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Innovation in Urban Design: Does Research Help?

ANN FORSYTH

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ABSTRACT In a world of design solutions, how important is research to innovation? This paper describes how innovation intersects with (1) urban design practice and (2) the work of research universities. When innovation is largely stylistic, design practice sensibilities may well be more useful than research skills. But when innovation requires new data or new analytical techniques, research is important. With their direct connections to tangible issues and their location within multiple professions, urban designers could well become exemplars of interdisciplinary research, serving as the human face of the research turn while expanding and deepening their own body of knowledge. Indeed, they could use this research turn to accelerate and disseminate inventive work in urban design, so that the urban design field experiences significant innovation.

Introduction

In a world of design solutions, how important is research to innovation? This paper argues that there are two primary locations for innovation in urban design: practice; and university-based research innovations. This is of interest to urban designers because many universities are currently trying to improve their measurable research productivity. The benefits to universities include not only the development of new knowledge, but also an increase in funding, prestige and economic development. Urban designers are well positioned to take advantage of this moment to build a research infrastructure that, by helping to push the practice and theory of urban design, will encourage a robust level of innovation. In fact, urban design, urban planning and urban studies programmes often involve just the types of interdisciplinary (or multidisciplinary or transdisciplinary) groups solving important human problems that have become so appealing to well-heeled funders in the hard sciences. Even less well-funded interdisciplinary programmes in other areas, such as the social sciences, are now finding themselves in the core of current initiatives to increase research output in areas of human and environmental importance (Lombardi et al., 2001; Forsyth & Crewe, 2006).

Urban design—claimed as a teaching and research specialty within architecture, landscape architecture and planning, and typically involving teams from multiple professions—is essentially interdisciplinary (Moudon, 1992; Schur, 1999; Lang, 2005). With their direct connections to tangible issues and
their location within multiple professions, urban designers could well become exemplars of interdisciplinary work, serving as the human face of the research turn, while expanding and deepening their own body of knowledge. Indeed, they could use this research turn to accelerate and disseminate inventive work in urban design, so that the urban design field experiences significant innovation.

However, it is all too likely that many academic urban designers will not do well in this context. Professional schools, such as programmes in the humanities and social sciences, have had complex reactions to the recent interest by universities in increasing funded and interdisciplinary research. Those focused on apprentice-like professional training in design, architecture and landscape architecture may have neither skills nor interest to take advantage of this trend to increase research of any type (Stevens, 1998). While urban planning has embraced the research turn, architecture and landscape architecture, the university disciplines housing much of urban design education are not so well prepared, and in fact may see the research emphasis at best as irrelevant and at worst as a threat to achieving excellence in professional education and practice.

Based on a review of projects and papers in urban design, this paper proposes that there are (at least) six domains of urban design innovation:

- Style
- Project types
- Process and engagement
- Formal/functional analysis and representation
- Ethical, social, and cultural critiques and evaluations
- Innovations in collaboration with other fields, a broad area of collaborative and interdisciplinary work

Obviously, research can help with innovation in some areas more than others. So far, the core environmental design professions of architecture and landscape architecture have contributed most to creating new, or newly revised, urban design ‘styles’ or urban ‘types’. These variations on neighbourhoods, streetscapes and plazas are often lovely, or at least interesting, and have become icons for landscape architecture, architecture and planning. When such innovation is largely stylistic, design practice sensibilities may well be more useful than research skills. However, urban planners could contribute a much needed research base to solving the emerging problems of the urban world—from environmental damage to infrastructure for the poor to providing a sense of place. Through new solutions and sophisticated evaluations this research base could lead to innovation in urban design. The rather narrow palette of urban design strategies in current practice could be evaluated more carefully and significantly expanded.

This paper first defines innovation and examines the importance of research. It then explores the differences between research and design, comparing how they lead to innovation. It concludes with reflections on how university-based urban designers can take advantage of the move in many universities toward a stronger research emphasis. As urban design faces a number of important and complex urban problems, research-based innovation in urban design is most likely to take place in planning programmes or in academic programmes where architectural urban designers can tap into the innovative capacity of collaborator fields.
Defining Innovation

The practice of innovation is frequently defined as having two dimensions. Stephen Ward explains in his history of planning in the 20th century that these have been characterized by the economic historian Joseph Schumpeter as follows: “The first, and most fundamental, is invention, meaning the discovery of new ideas with far-reaching potential... The second is innovation proper, whereby new ideas are adapted, packaged and applied in practical ways” (Ward, 2002, p. 4). Innovation in this sense implies transferability or diffusion beyond the immediate problem (Rogers, 1995). Schumpeter was most interested in innovation in business, in the pursuit of profit, and there is a large literature on business innovation (Utterback, 1994). Urban design is not quite a parallel activity, but the profit motive is more clearly in play in urban design than in typical public sector planning (Ward, 2002, p. 4). For most built work in urban design, implementing and dispersing an innovative idea (innovation proper) requires significant resources and the strong role of private development.

Psychologist Mikhały Csikszentmihalyi, in his 1996 book titled Creativity: Flow and the Psychology of Discovery and Invention, offers insight into the personality characteristics of innovators. Through interviews with more than 90 highly creative individuals, Csikszentmihalyi demonstrates the importance of context to creativity. He found that in order to make a real difference, creative individuals need to have a context (termed a ‘domain’ in his book) and an audience (a field). Csikszentmihalyi pointed to a number of apparently contradictory personality trait pairs possessed by creative individuals, such as imagination coupled with discipline, and high levels of ‘divergent’ or creative thinking coupled with a high capacity for ‘convergent’ or logical thinking to separate good ideas from bad. Collaborators, commentators, physical space, time, and the information to build mastery in the field were all found to be important. It is important that work on innovation and creativity frequently distinguishes between ideas that are novel to the person and those novel to the field; though both are important, this paper deals with the latter (Boden, 1990; Lawson, 2006).

Like Csikszentmihalyi, Ward and many other theorists emphasize the role of environment, context, milieu and networks (Dacey, 1989; Rogers, 1995; Csikszentmihalyi, 1996a, 1996b). Ward, for example, uses the idea of milieu to explain how the “isolated musings of a lone visionary might well receive their first tentative airings. Here their ideas can be rehearsed and made into something altogether more practical and relevant to the ‘real world’” (Ward, 2002, pp. 8–9). The context is also important for judging innovation because often an innovation in one field is in part a translation of knowledge from another; what matters is it is new to the audience and their intellectual and professional world and that it transforms the new field (Symes & Pauwels, 1999, p. 99).

While research universities, centres and units can certainly provide resources and a milieu, they are not the only possible locations of such supports for innovation in urban design. For example, architecture has a long tradition of innovation coming from practice. In the case of practice, a milieu can be created by a group coming together, rather as happened with the garden cities movement, the Regional Plan Association of America, the Congrès Internationaux d’Architecture Moderne (or CIAM), and, more recently, the Congress for New Urbanism (Thompson-Fawcett, 2003; Mumford, 2006). Journalists played a strong
role in critiques of modernism and the rise of New Urbanism helping create a significant level of debate (Jacobs, 1961; Kunstler, 1993).

Foundations or wealthy patrons have funded meetings and publications for urban design innovators outside of universities. For example, the Rockefeller Foundation funded Jane Jacobs to write her classic *Death and Life of Great American Cities*, although it also funded those within universities such as Kevin Lynch (Laurence, 2006). Developer James Rouse brought together a number of innovative thinkers in Columbia, Maryland’s, social planning work group and many more on the long-term professional team, with only few academics. Rouse also funded an internal group, the American City Corporation with at least part of its mission to educate others about Columbia (Forsyth, 2005, ch. 3). A number of developers, including the Prince of Wales, have funded New Urbanist work and meetings. The Prince of Wales has been particularly active in forming the Urban Villages Group and later International Network for Traditional Building, Architecture and Urbanism (Thompson-Fawcett, 2003, p. 256). Particular firms have codified innovations with books and manuals on their work. This has been particularly obvious with New Urbanists, although before them modernists and garden city proponents were similarly prolific (e.g. Duany *et al.*, 2000; Urban Design Associates, 2003). Given that urban design ultimately results in a new, rebuilt or refined built environment, practitioners and journalists can be well placed to translate new ideas into formats accessible to many (Symes & Pauwels, 1999, p. 100). Overall, universities have not always been a key location for urban design innovation. Adaptation, in particular, often happens outside their walls.

**How Important is Research?**

However, given the important innovations that have happened without much formal research, how important is research? When planning moved toward the social sciences in the middle of the last century, it left design to other professions, such as architecture and landscape architecture, while it became firmly ensconced as a public sector activity that drew increasingly on formal social-scientific theories and rational decision-making to solve problems (Birch, 2001). In the world of urban planning, innovation relies on good information, clear theories and a multi-dimensional view of the public interest. There is a strong link with research.

The architecture fields went on a rather different track—and, it should be noted, have been quite successful in it. Landscape architects continued to work on suburban developments, parks, plazas and streetscapes, and architects expanded into the void left by planners, working on buildings and large ensemble projects and populating most of the formal degree programmes in urban design. There have certainly been research-oriented professionals in these groups. Urban ecology has become increasingly important in landscape architecture, and landscape architecture programmes typically include a course in research methods (Spirn, 1984; Nassauer 1992). The broad field of human-environment interactions has drawn from psychology, sociology and anthropology to create a range of interesting work from design guidelines to visual and functional assessments (Lynch, 1960; Alexander *et al.*, 1977; Cooper Marcus, 1986; Cooper Marcus & Sarkissian 1986; Sanoff, 1991; Southworth, 1997; Nasar, 1998). Histories have dealt with the public realm (Cranz, 1982; Hayden, 1995). Researchers have investigated how to use new technologies in analyzing and representing public spaces with
increasing success as computing capacity has increased (e.g. Urban Simulation Team, 2007; Environmental Simulation Center, 2007; Senseable City Lab, 2007).²

However, urban research was far less dominant in the architecture fields than in planning. ‘Design theory’ became the term to describe design inspirations rather than a mode of explanation (as it is seen in other fields). As a result, the process of design decision-making has remained somewhat mysterious (Anthony, 1991). Innovations did occur but focused on creating new styles and types, combining or transforming traditional elements to solve current problems such as is the case with festival market place redevelopments, New Urbanist street layouts or transect planning, and landscape urbanist infrastructure interventions (Calthorpe, 1993; Shane, 2004). While certainly involving various types of investigations, and often having a large effect on practice, the link to formal research has often been tenuous. Only in cases such as low-impact design (LID) does an approach seem to be really new and linked to research, but even in this example, much of what is new in LID reflects recent research in ecology and hydrology rather than the urban design fields.

Defining Research and Design

Of course, this discussion depends on the definitions of research and design. While there is no one standard definition of research, authors generally see research as involving several key dimensions including: having a “broadly important” question, “systematically collecting and analyzing evidence”, building on earlier work, “recognizing alternative explanations”, evaluating and documenting findings, subjecting work to peer review, making it public, and overall having an aim of “contributing to the knowledge base of a field” (Forsyth & Crewe, 2006, p. 161). Research may take a number of forms, including empirical studies that collect and analyze data, logical arguments, critical analyses, and many very systematic uses of creative work that conform to the rather stringent definition above (Groat & Wang, 2002; Forsyth & Crewe 2006). Research is a subset of scholarship, which is commonly defined as work that shows great expertise, has clear goals, is documented with a reflective critique, has significance beyond an immediate context, and is reviewed by peers (Diamond, 2002, Table 1; Humphreys, 1997, p. 1; Forsyth & Crewe, 2006, p. 161).³ Table 1 compares definitions of research and scholarship that have been developed elsewhere and adds an analysis of design.

As can be seen in Table 1, design is quite different from research and scholarship in that it typically solves a specific problem by creating representations of future environments that will result in built forms (Groat & Wang, 2002, p. 101). Although designers do create generalized models or types such as the New Urbanist village, a design is typically developed for a specific rather than a generalized client. It solves a problem for particular people and is not intended to extend the knowledge base of a field. It also uses a very different form of argumentation based on graphical representations of analyses and proposals. While there is a problem-solving approach to design, often called analysis-synthesis, it still involves a fairly mysterious creative leap. Other design approaches or methods include those currently evident in New Urbanism, such as copying or modifying precedents and using codified systems akin to recipes or patterns. Metaphor and analogy are also used (Rowe, 1987; Casakin, 2006; Lawson, 2006). Such designs may certainly develop new approaches to the fields
Table 1. Research, scholarship and design

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Research</th>
<th>Scholarship</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goals and background</td>
<td>Answers a question that has some general interest—related to gaps in knowledge or key questions</td>
<td>Requires a high level of discipline related expertise; has clear goals</td>
<td>Answers a specific, site related question for a client</td>
</tr>
<tr>
<td>Methods</td>
<td>Provides evidence that has been systematically collected and analyzed, and that is capable of answering the core question</td>
<td>Has clear methods</td>
<td>Combination of analysis and inspiration. Can be: • “black box” • analysis/synthesis (problem solving) • based on precedents, analogies, or metaphors • from a codified approach such as new urbanism or modernism; etc.</td>
</tr>
<tr>
<td>Relation to earlier work</td>
<td>Builds on earlier work</td>
<td>Requires a high level of discipline-related expertise</td>
<td>Sometimes part of a school, often deliberately unique</td>
</tr>
<tr>
<td>Argument</td>
<td>Makes an argument that at least implicitly counsels reasonable objections</td>
<td></td>
<td>Makes a proposal in graphical/visual form</td>
</tr>
<tr>
<td>Documentation and evaluation</td>
<td>Documents and evaluates its methods and findings, so that both can be replicated by others</td>
<td>Involves documentation that includes a reflective critique</td>
<td>Is documented and made public through building (and drawing)</td>
</tr>
<tr>
<td>Peer review</td>
<td>Is subject to peer review</td>
<td>Is reviewed by a panel of peers</td>
<td>May occur through awards. Not essential.</td>
</tr>
<tr>
<td>Public/dissemination</td>
<td>Is made public</td>
<td>Involves documentation that includes a reflective critique</td>
<td>Is documented and made public through building</td>
</tr>
<tr>
<td>Contribution</td>
<td>Contributes to knowledge in a field</td>
<td>Is significant beyond the immediate context due to innovation of a capacity of replication or elaboration</td>
<td>Solves a problem; contributes to body of work of designer</td>
</tr>
</tbody>
</table>

Note: *Two columns adapted from Forsyth & Crewe (2006); other sources Groat & Wang (2002); Rowe (1987); Lawson (2006).*
of architecture, landscape architecture or urban design but still not conform to the
definition of research.

Urban design uses these generic design skills but with a more public
orientation than is typical in mainstream architecture or even landscape
architecture. Urban designers, particularly those in architecture, are often cut
off from their professional peers. Authorship is less clear in urban design. Urban
design is creating a setting for activities, in the context of complicated ownership,
regulatory and circulation needs. Because of this urban design architects must
usually make do with background or ‘fabric’ buildings and masterplans rather
than signature buildings, making it harder to reach star status (although The New
Urbanists have compensated for this somewhat by finding an audience among
planners, developers and the public). However, while having a public orientation,
the aim of urban design is still solving specific problems using design and not
research methods. Urban design is not equivalent to urban research.

Overall, while design and research both put something new into the world,
that new thing reaches very different audiences and conforms to very different
criteria.

Research, Design and Innovation

So how do design and research relate to innovation?

Overall, the focus of research on important problems raises the potential to
spark significant innovation. In such cases, universities seem to have some
advantages in creating innovative contexts, enabling the conduct of research that
combines convergent and divergent thinking and sparks transferable solutions.
However, close-knit professional groups such as CIAM and the Congress for New
Urbanism may also create innovative contexts. A number of manifestos,
reflections on practice, pattern books and think pieces have had great impact on
urban design with little base in research (Bacon, 1967; Venturi et al., 1972; Barnett,
1974, 1995; Jacobs & Appleyard, 1987; Calthorpe, 1993; Duany et al., 2000; Duany &
Talen, 2002). Researchers have had to work very hard to make their results as
engaging and understandable to designers as the history of design guidelines
demonstrates (Cooper Marcus, 1986; Cooper Marcus & Sarkissian, 1986; Cooper
Marcus & Francis, 1998; Kaplan et al., 1998; Forsyth & Musacchio, 2005).

However, on the design side, merely solving unique problems does not mean
that the problems or the solutions are important for changing the overall practice
of urban design. Local reports or local projects, which demonstrate the expertise
and artistic skills of the urban designer as well as their knowledge of the basic
palette of urban design strategies or ‘moves’, can be useful to communities and
clients. However, most do not change the overall practice of urban design. While
designers periodically think up new styles—such as forms of deconstructivism
and New Urbanism—many are recycling past approaches and the more avant-
garde of these are unlikely to be built on a large scale because they are typically
interesting (i.e. expensive and uncomfortable) rather than sustainable.

Similarly, given urban design’s location at the boundaries of a number of
professions—particularly architecture, landscape architecture and urban plan-
ing—some of what is seen as innovative in the urban design practice of one of
these professions is really just the common sense of another profession
translated. So, for example, the periodic discovery by architects of landscape is
often an example of translation rather than true innovation, interdisciplinarity or
even collaboration. Innovation requires practitioners who can select, conduct and document their work with a consciousness of its national and international contribution, beyond one site and one profession, and who have the ability to make such a contribution. Of course, the same is true for researchers, but the focus of research on contributing to knowledge makes this somewhat easier.

However, the question remains, does research actually lead to innovation in urban design?

In some ways it is easiest to think about innovation in urban design by reflecting on examples of innovative practitioners. As indicated above, much of the work in urban design practice simply recycles a set of standard aims such as ‘creating a visual hierarchy’ or ‘promoting social interactions’. Other work just translates from one field to another. Yet some of the most creative urban design work, even in the past 50 years, has come from outside universities, including the work of James Rouse on shopping centres, Jane Jacobs on street vitality, Gordon Cullen’s townscape work, William Whyte’s street life project (which also involved formal research), the New Urbanist movement, and much work on sustainable urban design (Cullen, 1961; Jacobs, 1961; Whyte, 1980; Gillette, 1999; Laurence, 2006). Practicing professionals have been able to try design approaches and learn from experience or, like Jacobs, have used a journalistic method with broad influence. They have created new models, new urban types and new ways of understanding cities.

However, other innovators have been linked to universities, including such academically affiliated practitioners as Elizabeth Plater-Zyberk for New Urbanism, Ian McHarg for design with nature, Kevin Lynch on several theoretical classifications of urban form, both Donald Appleyard and Alan Jacobs on streets, Jan Gehl on public spaces, and Ron Shiffman on participatory design (Lynch, 1960, 1981; McHarg, 1969; Newman, 1972; Appleyard, 1981; Gehl, 1987; Jacobs, 1993; Duany et al., 2000). Some have dipped in and out of academic life, for example, Oscar Newman of Defensible Space (1972) fame. In addition, there are a number of more traditional researchers and scholars who have clear connections to practice, and sometimes do have practices, such as Anne Vernez Moudon on urban form and health, Dolores Hayden on gender and diversity issues, Hillier and Hanson on space syntax, Anastasia Loukaitou-Sideris on social uses of public spaces, and Michael Southworth and colleagues on streets and street patterns (Hillier & Hanson, 1984; Moudon, 1992; Hayden, 1995; Loukaitou-Sideris, 1995; Southworth, 1997; Loukaitou-Sideris et al., 2002; Southworth & Ben-Joseph, 2004). Of course, there are other innovators in each of these categories, but these individuals give a sense of the range of innovation in urban design.

Considering these exemplary individuals, it can be seen that innovation in urban design can and does occur through both practice and research, both within and outside of universities and in a number of areas (Hack, 1984; Moudon, 1992; Schurch, 1999; Carmona et al., 2003; Ben-Joseph, 2004; Krieger, 2006). Some exemplars do not neatly fit their categories, for example, William Whyte, although a practitioner, conducted investigations that are recognizable as research; Elizabeth Plater-Zybeck has had a long and distinguished university career but has remained an important practitioner-scholar rather than a researcher. Overall, unlike some more technical fields, these exemplars all together demonstrate that innovation seems to come from a range of institutional locations, and from both research and practice.
Table 2. Forms of innovation

<table>
<thead>
<tr>
<th>Domain of Innovation</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Style</td>
<td>Built work or sustained illustrations that change the formal character of urban design</td>
<td>Ecological design (wild aesthetic), neo-traditionalism, and townscape.</td>
</tr>
<tr>
<td>Project types</td>
<td>Creates new urban types</td>
<td>The festival market place.</td>
</tr>
<tr>
<td>Process and engagement</td>
<td>Develops new processes or modes of public engagement</td>
<td>The New Urbanist charette; the Australian “speak out”.</td>
</tr>
<tr>
<td>Formal/functional analysis and representation</td>
<td>Involves new techniques for understanding and representing space</td>
<td>Serial vision, Lynchian cognitive mapping, and space syntax.</td>
</tr>
<tr>
<td>Ethical, social, and cultural analyses</td>
<td>Highlights issues of the good</td>
<td>Gendered spaces, space evaluations. The power of place.</td>
</tr>
<tr>
<td>Innovations in collaboration with other fields</td>
<td>Interdisciplinary research and prototype projects</td>
<td>• Human factors (psychology, sociology, e.g. post-occupancy evaluations).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Public health (collaborating with public health, medicine, e.g. impact of urban design on physical activity).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ecological sustainability (urban ecology, engineering, e.g. green cities).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Infrastructure efficiency (economics, e.g. ‘costs of sprawl’ analyses).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Economic and political models of design decisions.</td>
</tr>
</tbody>
</table>
Table 2, demonstrates this by illustrating six main types of innovation (however, note that each type has numerous subtypes.) Obviously, research plays a more primary role in some types of innovation than others, with the importance of research increasing toward the bottom of the list. Universities are uniquely placed to innovate in urban design in those latter areas, which are also arguably the areas most linked to larger societal issues (as opposed to debates within the practice of urban design).

Innovation in University Programmes

So far, the paper has talked about innovation in the past. What about the future? There are many forthcoming challenges for urban design linked to ecological damage, energy issues, urban growth, urban poverty and the need for a sense of place (Beatty, 2002; Gospodini, 2002; Madanipour, 2006). Obviously, urban design practice can no more be put on hold until all questions are answered through research than can medicine or forestry or any other profession. In addition, the public and even other professionals are often open to the urban designer’s latest recipe for change, whatever the evidence for its success, as long as the speaker is charismatic and their slides beautifully composed. Research may well be ignored even where it may be available and useful.

Urban design programmes, particularly in the architectural fields, may also lack research capacity. Many design schools focus rather less on research than the hard sciences or social sciences. Their research model may be compared with the humanities, for example, scholarly interpretations of built work, although their problem solving and professional training orientation makes them unique. Many urban design faculty in architecture and landscape architecture have traditionally considered the core mission of their academic programmes to be professional training operationalized as apprentice-like teaching. Innovation in urban design at universities may certainly occur through the work of edgy practitioners (those working part-time at university to help finance risky practices). Such practitioners make up a large percentage of faculty in key schools. They may certainly contribute to innovation, for example, creating new urban types. However, not everyone doing practice and associated with a university is being highly innovative. In many cases, those doing urban design in many architecture and landscape architecture programmes are more interested in teaching rather than research or even innovative practice. Thus universities do not necessarily produce innovation, whether research or practice based. Further, much innovation in urban design stemming from universities comes from affiliated practitioners.

However, emerging issues are amenable to research—creating energy efficient urban forms, for example, or developing a sense of place. Because of the shift toward social science that planning underwent in the 1960s and 1970s, academic programmes in urban planning have long attracted faculty interested in research. They are well equipped to contribute to the areas of formal or functional analysis and representation; ethical, social and cultural analyses, and innovations in collaboration with other fields. They can evaluate whether urban design strategies have achieved particular outcomes and even propose new solutions.

Indeed, based on the idea that other fields in the universities will look to urban designers for help solving important societal problems, it may seem at first
glance that research-based innovation in urban design will most easily happen in the area of collaborations. Yet it is often the case that urban designers are seen and included merely as built-environment consultants, rather than full partners in research conceptualization and analysis (Forsyth, 2007). Further complicating the matter is the fact that research is not at all essential to professional education in design. In schools where faculty have a mix of backgrounds and research faculty are a minority, the possibilities for fruitful collaboration may be quite limited.

Overall, the research turn raises many questions as well as opening significant possibilities for innovation. Urban design innovation is likely to continue to occur both in research and in practice, but it will be important not to underestimate the potential for research innovation or to underestimate the importance of practice in the design fields. Understanding the relationships between innovation, research and design can help increase understanding of key points of influence for those in practice, in universities, and in both.

Acknowledgements
The author would like to thank Katherine Crewe, Peter Brown and Taner Oc for valuable comments.

Notes
1. Some business texts use innovations as a synonym for change or focus on processes or products that are new to a firm but not necessarily innovative in the field (Brickley et al., 2004).
2. However, a number of these researchers came from planning (e.g. Batty et al., 1999).
3. However, scholarship does not necessarily involve the systematic collection of evidence or contribute to knowledge in a field in terms of either facts or theories.
4. The work of Koolhaas is not included here because it is not considered to have a strong enough urban perspective as opposed to an architectural one (Koolhaas, 1995; Goldhagen, 2002; Inam, 2002).
5. Generally, as Garry Stevens points out, departments and schools within universities provide symbolic capital (or status and networks), research or scholarship, and education to reproduce a field or profession (Stevens, 1998, p. 207). However, different fields have different balances of activities. The large number of government jobs in planning mean that few faculty are attracted to academic positions by the stability of institutional jobs; in contrast, stability may be a major incentive for faculty from the design fields, whose alternative employment is largely in the private sector.
6. The design fields present an interesting contrast with the rest of the university. In typical academic fields, tenure is thought to protect risky practices that are seen as happening within the university, whereas in architecture, risky practice tends to happen outside of the university.
7. The essential role of social status and social networks in achieving the commissions that provide recognition in architecture and landscape architecture means that a number of those faculty use university positions to achieve some of that status (Stevens, 1998).

References
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