competitive and urban house buyers more diverse and (arguably) more discerning. In essence, therefore, brownfield development contexts compel developers to invest in design in their business strategies, i.e. design must be utilized as a means of both overcoming development obstacles and constraints (and, thereby, containing production costs) and achieving the end values necessary to make development

viable. In this regard, the paper's essential proposition is that, if major house builders are to operate successfully within brownfield contexts, they must rethink and perhaps adapt their established business strategies—developed as they are from greenfield development contexts—in ways that yield greater opportunity space for designers. As the Building for Life (HBF et al., 2003) manifesto suggests, there is some evidence that this process has begun. The required 'upskilling' in design epitomizes the challenge now facing many major house builders, and the extent to which companies invest in higher-quality design may reflect their long-term capacity for business survival and success.

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